Operator Interface

Automation Organizer

WindO/I-NV2

Communication Manual

Publication history

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Caution

Trademarks

Confirm that the delivered product is what you have ordered. Read this instruction sheet to make sure of correct operation. Make sure that the instruction sheet is kept by the end user.

SAFETY PRECAUTIONS

- Be certain to read this manual carefully before performing installation, wiring, or maintenance work, or operating the HG2G/3G, HG1F/2F/2S/3F/4F.
- The HG2G/3G, HG1F/2F/2S/3F/4F has been manufactured with careful regard to quality. However, if you intend to use this product in applications where failure of this equipment may result in damage to property or injury, ensure that it used in conjunction with appropriate fail-safe backup equipment.
- In this manual, safety precautions are categorized in order of importance to Warning and Caution:

⚠ WARNING

Warning notices are used to emphasize that improper operation may cause severe personal injury or death.

⚠ CAUTION

Caution notices are used where inattention might cause personal injury or damage to equipment.

⚠ WARNING

- The HG2G/3G, HG1F/2F/2S/3F/4F is not intended to be used for applications which require high reliability and safety, such as medical equipment, nuclear equipment, railways, aircraft, and vehicles. The HG2G/3G, HG1F/2F/2S/3F/4F cannot be used for these applications.
- For other applications which require high reliability in function and precision, provide a failsafe design and redundant design for the entire system including the HG2G/3G, HG1F/2F/2S/3F/4F.
- Turn off the power to the HG2G/3G, HG1F/2F/2S/3F/4F before installation, removal, wiring, maintenance, and inspection of the HG2G/3G, HG1F/2F/2S/3F/4F. Failure to turn power off may cause electrical shock or fire hazard.
- Special expertise is required to install, wire, configure, and operate the HG2G/3G, HG1F/2F/2S/3F/4F. People without such expertise must not use the HG2G/3G, HG1F/2F/2S/3F/4F.
- The HG2G/3G, HG1F/2F/2S/3F/4F uses an LCD (liquid crystal display) as a display device. The liquid inside the LCD is harmful to the skin. If the LCD is broken and the liquid attaches to your skin or clothes, wash the liquid off using soap, and consult a doctor immediately.
- Emergency and interlocking circuits must be configured outside of the HG2G/3G, HG1F/2F/3F/4F.
  Do not use the HG2G/3G, HG1F/2F/3F/4F's internal touch switches for an emergency circuit. If the HG2G/3G, HG1F/2F/2S/3F/4F failed, the external equipment connected to the HG2G/3G, HG1F/2F/2S/3F/4F will no longer be protected, and serious injury to operators and equipment damage may be caused.
  Also, connect the emergency stop switch (Direct opening action, Red switch) or the stop switch (Direct opening action, Gray switch) on the HG2S to the emergency stop circuit fixed to the machine in accordance with ISO13850/EN418.
- If an emergency stop switch is used for the HG2S, it should be secured and connected to the machine for fear of disconnecting easily.
- Connect the emergency stop switch or the stop switch and the enabling switch on the HG2S to function as either a category 0 or category 1 stop in accordance with IEC/EN60204-1 which applies to the HG2S.
- When the HG2S cable can be easily disconnected from the machine, use the HG2S with a stop switch so that the operator can easily notice that the HG2S is NOT an emergency stop device which always functions.

⚠ CAUTION

- Prevent the HG2G/3G, HG1F/2F/2S/3F/4F from falling while moving or transporting, otherwise damage or malfunction of the HG2G/3G, HG1F/2F/2S/3F/4F will result.
- Use the product within the environmental limits given in the catalog and manual. Use of the product in high-temperature or high-humidity environments, or in locations where it is exposed to condensation, corrosive gas or large shock loads can create the risk of electrocution and fire.
- The HG2G/3G, HG1F/2F/2S/3F/4F is designed for use in pollution degree 2. Use the HG2G/3G, HG1F/2F/2S/3F/4F in environments of pollution degree 2. (based on the IEC60664-1 rating)
- Install the HG2G/3G, HG1F/2F/2S/3F/4F according to the instructions. Improper installation will result in falling, failure, electrical shock, fire hazard, or malfunction of the HG2G/3G, HG1F/2F/2S/3F/4F.
- Prevent metal fragments or wire chips from dropping inside the HG2G/3G, HG1F/2F/2S/3F/4F housing. Ingress of such fragments and chips may cause fire hazard, damage, and malfunction.
- Use a power supply of the rated value. Using a wrong power supply may cause fire hazard.
- The HG2G/3G, HG1F/2F/3F/4F uses “PS2 of EN61131” as DC power supply. (based on the IEC/EN61131 rating)
- Use wire of a proper size to meet the voltage and current requirements.
- When exporting the HG2G/3G, HG1F/2F/3F/4F to Europe, use an EN60127 (IEC60127) approved fuse on the power line outside the HG2G/3G, HG1F/2F/3F/4F.
- The D-sub connector on the end of the cable of the HG2S is not water- and dust-proof. If protection against water and dust is required, the user must implement a water-proof provision on the connector or replace the D-sub connector with a water-proof connector.
- When exporting the HG2G/3G, HG1F/2F/3F/4F to Europe, use an EU-approved circuit protector.
- Make sure of safety before starting and stopping the HG2G/3G, HG1F/2F/2S/3F/4F. Incorrect operation of the HG2G/3G, HG1F/2F/2S/3F/4F may cause mechanical damage or accidents.
- Use the HG2G/3G, HG3F/4F in a local area network if you download, upload or monitor the project data via the Ethernet port.
- The touch panel of the HG2G/3G, HG1F/2F/2S/3F/4F is made of glass, and will break if exposed to excessive shock. Take due care when handling it.
- When more than one button is pressed at the same time, due to the detection characteristics of an analog type touch panel, only the gravity center of the pressed area is sensed and the unit assumes that only one button is pressed. Thus, when more than one button is pressed simultaneously, the resulting operation is not guaranteed.
- The screen becomes blank when the backlight is burnt out; however, the touch panel remains enabled. Incorrect touch panel operation will occur when operating the touch panel when the backlight appears to be turned off but is actually burnt out. Note that this erroneous operation may result in damage.
- Do not push hard or scratch the touch panel and protection sheet with a hard object such as a tool, because they are damaged easily.
- At temperatures over the rated operating temperature, the clock accuracy is affected. Adjust the clock before use.
- For applications which require clock accuracy, adjust the clock periodically.
- Do not install the HG2G/3G, HG1F/2F/2S/3F/4F in areas subjected to strong ultraviolet rays, since ultraviolet rays may impair the quality of the LCD.
- Do not attempt to disassemble, repair or modify the HG2G/3G, HG1F/2F/2S/3F/4F. This can create the risk of fire or electrocution.
- When disposing of the HG2G/3G, HG1F/2F/2S/3F/4F, do so as an industrial waste.
- Do not switch off the power or pull out the Memory Card while it is being accessed, as this may result in destruction of the stored data. If the data on the Memory Card is corrupted, format the Memory Card.
- Be sure to confirm that the Memory Card Access lamp is not lit prior to turning the power off to the HG3G, HG2F/3F/4F or pulling out the Memory card. Refer to the Instruction Manual for details.

- Do not switch off the power or pull out the USB Flash Drive while it is being accessed, as this may result in destruction of the stored data. If the data on the USB Flash Drive is corrupted, format the USB Flash Drive.

Symbols Used in this Document

This document uses the following symbols to facilitate explanation.

Symbols

Useful information relating to a function

Information that requires special attention. Failure to operate the product in accordance with the information provided can lead to serious injury or damage.

Indicates the location of related information.

OK — Screen buttons are indicated by enclosing text inside a rectangle or by using the actual graphic icon.

[A5] — Keyboard keys are indicated by the keyboard inscription enclosed in square brackets.

[****] — Controls are indicated by enclosing text inside a rectangle

Chapter 3 O/I Link Communication Interface

Chapter 4 DM Link Communication

Chapter 1 PLC Link Communication

1 PLC Link Communication

1.1 Overview

With the PLC Link communication method, the MICRO/I reads from and writes data to PLC devices such as relays and registers via the PLC's Link Unit or the CPU Unit Programming Port (the terminology used depends on the PLC manufacturer). No special communication program is required on the PLC when PLC Link communication is used.

1.2 Operation

The MICRO/I can use PLC Link communication to read from and write to PLC devices.

- Reading from the PLC

  The continuously reads data from PLC devices set in the currently displayed screen, and display parts (such as numerical displays and pilot lamps) in the MICRO/I screen are updated with the latest data at all Times.

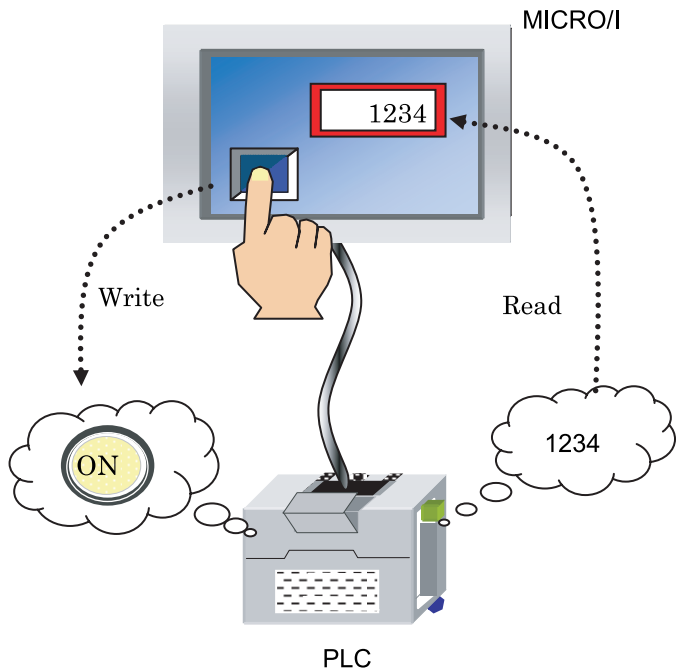
- Writing to the PLC

  When data input parts in the MICRO/I screen (such as Bit or Word buttons) are operated, reading from the PLC is interrupted, and data is written to the PLC.

1.3 1: N Communication

When the Host I/F driver supporting the 1: N Communication is selected, two or more PLC units can be connected to a single MICRO/I unit. Refer to Chapter 6 “1: N Communication (Multi-drop)” on page 579 for the details.

Reading from and writing to PLC devices



2 Compatible PLC Units

In order to connect the MICRO/I to a PLC using PLC Link Communication, you must select a communication program that is compatible with the PIC's CPU unit and Link Unit using the WindO/I-NV2 application. The PLCs and link units that are compatible with the MICRO/I are listed in the following table.

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\/I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
IDEC	FA-3S	PF3S-CP12, CP13	PF3S-SIF2	FA-3S (CP12/13)	---	X	X
			PF3S-SIF4				
			PF2-CLA				
		PF3S-CP11, CP11T	PF2-CLA	FA-3S(CP11/11T), FA2J			
	FA-2J	PF2-CPU1					
	MICRO^3	FC2A-C10, C16A, C24A	Not required (connects to CPU unit)	MICRO^3/MICRO^{3}C	---	X	X
	MICRO^{3}C	FC2A-C16A, C24A	Not required (connects to CPU unit)				
	OpenNet Controller	FC3A-CP2	Not required (connects to CPU unit)	OpenNet(FC3A), MicroSmart(FC4A/ FC5A)	X	X	X
			FC4A-SX5ES1E	Web Server Unit (FC3A/FC4A/FC5A)			
	MICROSmart	FC4A-C10R2	Not required (connects to CPU unit)	OpenNet(FC3A), MicroSmart(FC4A/ FC5A)	X	X	X
			FC4A-SX5ES1E	Web Server Unit (FC3A/FC4A/FC5A)			
		FC4A-C16R2 FC4AC24R2	Not required (connects to CPU unit)	OpenNet(FC3A), MicroSmart(FC4A/ FC5A)			
			FC4A-PC1				
			FC4A-PC3				
			FC4A-SX5ES1E	Web Server Unit (FC3A/FC4A/FC5A)			

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\/I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
IDEC	MICROSmart	FC4A-D20K3 FC4A-D20S3 FC4A-D20RK1 FC4A-D20RS1 FC4A-D40K3 FC4A-D40S3	Not required (connects to CPU unit)	OpenNet(FC3A), MicroSmart(FC4A/ FC5A)	X	X	X
			FC4A-HPC1				
			FC4A-HPC3				
			FC4A-HPH1 +FC4A-PC1				
			FC4A-HPH1 +FC4A-PC3				
			FC4A-SX5ES1E	Web Server Unit (FC3A/FC4A/FC5A)			
	MICROSmart-Pentra	FC5A-C10R2 FC5A-C16R2 FC5A-C24R2 FC5A-C10R2C FC5A-C16R2C FC5A-C24R2C	Not required (connects to CPU unit)	OpenNet(FC3A), MicroSmart(FC4A/ FC5A)	X	X	X
			FC4A-PC1				
			FC4A-PC3				
			FC5A-SIF2				
			FC5A-SIF4				
			FC4A-SX5ES1E	Web Server Unit (FC3A/FC4A/FC5A)			
		FC5A-D16RK1 FC5A-D16RS1 FC5A-D32K3 FC5A-D32S3	Not required (connects to CPU unit)	OpenNet(FC3A), MicroSmart(FC4A/ FC5A)			
			FC4A-HPC1				
			FC4A-HPC3				
			FC4A-HPH1 +FC4A-PC1				
			FC4A-HPH1 +FC4A-PC3				
			FC5A-SIF2				
			FC5A-SIF4				
			FC4A-SX5ES1E	Web Server Unit (FC3A/FC4A/FC5A)			

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\/I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Mitsub-ishi	MELSEC-A	A1N,A2N, A3N	AJ71C24 AJ71C24-S3/-S6/-S8 AJ71UC24	MELSEC-AnN (LINK)	X	X	X
		A1SH-S1	A1SJ71C24-R2 A1SJ71UC24-R2 A1SJ71C24-R4 A1SJ71UC24-R4				
		A2CCPUC24	Not required (connects to CPU unit)				
		A0J2, A0J2H	A0J2-C214-S1				
		A2A, A3A, A2U, A3U,A4U	AJ71C24-S6/-S8 AJ71UC24	MELSEC-AnA (Link)	X	X	X
		A2N	Not required (connects to CPU unit)	MELSEC-AnN (CPU)	---	---	X
		A1SJH, A1SH, A2SH, A2C, A0J2H	Not required (connects to CPU unit)	MELSEC-A1S/ A2C(CPU)			
		A2A, A3A, A2US, A2USH	Not required (connects to CPU unit)	MELSEC-AnA (CPU)			
		A2US,A1SH-S1	Not required (connects to CPU unit)	MELSEC-AnU (CPU)			

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Mitsub-ishi	MELSEC-QnA	Q4A CPU Q4ARCPU Q3ACPU Q2ACPU-S1 Q2ACPU	AJ71QC24N-R2	MELSEC-Q/QnA (LINK)	X	X	X
			AJ71QC24N				
			AJ71QC24N-R4				
			AJ71QE71N3-T	MELSEC-Q/QnA (Ethernet)			
			AJ71QE71N-B2				
			AJ71QE71N-B5				
		Q2ASH CPU-S1 Q2ASHCPU Q2ASCPU-S1 Q2ASCPU	A1SJ71QC24N-R2	MELSEC-Q/QnA (LINK)	X	X	X
			A1SJ71QC24N				
			A1SJ71QE71N3-T	MELSEC-Q/QnA (Ethernet)			
			A1SJ71QE71N-B2				
			A1SJ71QE71N-B5				
	MELSEC-Q	Q00CPU, Q01CPU	Not required (Connects to CPU unit)	MELSEC-Q/QnA (LINK)	X	X	X
		Q02CPU,Q02HCPU Q06HCPU, Q12PHCPU, Q25HCPU	QJ71C24, QJ71C24N, QJ71C24N-R2		X	X	X
		Q02CPU, Q02HCPU	Not required (Connects to CPU unit)	MELSEC-Q (CPU)	X	X	X
		Q02Cpu-A mode	Not required (Connects to CPU unit)	MELSEC-AnU (CPU)	---	---	X
		Q00JCPU, Q00CPU Q01CPU, Q02CPU Q02HCPU, Q06HCPU Q12HCPU, Q25HCPU	QJ71E71-100 QJ71E71-B5 QJ71E71-B2	MELSEC-Q/QnA (Ethernet)	X	X	X

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\/I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Mitsubishi	MELSEC-FX	FX-0, FX-0N, FX-1, FX-2, FX-2C, FX-0S, FX-1S	Not required (connects to CPU unit)	MELSEC-FX (CPU)	X	X	X
		FX-2N, FX2-NC, FX-1N, FX-1NC	Not required (connects to CPU unit)	MELSEC-FX2N (CPU)	X	X	X
		FX-2N	FX2N-232-BD		X	X	X
			FX2N-422-BD				
			FX2N-485-BD				
		FX-1N	FX1N-232-BD		X	X	X
			FX1N-422-BD				
			FX1N-485-BD				
		FX-3UC FX-3U FX-3G	Not required (Connects to CPU unit)	MELSEC-FX3UC (CPU)	X	X	X
			FX3U-232ADP				
			FX3U-232-BD				

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Omron	SYSMAC-C	C500, C500F, C1000H, C2000, C2000H	C120-LK201-V1	SYSMAC-C Series	X	X	X
			C120-LK202-V1				
			C500-LK201-V1				
			C500-LK203				
		C1000HF	C500-LK203				
		C200HS	C200H-LK201				
			C200H-LK202				
		C200HE, C200HG,	C200H-LK201				
			C200H-LK202				
		C200HX	C200HW-COM02/COM04/ COM05/COM06				
			C200HW-COM03/COM06				
		C120, C120F	C120-LK201-V1				
			C120-LK202-V1				
		C20H, C28H, C40H, C60H	Not required (connects to CPU unit)				
		CQM1H, C200HS-CPU21/23/ 31 /33	Not required (connects to CPU unit)				
		C200HE-CPU42, C200HG-CPU43/63, C200HX-CPU44/64	Not required (connects to CPU unit)				
	SYSMAC-C	CPM 1,CPM 1A, CPM 2A	CPM 1-CIF01	SYSMAC-C Series	X	X	X
			CPM 1-CIF11				
		CPM 2A	Not required (connects to CPU unit)				

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\/I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Omron	SYSMAC-CS1	CS1G, CS1H	Not required (connects to CPU unit)	SYSMAC-CS1 Series	X	X	X
			CS1W-SCB41 (port1)				
			CS1W-SCB41 (port2)				
			CS1W-ENT01	SYSMAC-CS1/CJ Series (Ethernet)			
			CS1W-ENT11				
			CS1W-ENT21				
			CJ1W-ENT21				
	SYSMAC-CJ1	CJ1G, CJ1H, CJ1M	Not required (connects to CPU unit)	SYSMAC-CS1 Series			
			CS1W-ENT01	SYSMAC-CS1/CJ Series (Ethernet)			
			CS1W-ENT11				
			CS1W-ENT21				
			CJ1W-ENT21				
	SYSMAC-CJ2	CJ2H	Not required (connects to CPU unit)	SYSMAC-CS1/CJ Series (Ethernet)			
	SYSMAC-CP1H	CP1H	CP1W-CIF01	SYSMAC-CS1 Series			
			CP1W-CIF11				

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Allen-Bradley	PLC-5	All PLC-5 models that can be connected to 1770-KF2	1770-KF2	PLC-5 (Half Duplex)	---	X	X
		All PLC-5 models	Not required (Connects to CPU unit)				
	SLC-500 (Half Duplex)	SLC5/03, SLC5/04	Not required (Connects to CPU unit)	SLC500 (Half Duplex)			
	MicroLogix (Full Duplex)	MicroLogix1000 MicroLogix1100 MicroLogix1200 MicroLogix1500	Not required (Connects to CPU unit)	MicroLogix/SLC 500 (Full Duplex)	X	X	X
	ControlLogix	ControlLogix 5550 ControlLogix 5555	Not required (Connects to CPU unit)	Logix DF1 (Full Duplex)	X	X	X
		1768 CompactLogix 1769 CompactLogix	Not required (Connects to CPU unit)				
	FlexLogix	1794-L33 1794-L34	Not required (Connects to CPU unit)		X	X	X
	ControlLogix	ControlLogix5550 ControlLogix5555	1756-ENBT	Ethernet/IP	X	X	X
	CompactLogix	1769 CompactLogix	Not required (Connects to CPU unit)		X	X	X
	PLC-5	PLC-5	1785-ENET		X	X	X
		PLC-5E	Not required (Connects to CPU unit)				

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Allen-Bradley	SLC 500	SLC5/05	Not required (Connects to CPU unit)	Ethernet/IP	X	X	X
		SLC5/03 SLC5/04 SLC5/05	1761-NET-ENI				
	MicroLogix	MicroLogix1000 MicroLogix1100 MicroLogix1200 MicroLogix1500	1761-NET-ENI				
		MicroLogix1100	Not required (Connects to CPU unit)				
SIEMENS	S7-200	CPU212, CPU214, CPU215, CPU216 CPU221,CPU222 CPU224,CPU226 CPU226XM	Not required (Connects to CPU unit)	S7-200(PPI)	X	X	X
	S7-300	CPU313C-2PtP	Not required (Connects to CPU unit)	S7-MPI	X	X	X
		CPU 313, CPU 314 CPU 315, CPU 315-2DP CPU 316, CPU 318	CP-340 CP-341	S7-300 3964(R)/ RK512	---	X	X
	S7-400	CPU 412, CPU 414 CPU 416, CPU 416F-2 CPU 417	CP-440 CP-441				
Keyence	KV-700 KV-1000	KV-700 KV-1000	Not required (connects to CPU unit)	KV-700/1000	X	X	X
			KV-L20R				
	KZ	KZ-10, 16, 20, 40, 80	Not required (connects to CPU unit)	KV/KZ	---	X	X
	KV	KV-10,16,24,40	Not required (connects to CPU unit)				

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
SHARP	New Satellite JW	JW-10	Not required (connects to CPU unit)	JW	---	X	X
		JW-21CU, JW-22CU, JW-31CUH/H1, JW-32CUH/H1, JW-33CUH/H1/H2/ H3	JW-21CM				
	New Satellite JW	JW-50CU/CUH, JW-70CU/CUH, JW-100CU/CUH	JW-10CM	JW	---	X	X
		JW-22CU, JW-70CU/CUH, JW-100CU/CUH	Not required (connects to CPU unit)				
		JW-32CUH/H1, JW-33CUH/H1/H2/ H3					
Hitachi	S10mini	S10mini	Not required (Built into the CPU unit)	S10mini	---	X	X
			LQE160				
			LQE165				
			LQE560				
			LQE565				
	S10V	LQP510	Not required (Built into the CPU unit)				
			LQE560				
			LQE565				
JTEKT (TOYODA)	TOYOPUC-PC2J	PC2J	Not required (Connects to Built-in Link)	TOYOPUC-PC3J	---	X	X
	TOYOPUC-PC3J	PC3J PC3JD	Not required (Connects to Built-in Link)				
		PC3JG	Not required (Connects to Built-in Link)				

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Toshiba Machine Works	TC200	TC3-13B1	Not required (connects to CPU unit)	TC200	---	X	X
	TCmini	TC03-01 TC03-02	Not required (connects to CPU unit)				
GE Fanuc Automation	Series90-30	CPU331, CPU341, CPU350, CPU351, CPU352, CPU360, CPU363, CPU364, CPU374	IC693CMM311	Series90(SNP-X) ASCII	---	X	X
		CPU311, CPU313, CPU323, CPU331, CPU341, CPU350, CPU351, CPU352, CPU360, CPU363, CPU364, CPU374	Not required (Connects to CPU (Power Supply) unit directly)				
	VersaMax	Nano	Not required (Connects to CPU unit directly)		---	X	X
		Micro(14point)					
		Micro(23,28point)					
Schneider	Twido	TWDLCAA16DRF TWDLCAA24DRF	TWDNAC232D TWDNAC485D TWDNAC485T	Modbus RTU Modbus ASCII	X	X	X
Modicon	Momentum	171CCC96020	Not required (connects to Ethernet port)	MODBUS/TCP Client	X	X	X
	-	-	-	MODBUS/TCP Server	---	X	X
Panasonic (AROMAT)	FP Series	FP0, FP1, FPS	Not required (connects to CPU unit)	MEWNET	X	X	X
YASKAWA ELECTRIC CORPORATION	Machine Controller	MP920, MP930 MP2300	Not required (Connects to CPU unit)	MP920_R	---	X	X
			217IF				

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Koyo	DirectLOGIC 05	DL05	D0-ECOM D0-ECOM100	DirectLogic (Ether-net)	---	X	X
	DirectLOGIC 06	DL06					
	DirectLOGIC 205	D2-240, D2-250, D2-250-1, D2-260	D2-ECOM D2-ECOM-F D2-ECOM100				
	KOSTAC SZ	SZ-4	Not required (Connects to CPU unit)	KOSTAC SU, SZ	X	X	X
	KOSTAC SU	SU-5E, SU-6B SU-5M, SU-6M	Not required (Connects to CPU unit)				
		SU-6H	U-01DM				
		SU-5E, SU-6B	U-01DM				
		SU-5M, SU-6M	D-4ECOM, D4-ECOM-F, D4-ECOM100	DirectLogic (Ether-net)	---	X	X
FANUC	Power Mate	Power Mate-MODEL D	Not required	Power Mate	---	X	X
	Series	16i, 160i, 18i, 180i, 30i, 31i, 32i	Not required				
YOKOGAWA	FA-M3	FA-M3 (F3SP05, F3SP20, F3SP21, F3SP25, F3SP30, F3SP35, F3SP38, F3SP53, F3SP58, F3FP36, F3BP20, F3BP30)	F3LC11-1N F3LC11-2N	FA-M3	---	X	X
		FA-M3 (F3SP05, F3SP21, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58)	Not required				

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\/I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
FUJI	FREX-PC	NB1, NB2, NB3, NJ-CPU-E4, NJ-CPU-A8, NJ-CPU-B16, NS	Not required (Connects to CPU unit)	FREX-PC(CPU)	---	X	X
			NB-RS1-AC/DC NJ-RS2 NJ-RS4 NS-RS1	FREX-PC(LINK)			
	MICREX-F	F55	NV1L-RS2	MICREX-F	---	X	X
		F70	NC1L-RS2				
			NC1L-RS4				
		F80H, F120H, F120S, F140S, F150S	FFU120B				
		F30, F50, F50H, F55, F60, F70, F70S, F80H, F81, F120H, F120S F140S, F150S, F250	FFK120A-C10				
Toshiba	PROSEC T Series	T1-16,T1-28,T1-40	Not required (Connects to CPU unit)	PROSEC T	---	X	X
			CU111				
		T1-40S	Not required (Connects to CPU unit)				
			CU111				
		PU224	Not required (Connects to CPU unit)				

Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\/I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
Toshiba	PROSEC T Series	PU234E	Not required (Connects to CPU unit)	PROSEC T	---	X	X
			CM231E				
			CM232E				
		PU215N,PU235N PU245N	Not required (Connects to CPU unit)				
		PU315, PU325 PU325H, PU326H	Not required (Connects to CPU unit)				
	V Series	PU672T, PU662T PU612E L1PU11H,L1PU12H, S2PU82, S2PU72 S2PU32, S2PU22 S3PU65, S3PU55 S3PU45, S3PU21	Not required (Connects to CPU unit)		---	X	X
LS Industrial Systems	MASTER-K	K10S1	Not required (Connects to CPU unit)	MASTER-K	---	X	X
		K80S, K120S, K200S,	Not required (Connects to CPU unit)				
		K80S	G7L-CUEB				
			G7L-CUEC				
		K200S	G6L-CUEB				
			G6L-CUEC				
		K300S	G4L-CUEA				

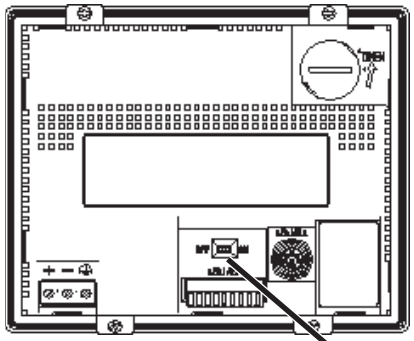
Manufacturer	Series Name	System (CPU unit)	Link Unit	PLC Model set using WindO/I-NV2	MICRO\I Type		
					HG3G	HG2G	HG1F/ 2F/ 2S/ 3F/ 4F
VIGOR	VB	V0, VB1, VB2	Not required (Connects to CPU unit)	VB/VH	---	X	X
			VB-485A				
			VB-CADP				
			VB-232				
			VB-485				
	VH	VH	Not required (Connects to CPU unit)				
			VB-485A				
			VB-CADP				
			VB-232				
			VB-485				

3 Important Points Regarding Wiring

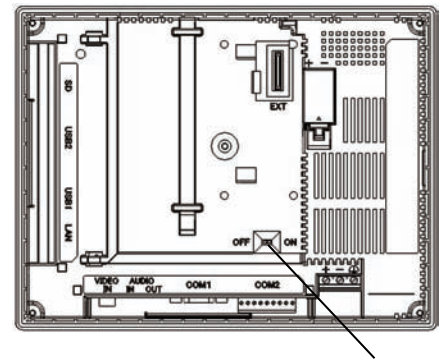
Take note of the following points when connecting a PLC to the MICRO/I.

- Depending on the environment, connect a shield wire to the FG terminal on either the PLC side or the MICRO/I side.
- In case of HG2F/3F/4F when using RS-485 (422), shorting pin 9 (TERM) and pin 10 (RDA or RD+) inserts a 330-Ohm terminating resistor. Use it if necessary.
- In case of HG2S when using RS-485 (422), setting the communication switch (SW2) as the below figure inserts a 330-Ohm terminating resistor. Use it if necessary.
- In case of HG2G/3G and HG1F when using RS-485 (422), setting the terminator switch ON inserts a 120-Ohm at HG3G, 100-Ohm at HG2G or 330-Ohm at HG1F. *1Use it if necessary.

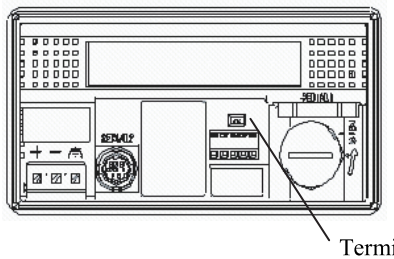
HG2G



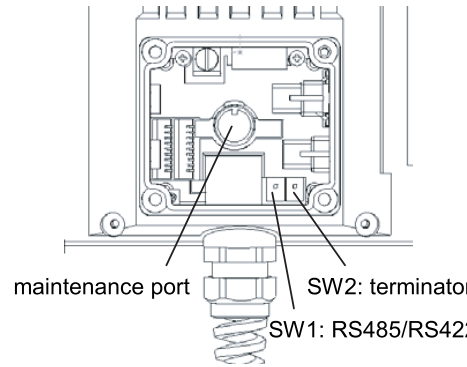
HG3G



HG1F



HG2S



Inside of Maintenance Port Cover

*1. In case of HG3G inserts terminating resistor to only Terminal Port, not D-SUB port.
Insert 100-120 Ohm terminating resistor when using RS-485(422) at D-SUB port if necessary.

4 Settings for PLC Link Communication

You must setup MICRO/I using WindO/I-NV2 in order for it to be able to communicate with the PLC that you will be using.

You will find the WindO/I-NV2 setting items for PLC Link Communication in the Host I/F Selection and [Configuration] - [System Setup] - [Project] dialog boxes (refer to Chapter 5 of the MICRO/I instruction manual). Match the settings for the items in the following table to those of the PLC that you will be using.

[Dialog Box Name] - [Tab Name]	Setting	Description
[Status Bar] - [Host I/F Driver]	Manufacturer	Select the manufacturer and the PLC from the list of compatible PLCs given in Chapter 2 that corresponds to the one you will be using.
	Host I/F Driver	
	Connection Type	When the Host I/F driver supporting 1: N communication is selected, the 1: N Communication option becomes selectable.
[Project Settings] - [Communication Interface]	Protocol	The setting depends on the Connection to the PLC that you will use. HG3G: Select “Host Communication” as the communication interface for PLC communication, and “O/I Link Master” or "O/I Link Slave" as the communication interface for O/I Link communication. Refer to Chapter 3 “O/I Link Communication Interface” on page 499. HG2G, HG1F/2F/2S/3F/4F: Select “O/I Link Master” or “O/I Link Slave” from the Serial I/F or O/I Link I/F tab. Refer to Chapter 3 “O/I Link Communication Interface” on page 499.
	Baud Rate	The setting depends on the Connection to the PLC that you will use. Refer to Chapter 2 “Connection to a PLC” on page 21.
	Data Bits	
	Stop Bits	
	Parity	
	Flow Control	
	Serial Interface	

WARNING HG1F transmits the data even if CS signal line is OFF.

[Dialog Box Name] - [Tab Name]	Setting	Description
[Project Settings] - [Host I/F Driver]	Transmission Wait (x 10 msec.)	The settings depend on the PLC that you will use. Refer to the Environment Settings for your PLC. If there is no setting given for Transmission Wait, set it to 0.
	Time Out (x 100 msec.)	This is the time that the MICRO/I will wait for a reply from the PLC after it sends a communication command. When this time elapses, the MICRO/I will send the command again. The default setting is 20. Give careful consideration to the value that you will use before changing this setting.
	Retry Cycles	If communication errors occur despite trying the number set here, an error is displayed on the screen and the error information is set in the system area. The default setting is 5.
[Project Settings] - [Host I/F Network]	Station No	This number is used to distinguish a PLC when set to a device address.
	IP Address	IP address of each PLCs
	Port No	Port Number of each PLCs
	Other setting items	These items depend on Host I/F driver. You can see some items if the selected Host I/F driver has any setting items. Refer to each manual.
[Project Settings] - [System]	Start Time (sec.)	This is the time delay until the MICRO/I sends a communication command after the power is switched on. Set this when there may be occasions when the PLC is switched on after the MICRO/I or when some time is required until the PLC communication port can be used.
	Use System Area	When Use System Area is selected, set Device Address for System Area so that the PLC device range is not exceeded.
	Device	
	Use System Areas 3, 4	
	Watch Dog	When Watch Dog is selected, set the write device and the time for the write interval.
	Device	
	Time (sec.)	

Chapter 2 Connection to a PLC

1 IDEC

Selecting MICRO^3/MICRO^{3}C or OpenNet (FC3A), MicroSmart (FC4A/FC5A) as the Host I/F Driver allows the user to use the 1: N Communication and Pass-through function. Selecting Web Server Unit (FC3A/FC4A/FC5A) as the Host I/F Driver allows the user to use 1: N Communication.

- Pass-through function (Refer to “Pass-Through Function” in the Instruction Manual)
- 1: N Communication function (Refer to Chapter 6 “1: N Communication (Multi-drop)” on page 579)

1.1 Connection Table

1.1.1 Compatible PLCs

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
FA-3S*1	PF3S-CP12*1 PF3S-CP13	PF3S-SIF2*1	RS-232C Connection Diagram 1 (refer to P33)	ER control	FA-3S (CP12/13)
		PF3S-SIF4	RS-485 (422)-2 Connection Diagram 2 (refer to P36)		
		PF2-CLA	RS-232C Connection Diagram 3 (refer to P39)		
	PF3S-CP11*1 PF3S-CP11T	PF2-CLA*1	RS-232C Connection Diagram 3 (refer to P39)	ER control	FA-3S (CP11/11T), FA-2J
FA-2J	PF2-CPU1				
MICRO^3*1	FC2A-C10 -C16A -C24A	Not required (connects to CPU unit)	RS-485 (422)-2 Connection Diagram 4 (refer to P41)	ER control	MICRO^3/ MICRO^{3}C
MICRO^{3}C*1	FC2A-C16A -C24A	Not required (connects to CPU unit)	RS-232C Connection Diagram 5 (refer to P44)		
			RS-485 (422)-2 Connection Diagram 6 (refer to P47)		
OpenNet Controller	FC3A-CP2	Not required (connects to CPU unit)	RS-232C Connection Diagram 5 (refer to P44)	ER control	OpenNet(FC3A), MicroSmart (FC4A/FC5A)
			RS-485 (422)-2 Connection Diagram 6 (refer to P47)		
		Web Server Unit (FC4A-SX5ES1E)	Ethernet	-	Web Server Unit (FC3A/FC4A/ FC5A)

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
MICROSmart*1	FC4A-C10R2	Not required (connects to CPU unit)	RS-232C Connection Diagram 7 (refer to P50)	ER control	OpenNet(FC3A), MicroSmart (FC4A/FC5A)
			RS-232C Connection Diagram 5 (refer to P44)	None	
		Web Server Unit (FC4A-SX5ES1E)	Ethernet	-	Web Server Unit (FC3A/FC4A/FC5A)
	FC4A-C16R2 -C24R2	Not required (connects to CPU unit)	RS-232C Connection Diagram 7 (refer to P50)	ER control	OpenNet(FC3A), MicroSmart (FC4A/FC5A)
			RS-232C Connection Diagram 5 (refer to P44)	None	
		FC4A-PC1	RS-232C Connection Diagram 5 (refer to P44)	ER control	
		FC4A-PC3	RS-485 (422)-2 Connection Diagram 6 (refer to P47)		
		Web Server Unit (FC4A-SX5ES1E)	Ethernet	-	Web Server Unit (FC3A/FC4A/FC5A)

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
MICROSmart[*1]	FC4A-D20K3 -D20S3 -D20RK1 -D20RS1 -D40K3 -D40S3	Not required (connects to CPU unit)	RS-232C Connection Diagram 7 (refer to P50)	ER control	OpenNet(FC3A), MicroSmart (FC4A/FC5A)
			RS-232C Connection Diagram 5 (refer to P44)	None	
		FC4A-HPC1	RS-232C Connection Diagram 5 (refer to P44)	ER control	
		FC4A-HPC3	RS-485 (422)-2 Connection Diagram 6 (refer to P47)		
		FC4A-HPH1 +FC4A-PC1	RS-232C Connection Diagram 5 (refer to P44)		
		FC4A-HPH1 +FC4A-PC3	RS-485 (422)-2 Connection Diagram 6 (refer to P47)		
		Web Server Unit (FC4A-SX5ES1E)	Ethernet	-	Web Server Unit (FC3A/FC4A/ FC5A)
MICROSmart Pentra[*1]	FC5A-C10R2 FC5A-C16R2 FC5A-C24R2 FC5A-C10R2C FC5A-C16R2C FC5A-C24R2C	Not required (connects to CPU unit)	RS-232C Connection Diagram 7 (refer to P50)	ER control	OpenNet(FC3A), MicroSmart (FC4A/FC5A)
			RS-232C Connection Diagram 5 (refer to P44)	None	
		FC4A-PC1	RS-232C Connection Diagram 5 (refer to P44)	ER control	
		FC4A-PC3	RS-485(422)-2 Connection Diagram 6 (refer to P47)		
		FC5A-SIF2	RS-232C Connection Diagram 8 (refer to P53)	None	
		FC5A-SIF4	RS-485(422)-2 Connection Diagram 6 (refer to P47)		
		Web Server Unit (FC4A-SX5ES1E)	Ethernet	-	Web Server Unit (FC3A/FC4A/ FC5A)

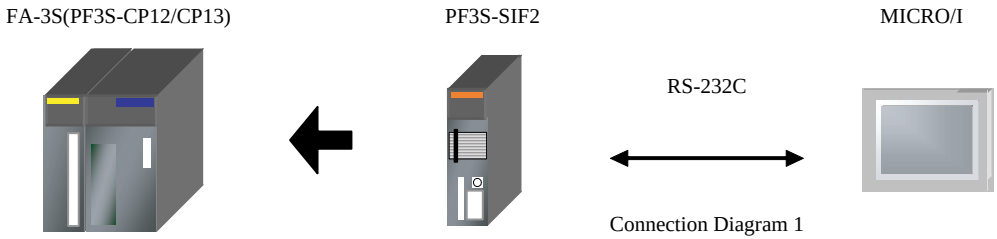
Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
MICROSmart Pentra*1	FC5A-D16RK1 FC5A-D16RS1 FC5A-D32K3 FC5A-D32S3	Not required (connects to CPU unit)	RS-232C Connection Diagram 7 (refer to P50)	ER control	OpenNet(FC3A), MicroSmart (FC4A/FC5A)
			RS-232C Connection Diagram 5 (refer to P44)	None	
		FC4A-HPC1	RS-232C Connection Diagram 5 (refer to P44)	ER control	
		FC4A-HPC3	RS-485(422)-2 Connection Diagram 6 (refer to P47)		
		FC4A-HPH1 +FC4A-PC1	RS-232C Connection Diagram 5 (refer to P44)		
		FC4A-HPH1 +FC4A-PC3	RS-485(422)-2 Connection Diagram 6 (refer to P47)		
		FC5A-SIF2	RS-232C Connection Diagram 8 (refer to P53)	None	
		FC5A-SIF4	RS-485(422)-2 Connection Diagram 6 (refer to P47)		
		Web Server Unit (FC4A-SX5ES1E)	Ethernet	-	Web Server Unit (FC3A/FC4A/ FC5A)

*1. We tested with the PLC of these parts.

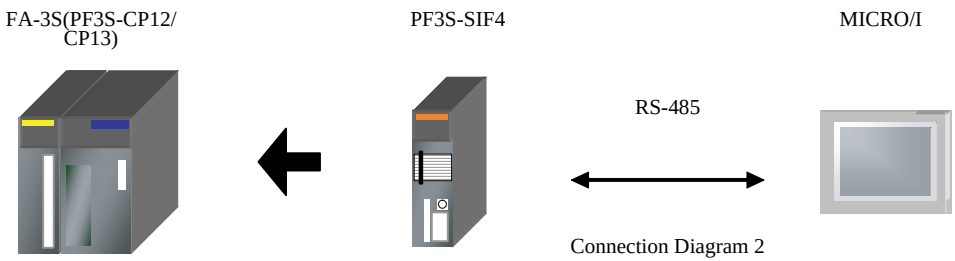
1.2 System Configuration

This is the system configuration for connection of IDEC PLCs to the MICRO/I.

1.2.1 FA Series (using the Serial Interface unit)



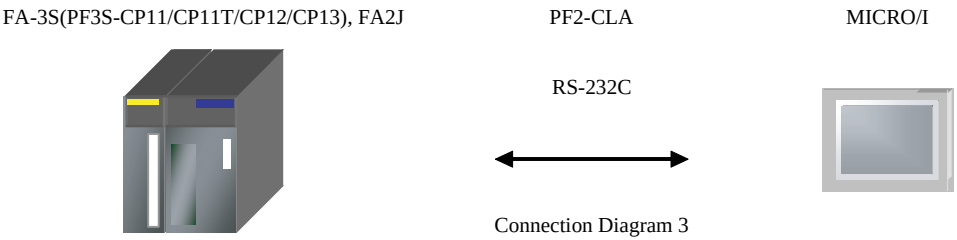
Connection Diagram 1



Connection Diagram 2

- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: PF3S-KS1).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC115).

1.2.2 FA Series (using the Link Adapter)

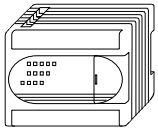


Connection Diagram 3

Use the special Link Cable (PFA-1A51) to connect the FA-3S and FA-2J to the PF2-CLA.

1.2.3 MICRO^3 (connects to CPU Unit loader port)

FC2A-C10/C16/C24



MICRO^3 Interface

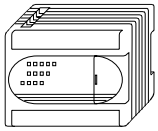
MICRO/I

Connection Diagram 4

In case of HG2F/3F/4F a connection cable is available (part number: HG9Z-3C115).

1.2.4 MICRO^{3}C (connects to CPU Unit loader port)

FC2A-C16A/C24A



MICRO^3 Interface

MICRO/I

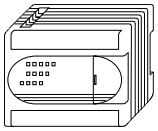
Connection Diagram 5

- In case of HG3G a connection cable is available (part number: HG9Z-XC295).
- In case of HG2G/3G a connection cable is available (part number: HG9Z-XC275).

  In case of HG2F/3F/4F a connection cable is available (part number: HG9Z-3C125).
- In case of HG1F a connection connection cable is available (part number: HG9Z-XC183).

1.2.5 MICRO^{3}C (connects from the CPU to the Data Link port)

FC2A-C16A/C24A



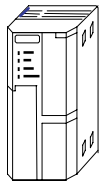
RS-485

MICRO/I

Connection Diagram 6

1.2.6 OpenNet Controller (connects to RS-232C port of the CPU unit)

FC3A-CP2



OpenNet Controller Interface

Connection Diagram 5

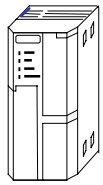
MICRO/I

- In case of HG3G a connection cable is available (part number: HG9Z-XC295).
- In case of HG2G/3G a connection cable is available (part number: HG9Z-XC275).

  In case of HG2F/3F/4F a connection cable is available (part number: HG9Z-3C125).
- In case of HG1F a connection cable is available (part number: HG9Z-XC183).

1.2.7 OpenNet Controller (connects to RS-485 port of the CPU unit)

FC3A-CP2



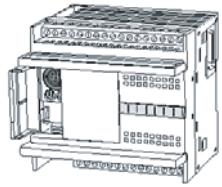
OpenNet Controller Interface

Connection Diagram 6

MICRO/I

1.2.8 MicroSmart/MICROSmart Pentra (uses the communication port1)

FC4A
FC5A



RS-232C

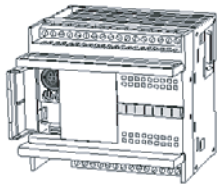
Connection Diagram 5 or 7

MICRO/I

- In case of HG3G a connection cable is available for Connection Diagram 5 or 7 (part number: HG9Z-XC295).
- In case of HG2G/3G a connection cable is available for Connection Diagram 5 or 7 (part number: HG9Z-XC275).

  In case of HG2F/3F/4F a connection cable is available for Connection Diagram 5 (part number: HG9Z-3C125).
- In case of HG1F a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC183)
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 7 (part number: FC4A-KC2C).
- In case of HG1F a connection cable is available for Connection Diagram 7 (part number: FC4A-KC1C).

1.2.9 MicroSmart/MICROSmart Pentra (uses the communication port 2)



RS-232C

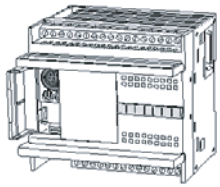
MICRO/I

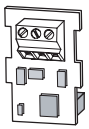
Connection Diagram 5

FC4A- C16R2 C24R2

FC5A- C10R2 C16R2 C24R2 C10R2C C16R2C C24R2C

FC4A-PC1 (Communication Adapter)





RS-485

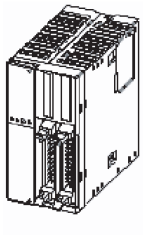
MICRO/I

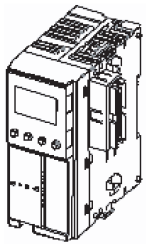
Connection Diagram 6

FC4A- C16R2 C24R2

FC5A- C10R2 C16R2 C24R2 C10R2C C16R2C C24R2C

FC4A-PC3 (Communication Adapter)





RS-232C

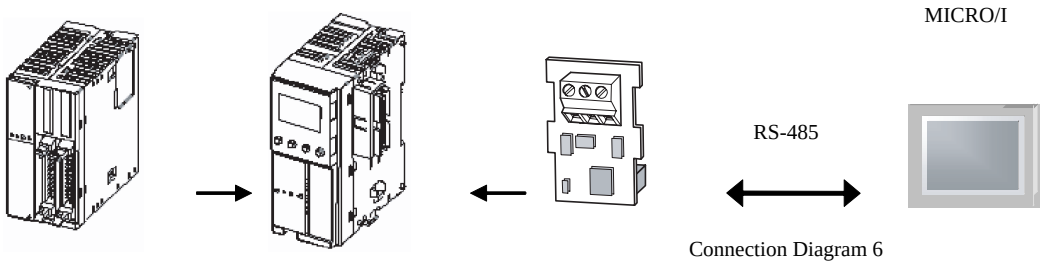
MICRO/I

Connection Diagram 5

FC4A-D***** FC5A-D*****

FC4A-HPH1 (HMI Base Module)

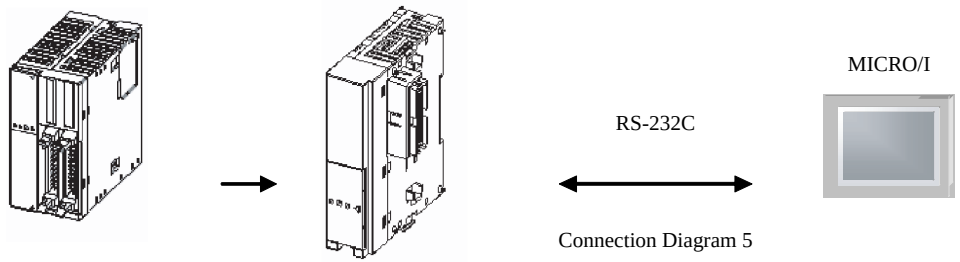
FC4A-PC1 (Communication Adapter)

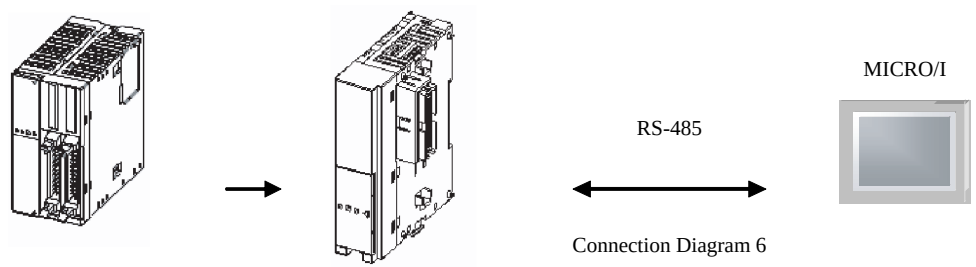


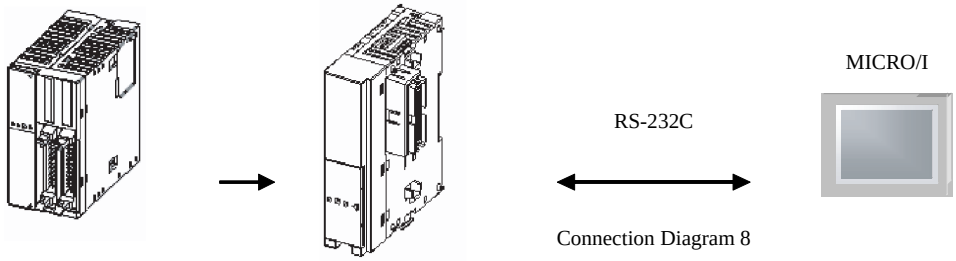
- In case of HG3G a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC295).
- In case of HG2G/3G a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC275).

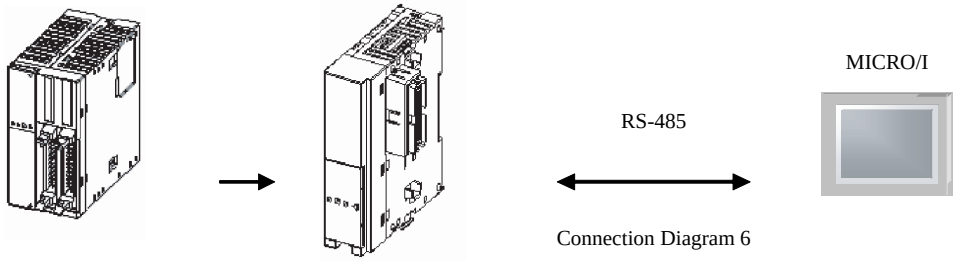
  In case of HG2F/3F/4F a connection cable is available for Connection Diagram 5 (part number: HG9Z-3C125).
- In case of HG1F a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC183).

1.2.10 MicroSmart/MICROSmart Pentra (uses the Communication Module)



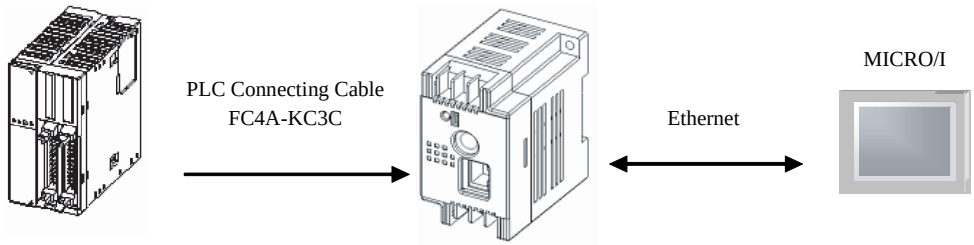






- In case of HG3G a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC295).
- In case of HG2G/3G a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC275).
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 5 (part number: HG9Z-3C125).
- In case of HG1F a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC183).

1.2.11 OpenNet Controller/MICROSmart/MICROSmart Pentra (uses Web Server Unit)



1.2.12 1: N Communication-OpenNet Controller/MICROSmart/MICROSmart Pentra

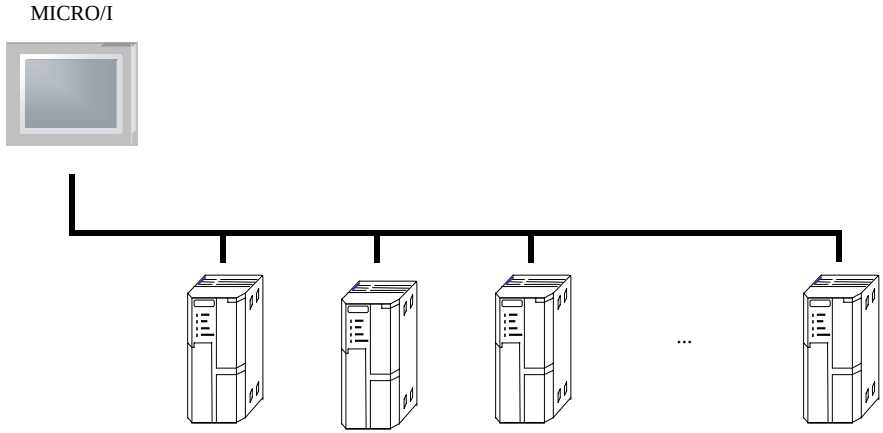
The 1: N communication can be established by using the following connections

OpenNet Controller (Connects to the RS-485 port of the CPU unit)

MICROSmart/MICROSmart Pentra (Port 2) - with RS-485 connection

MICROSmart/MICROSmart Pentra (Communication module -to-RS-485)

- OpenNet Controller (Connects to the RS-485 port of the CPU unit)
- MICROSmart/MICROSmart Pentra (Port 2) - with RS-485 connection
- MICROSmart/MICROSmart Pentra (Communication module -to-RS-485)

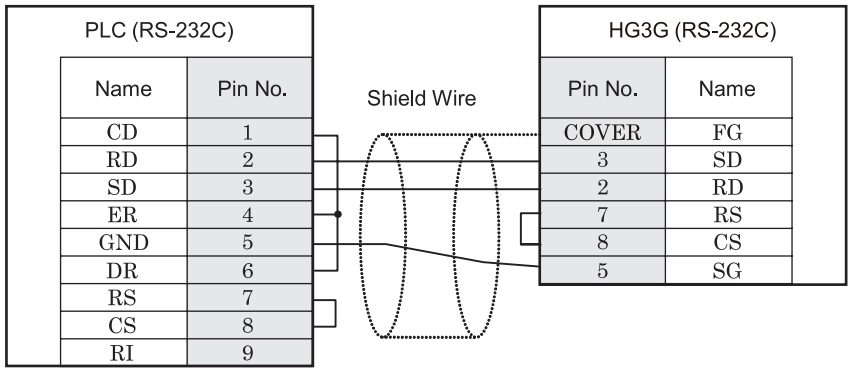


1.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

1.3.1 Connection Diagram 1: FA-3S (PF3S-SIF2) to MICRO/I

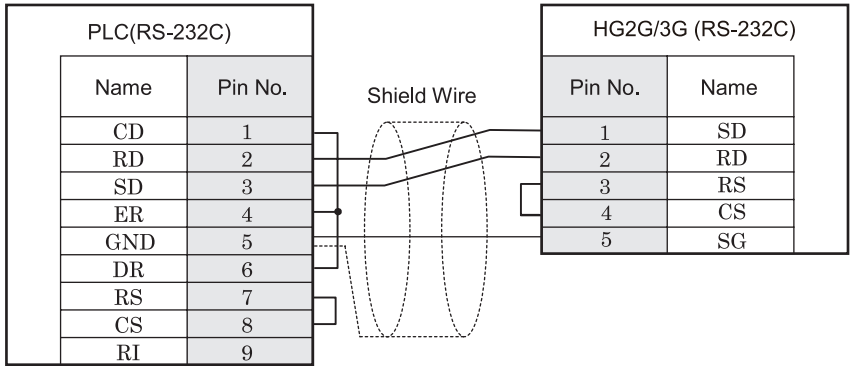
HG3G (Connector)



D-sub, 9P connector plug type (unit side)

D-sub, 9P connector plug type

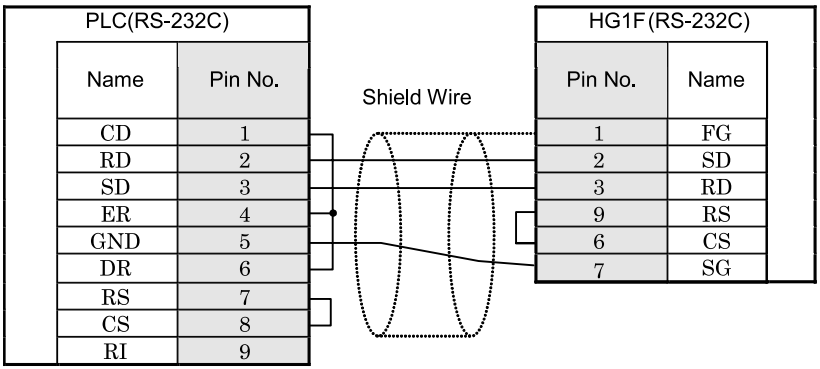
HG2G/3G (Terminal)



D-sub, 9P connector plug type (unit side)

Terminal

HG1F (Connector)

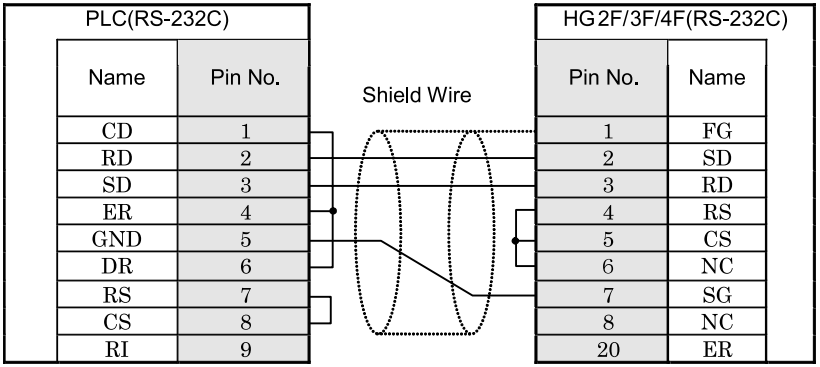


D-sub, 9P connector plug type (unit side)

D-sub, 9P connector socket type

A connection cable is available (part number: XC115).

HG2F/3F/4F

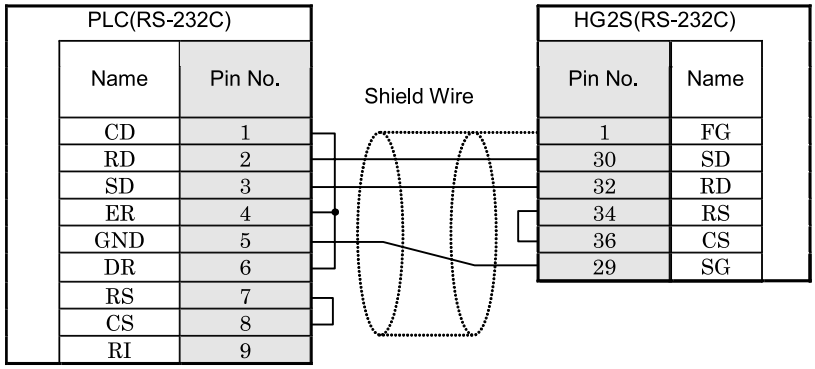


D-sub, 9P connector plug type (unit side)

D-sub, 25P connector socket type

A connection cable is available (part number: PF3S-KS1).

HG2S

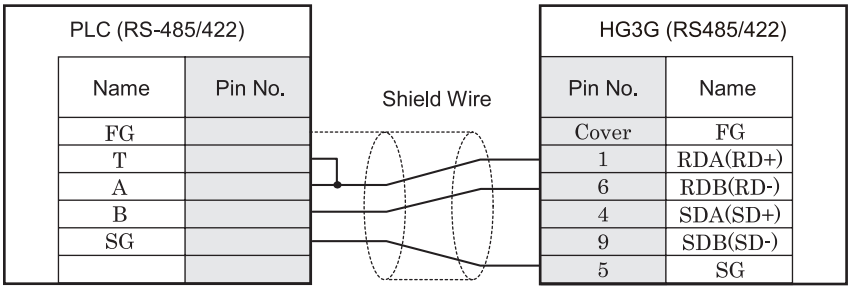


D-sub, 9P connector plug type (unit side)

D-sub, 37P connector socket type

1.3.2 Connection Diagram 2: FA-3S (PF3S-SIF4) to MICRO/I

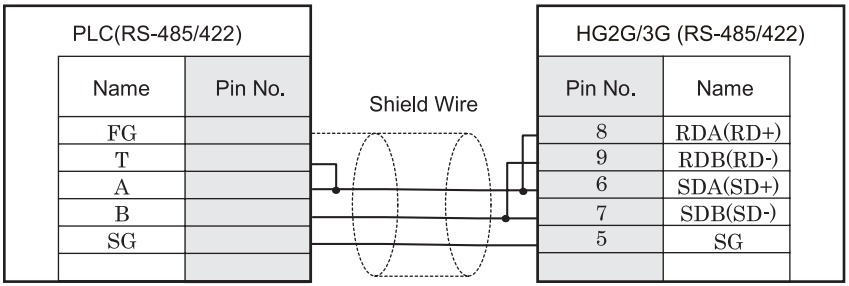
HG3G (Connector)



M3 screw terminal block 5P

D-sub, 9P connector plug type

HG2G/3G (Terminal)

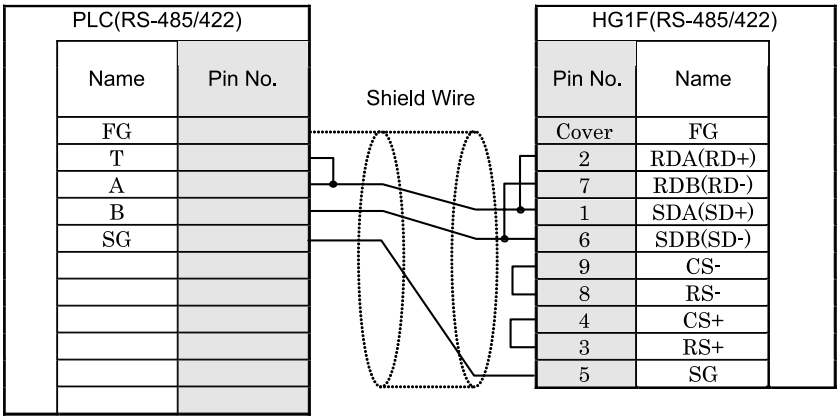


M3 screw terminal block 5P

Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

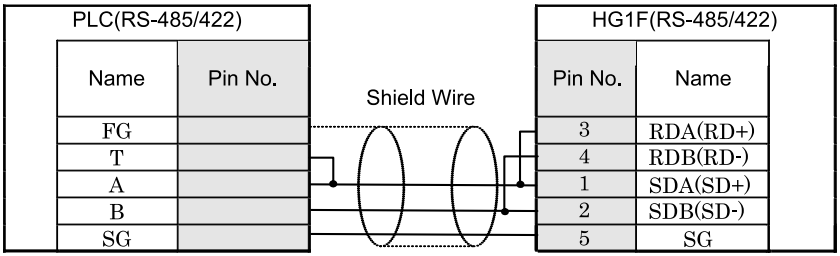
HG1F (Connector)



M3 screw terminal block 5P

D-sub, 9P connector socket type

HG1F (Terminal)



M3 screw terminal block 5P

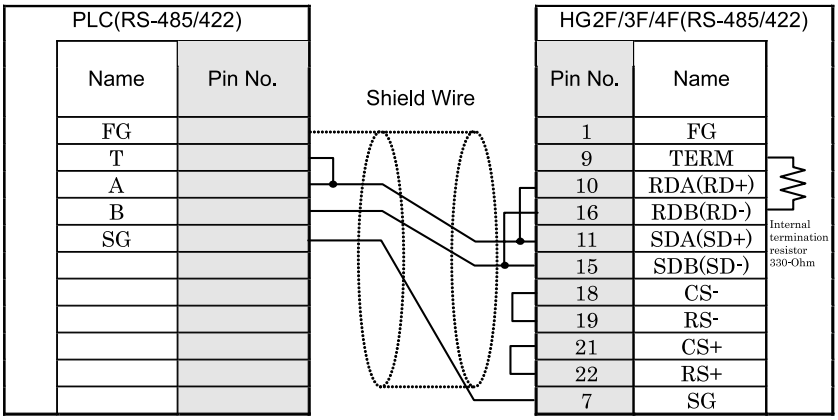
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

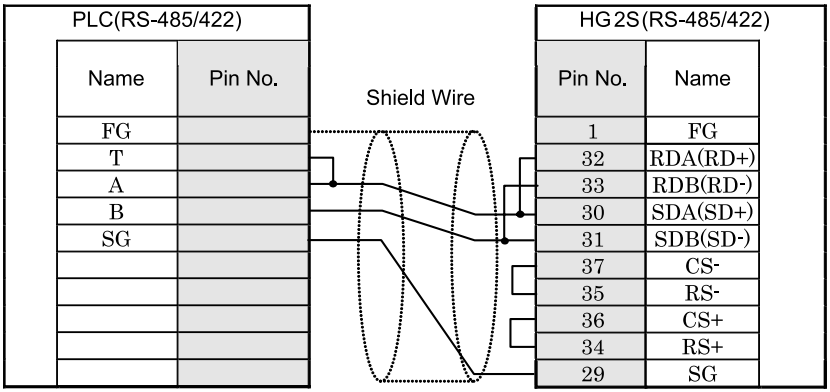
HG2F/3F/4F



M3 screw terminal block 5P

D-sub, 25P connector socket type

HG2S



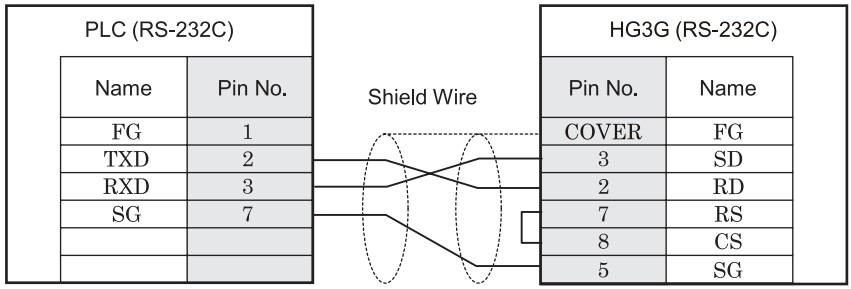
M3 screw terminal block 5P

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

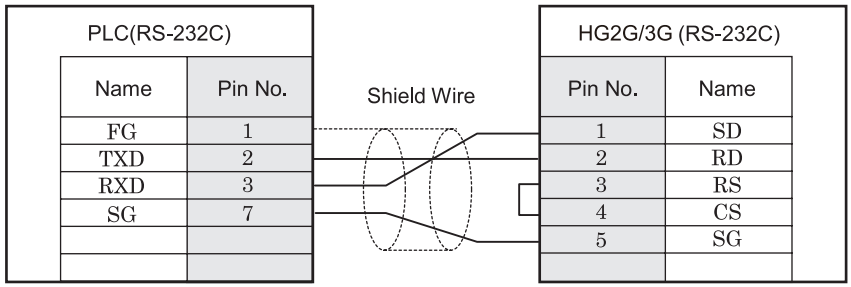
1.3.3 Connection Diagram 3: FA-3S, FA-2J (PF2-CLA) to MICRO/I

HG3G (Connector)



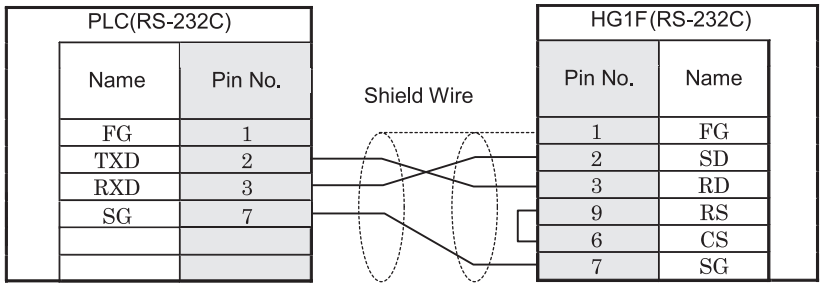
D-sub, 25P connector plug type (unit side) D-sub, 9P connector plug type

HG2G/3G (Terminal)



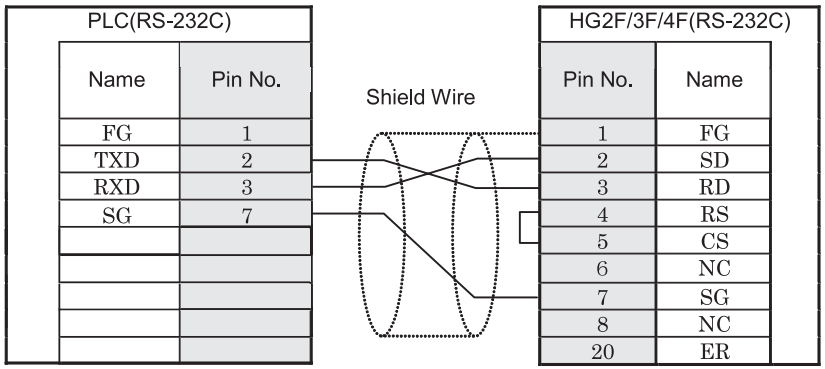
D-sub, 25P connector plug type (unit side) Terminal

HG1F (Connector)



D-sub, 25P connector plug type (unit side) D-sub, 9P connector socket type

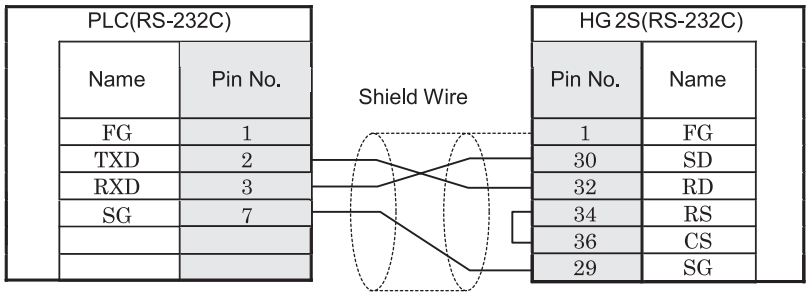
HG2F/3F/4F



D-sub, 25P connector plug type (unit side)

D-sub, 25P connector socket type

HG2S

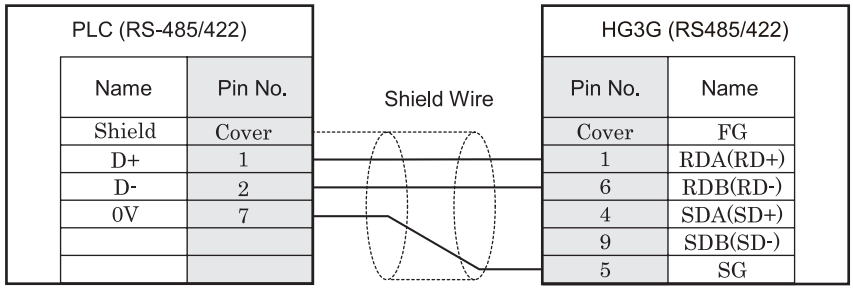


D-sub, 25P connector plug type (unit side)

D-sub, 37P connector socket type

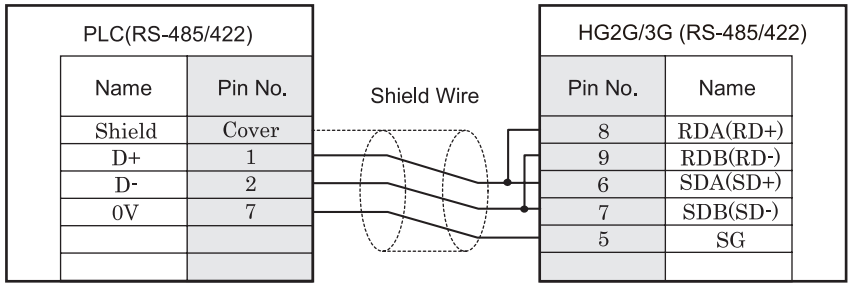
1.3.4 Connection Diagram 4: MICRO^3 (loader port) to MICRO/I

HG3G (Connector)



Mini Din 8P — D-sub, 9P connector plug type

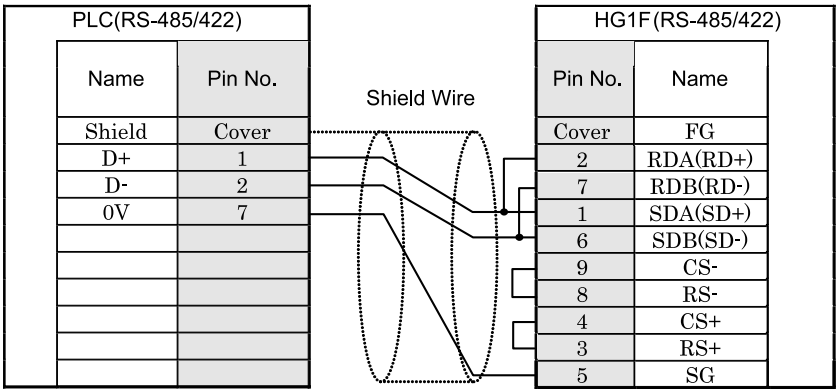
HG2G/3G (Terminal)



Mini Din 8P — Terminal

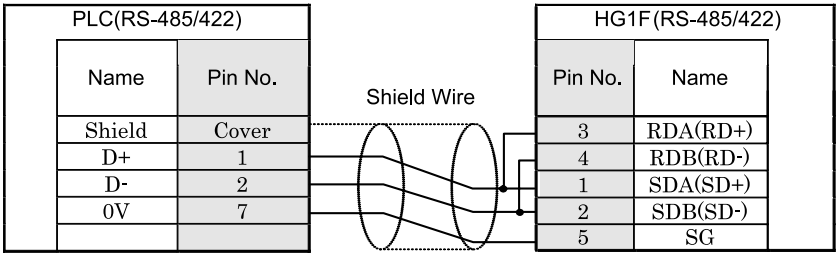
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don't need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

HG1F (Connector)



Mini Din 8P D-sub, 9P connector socket type

HG1F (Terminal)

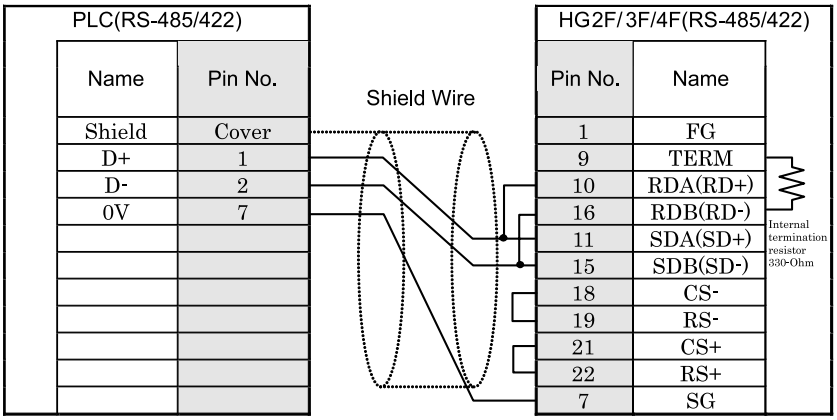


Mini Din 8P Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F

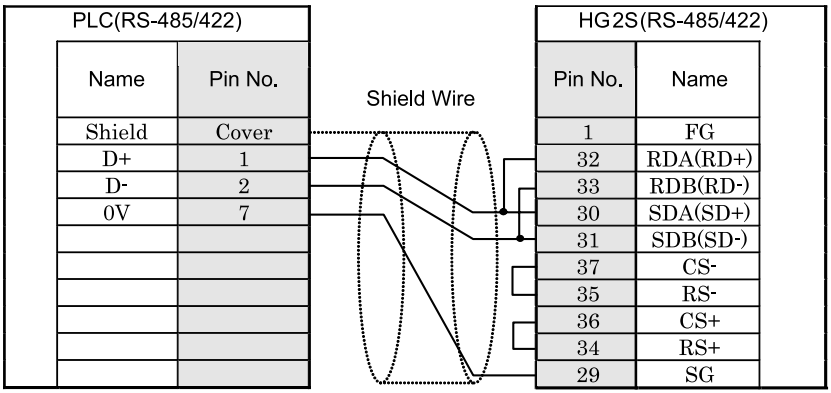


Mini Din 8P

D-sub, 25P connector socket type

In case of HG2F/3F/4F a connection cable is available (part number: HG9Z-3C115).

HG2S



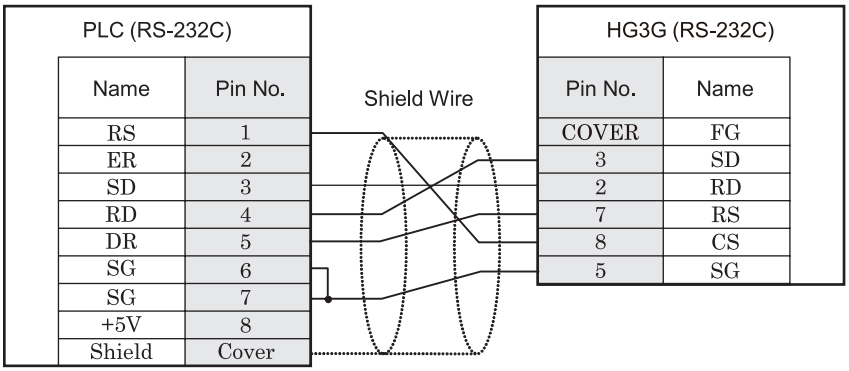
Mini Din 8P

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

1.3.5 Connection Diagram 5: MICRO^{3}C (Loader port) to MICRO/I
OpenNet Controller (RS-232C port) to MICROI
MICROSmart Pentra (RS-232C port) to MICRO/I

HG3G (Connector)

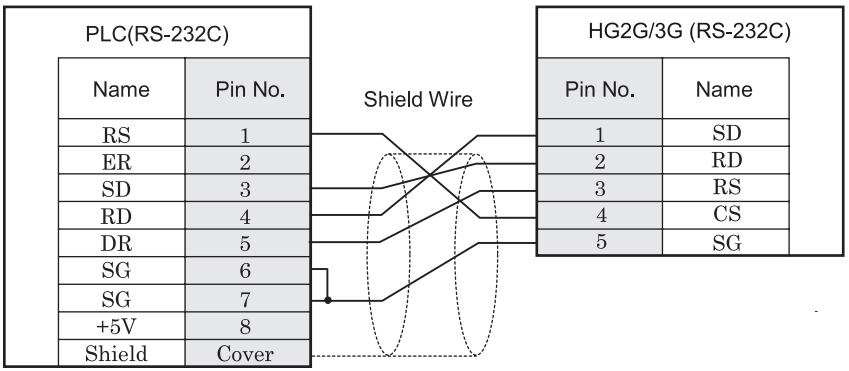


Mini Din 8P

D-sub, 9P connector plug type

- A connection cable is available (part number: HG9Z-XC295).
- The connection diagram 5 is not same as HG9Z-XC295. But both diagrams are available. Refer to Chapter 7 “1.22 PLC connection cable: HG9Z-XC295” on page 604 about the connection diagram of HG9Z-XC295.

HG2G/3G (Terminal)

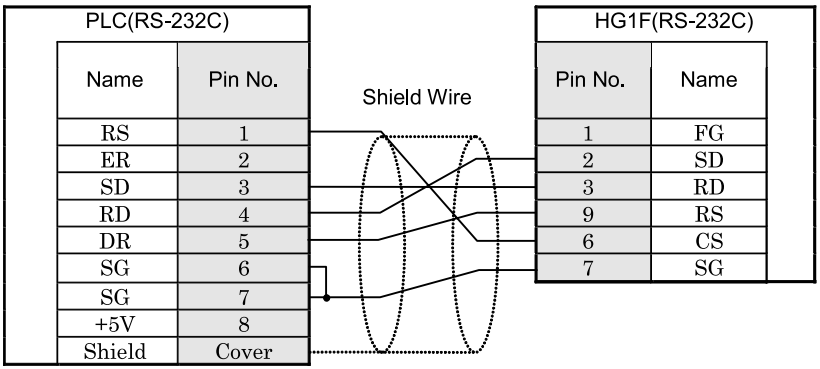


Mini Din 8P

Terminal

- A connection cable is available (part number: HG9Z-XC275).
- Refer to Chapter 7 “1.21 PLC connection cable: HG9Z-XC275” on page 603 about the connection diagram of HG9Z-XC275.

HG1F (Connector)

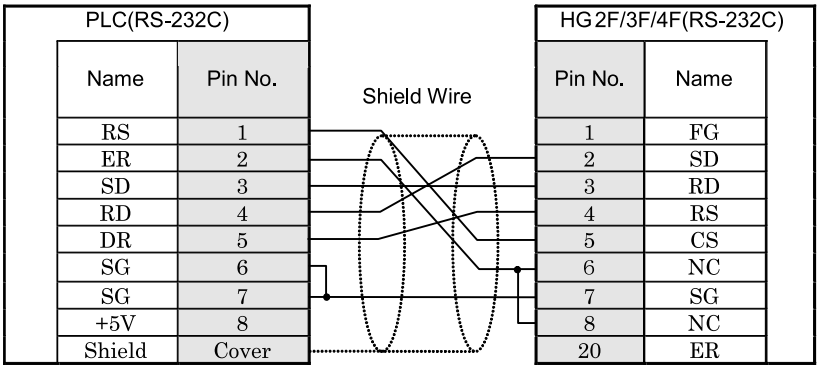


Mini Din 8P

D-sub, 9P connector socket type

- A connection cable is available (part number: HG9Z-XC183).
- The connection diagram 5 is not same as HG9Z-XC183. But both diagrams are available. Refer to Chapter 7 “1.15 PLC connection cable: HG9Z-XC183” on page 600 about the connection diagram of HG9Z-XC183.

HG2F/3F/4F

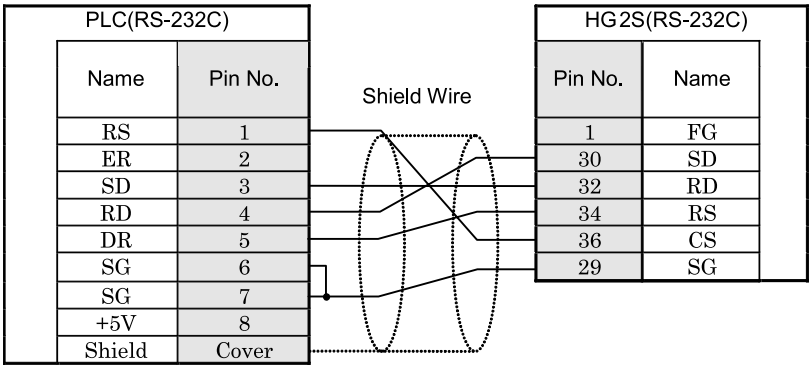


Mini Din 8P

D-sub, 25P connector socket type

- A connection cable is available (part number: HG9Z-3C125).
- The connection diagram 5 is not same as HG9Z-3C125. But both diagrams are available. Refer to Chapter 7 “1.5 PLC connection cable: HG9Z-3C125” on page 594 about the connection diagram of HG9Z-3C125.

HG2S

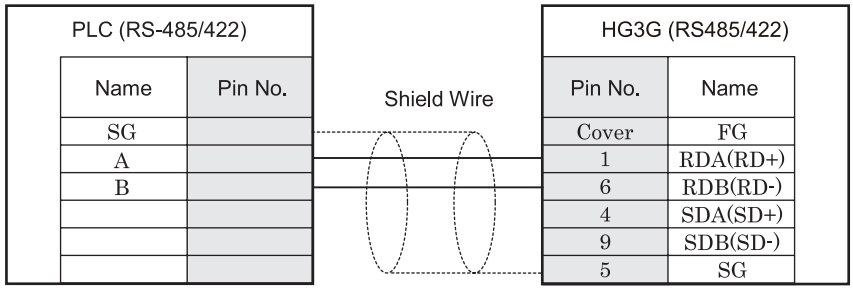


Mini Din 8P

D-sub, 37P connector socket type

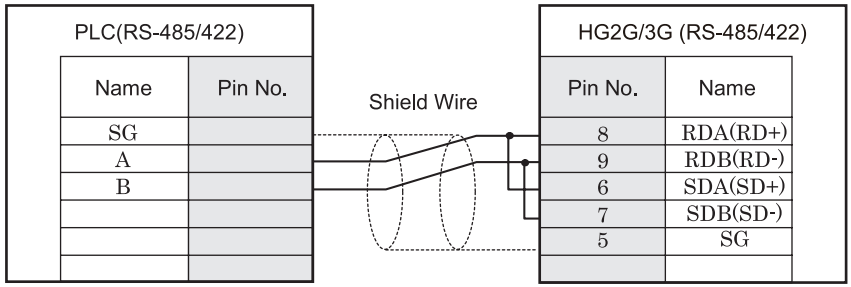
1.3.6 Connection Diagram 6: MICRO^{3}C (Data Link port) to MICRO/I
OpenNet Controller (RS-485 port) to MICRO/I
MICROSmart/MICROSmart Pentra (RS-485 port) to MICRO/I
MICROSmart/MICROSmart Pentra (FC5A-SIF4) to MICRO/I

HG3G (Connector)



Screw terminal block — D-sub, 9P connector plug type

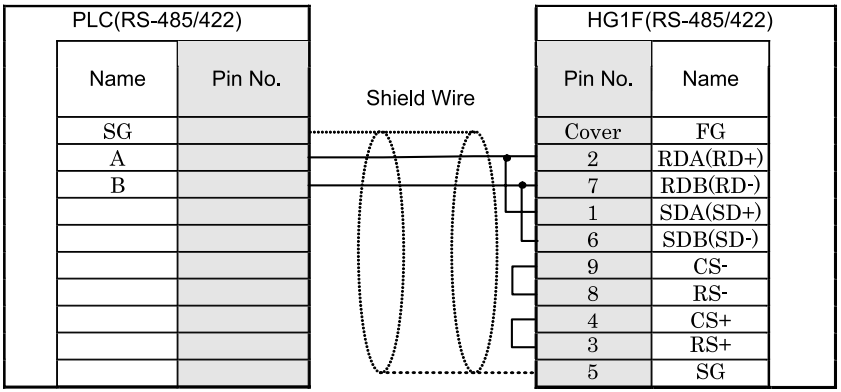
HG2G/3G (Terminal)



Screw terminal block — Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

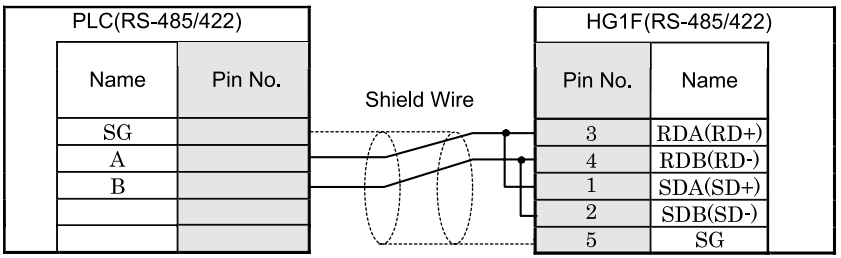
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)



Screw terminal block

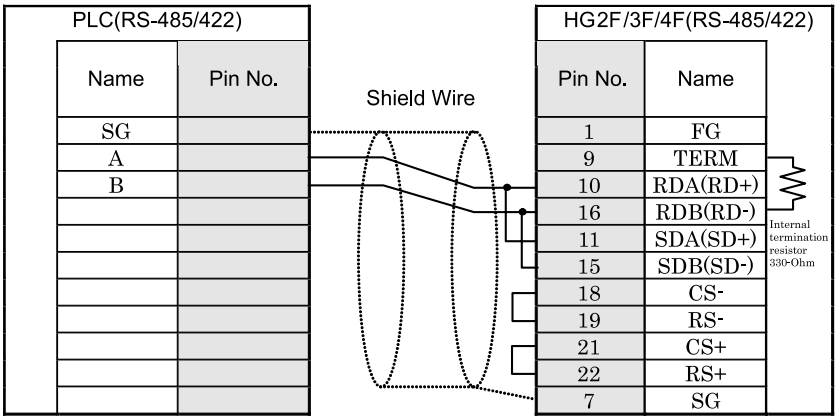
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

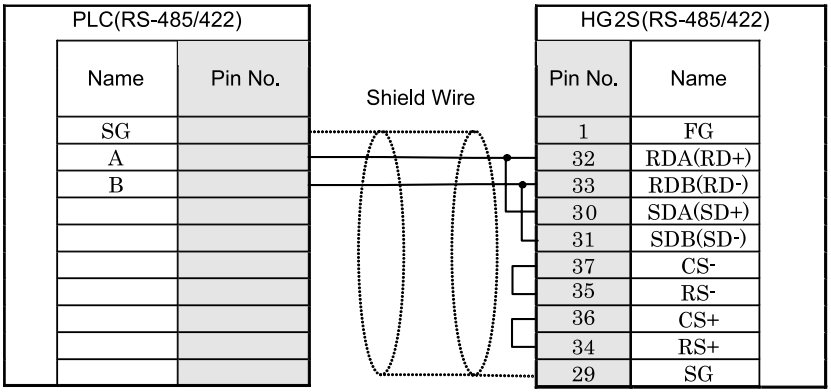
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S



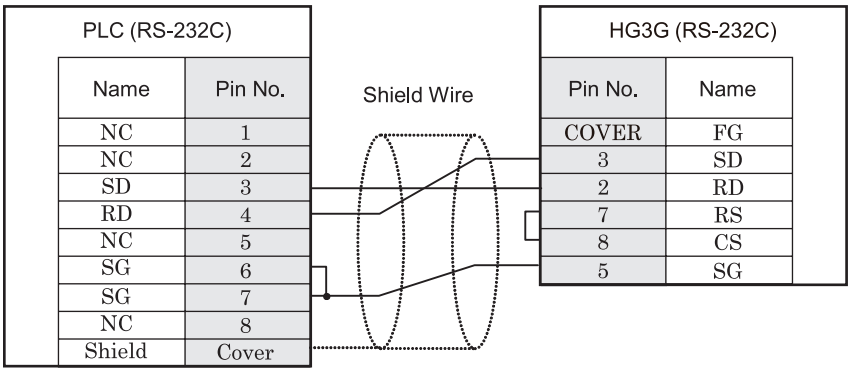
Screw terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

1.3.7 Connection Diagram 7: MICROSmart/MICROSmart Pentra (RS-232C Port 1) to MICRO/I

HG3G (Connector)

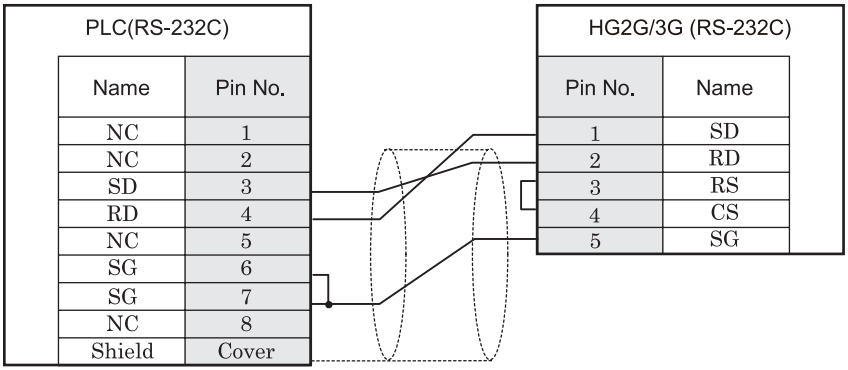


Mini DIN 8P

D-sub, 9P connector plug type

A connection cable is available (part number: HG9Z-XC295).

HG2G/3G (Terminal)

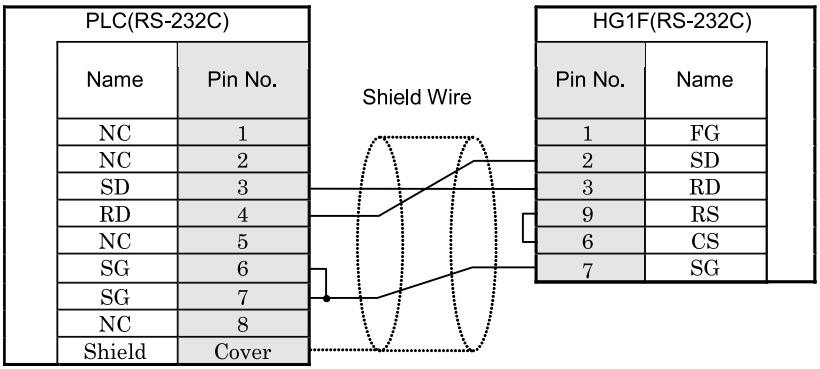


Mini Din 8P

Terminal

- A connection cable is available (part number: HG9Z-XC275).
- Refer to Chapter 7 “1.21 PLC connection cable: HG9Z-XC275” on page 603 about the connection diagram of HG9Z-XC275.

HG1F (Connector)

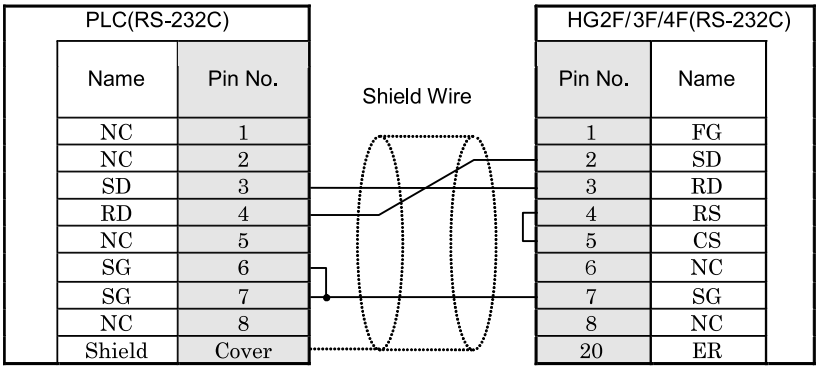


Mini DIN 8P

D-sub, 9P connector socket type

- In case of HG1F a connection cable is available (part number: FC4A-KC1C).
- The connection diagram 7 is not same as FC4A-KC1C. But both diagrams are available. Refer to Chapter 7 “1.11 PLC connection cable: FC4A-KC1C” on page 598 about the connection diagram of FC4A-KC1C.

HG2F/3F/4F

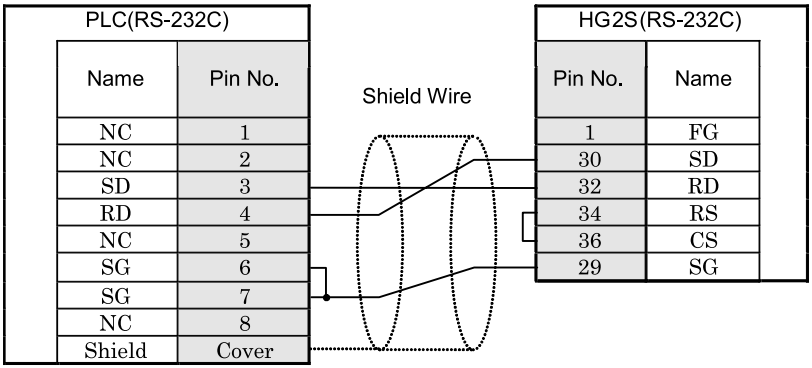


Mini DIN 8P

D-sub, 25P connector socket type

- In case of HG2F/3F/4Fa connection cable is available (part number: FC4A-KC2C).
- The connection diagram 7 is not same as FC4A-KC2C. But both diagrams are available. Refer to Chapter 7 “1.3 PLC connection cable: FC4A-KC2C” on page 593 about the connection diagram of FC4A-KC2C.

HG2S

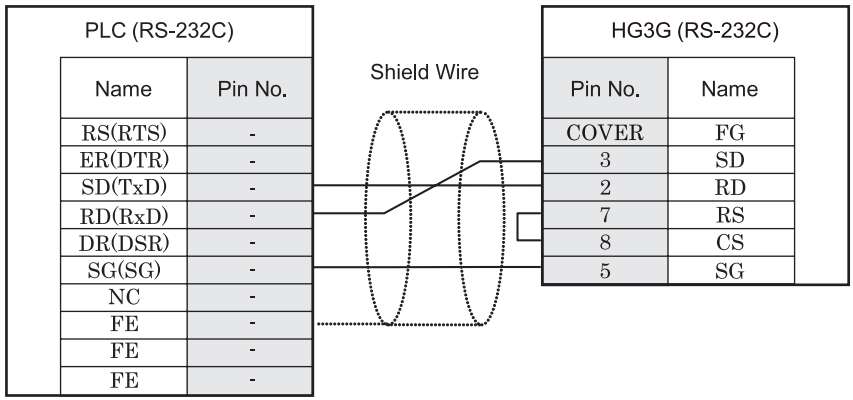


Mini DIN 8P

D-sub, 37P connector socket type

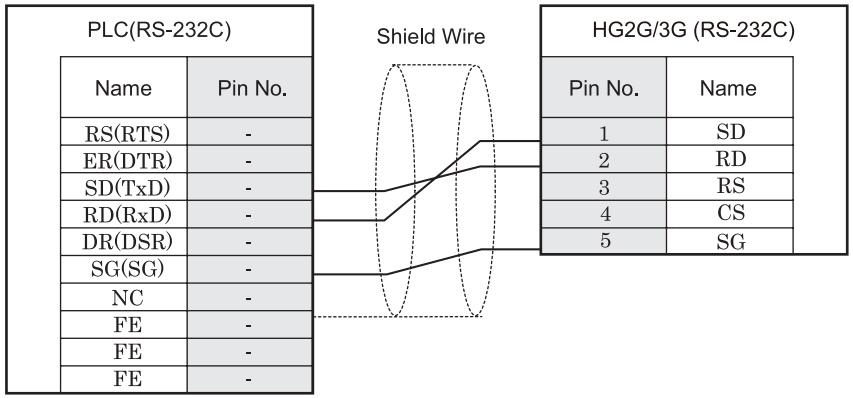
1.3.8 Connection Diagram 8: MICROSmart/MICROSmart Pentra (FC5A-SIF2) to MICRO/I

HG3G (Connector)



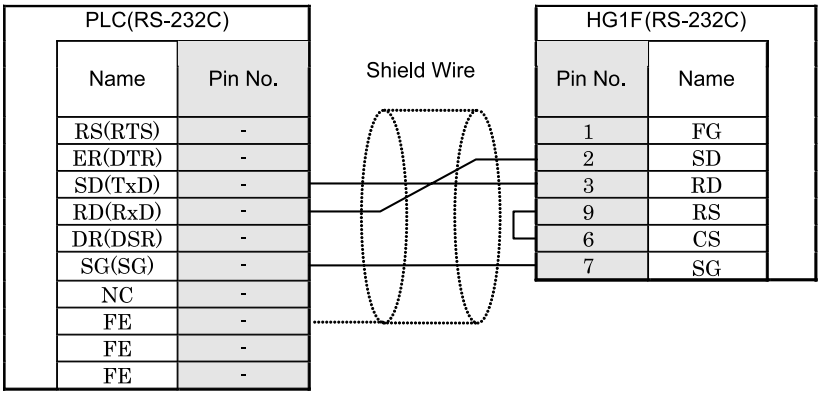
Terminal D-sub, 9P connector plug type

HG2G/3G (Terminal)



Terminal Terminal

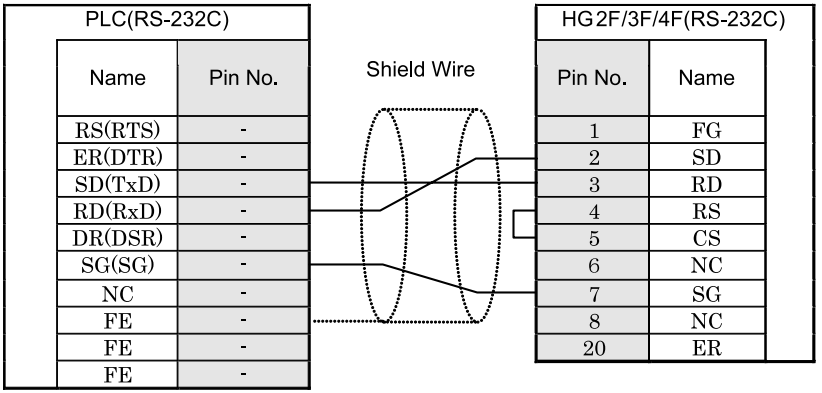
HG1F (Connector)



Terminal

D-sub, 9P connector socket type

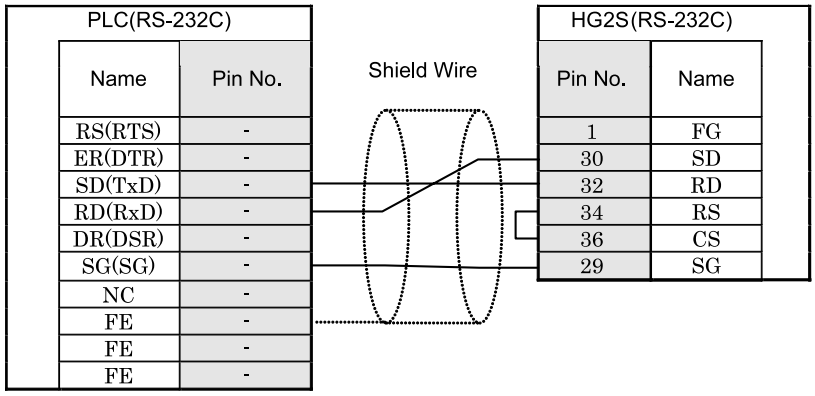
HG2F/3F/4F



Terminal

D-sub, 25P connector socket type

HG2S



Terminal

D-sub, 37P connector socket type

1.4 Environment Settings

1.4.1 FA-3S Series (Serial Interface Unit)

Item		Setting
Communication Device Number	Set to the same setting as the MICRO/I.	0(DEC)
Data Bits		7 or 8 bits
Baud Rate (bps)		1200, 2400, 4800, 9600 or 19200
Parity		Even, Odd or None
Stop Bits		1 or 2 bits

Set the FA Series communication settings using the following switches.

PF3S-SIF2/SIF4 Settings

Switch No.		Function						Setting		
								OFF		ON
SW1	1	Parity check						Even		Odd
	2	Parity check						Yes		No
	3	Stop Bits						1		2
	4	Data Bits						8		7
	Baud Rate (bps)		9600	4800	2400	1200	600	300	38400	19200
	5		OFF	ON	OFF	ON	OFF	ON	OFF	ON
	6		OFF	OFF	ON	ON	OFF	OFF	ON	ON
	7		OFF	OFF	OFF	OFF	ON	ON	ON	ON
	8	Unused						Either OK		
SW2		Communication mode						All off because used with standard communication mode.		
Module No.		Module number						From 1 to 7 with no duplication.		

The above settings are the same for both SIF2 and SIF4 except that the maximum communication for SIF2 is 19200 bps (38400 bps is not possible).

Make the settings for SIF2 and SIF4 so that the total number of bits calculated from Start Bit (1 bit) + Data Bits + Parity (1 bit if set) + Stop Bits comes to either 10 or 11 bits.

The time taken from power on to reaching the operational state for SIF2 and SIF4 is about one second when the memory bank capacity is 1k steps, and about four seconds when the memory bank capacity is 4k steps. Therefore, when the SIF2 or SIF4 will be powered up at the same time as the MICRO/I, set the Start Time for the MICRO/I to match the memory bank capacity (the default setting for Start Time is 0).

1.4.2 FA-3S and FA-2J (Ring Adapter)

Item	Setting
Baud Rate (bps)	9600
Data Bits (bits)	8
Parity	Even
Stop Bits	1
Device Number	0(DEC)

1.4.3 MICRO^3, MICRO^{3}C, OpenNet Controller and MICROSmart

Item	Setting
Baud Rate (bps)	9600
Data Bits (bits)	7
Parity	Even
Stop Bits	1
Network Number.	0(DEC)

When connecting an OpenNet Controller to the MICRO/I, you must set the OpenNet Controller special Internal Relay M8014 to on.

1.4.4 OpenNet Controller, MICROSmart/MICROSmart Pentra (uses Web Server Unit)

Set following Items in [Project Settings] dialog.

Item	Setting
IP Address (for MICRO/I)	Set the IP Address for MICRO/I. (Set the Item in [Communication Interface] tab.)
Subnet Mask	Set the Subnet Mask for MICRO/I. (Set the Item in [Communication Interface] tab.)
Default Gateway	Set the Default Gateway for MICRO/I. (Set the Item in [Communication Interface] tab.)
IP Address (Web Server Unit)	Set the IP Address for Web Server Unit. (Set the Item in [Host I/F network] tab.)
Port Number (Web Server Unit)	Set the Port Number for Web Server Unit. (Set the Item in [Host I/F network] tab.)

- When connecting an OpenNet Controller to the MICRO/I, you must set the OpenNet Controller special Internal Relay M8014 to on.
- If the HG3F/4F is connected to the IDEC Web Sever Unit, the communication speed of the Web Sever Unit (Ethernet) must be set to “10 Base” or “Auto”.

1.5 Usable Devices

1.5.1 FA-3S (CP11, CP11T), FA2J

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Internal Relay (Bit)	M	M	0 - 297, 320 - 617	R/W	*1
Input (Bit)	I	I	0 - 157	R	*1
Output (Bit)	Q	Q	0 - 317	R/W	*1
Timer (Contact)	T	T	0 - 79	R	Dec
Counter (Contact)	C	C	0 - 46	R	Dec
Spec. Int. Relay (Bit)	SM	M	300 - 317	R	*1
Sift Register (Bit)	R	R	0 - 127	R/W	Dec

*1. Set position 1 for this device in octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Data Register	D	D	0 - 399	R/W	Dec
Input (Word)	WI	I	0 - 140	R	Dec*1
Output (Word)	WQ	Q	0 - 300	R/W	Dec*1
Internal Relay (Word)	WM	M	0 - 280, 320 - 600	R/W	Dec*1
Timer (Current)	TN	T	0 - 79	R	Dec
Counter (Current)	CN	C	0 - 46	R	Dec
Timer (Preset)	TP	T	0 - 79	R/W	Dec
Counter (Preset)	CP	C	0 - 46	R/W	Dec
10-msec Timer (Current)	H	H	0 - 79	R	Dec
Spec. Int. Relay (Word)	WSM	M	300	R	Dec

*1. Set this device using a multiplier of 20.

Usage limitations may exist for PLC devices depending on the operating conditions. Refer to the PLC manual to confirm performance under your actual operating conditions.

1.5.2 FA-3S (CP12, CP13)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Internal Relay (Bit)	M	M	0 - 297, 320 - 617	R/W	*1
Input (Bit)	I	I	0 - 317	R	*1
Output (Bit)	Q	Q	0 - 317	R/W	*1
Timer (Contact)	T	T	0 - 255	R	Dec
Counter (Contact)	C	C	0 - 102	R	Dec
Spec. Int. Relay (Bit)	SM	M	300 - 317, 620 - 637	R	*1
Shift Register (Bit)	R	R	0 - 223	R/W	Dec

*1. Set position 1 for this device in octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Data Register	D	D	0 - 2999	R/W	Dec
Input (Word)	WI	I	0 - 300	R	Dec*1
Output (Word)	WQ	Q	0 - 300	R/W	Dec*1
Internal Relay (Word)	WM	M	0 - 280, 320 - 600 640 - 1300	R/W	Dec*1
Timer Current)	TN	T	0 - 255	R	Dec
Counter (Current)	CN	C	0 - 102	R	Dec
Timer (Preset)	TP	T	0 - 255	R/W	Dec
Counter (Preset)	CP	C	0 - 102	R/W	Dec
10-msec Timer (Current)	H	H	0 - 79	R	Dec
Control Register	CD	D	3000 - 3071	R	Dec
Spec. Int. Relay (Word)	WSM	M	300 - 620	R	Dec

*1. Set this device using a multiplier of 20.

Usage limitations may exist for PLC devices depending on the operating conditions. Refer to the PLC manual to confirm performance under your actual operating conditions.

1.5.3 MICRO^3/MICRO^{3}C

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Internal Relay (Bit)	M	M	0 - 287	R/W	*1
Input (Bit)	I	I	0 - 35	R	*1
Output (Bit)	Q	Q	0 - 31	R/W	*1
Timer (Contact)	T	T	0 - 31	R	Dec
Counter (Contact)	C	C	0 - 31	R	Dec
Spec. Int. Relay (Bit)	SM	M	290 - 317	R/W	*1
Shift Register (Bit)	R	R	0 - 63	R/W	Dec

*1. Set position 1 for this device in octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Data Register	D	D	0 - 499	R/W	Dec
Input (Word)	WI	I	0 - 20	R	Dec*1
Output (Word)	WQ	Q	0 - 20	R/W	Dec*1
Internal Relay (Word)	WM	M	0 - 260	R/W	Dec*1
Timer (Current)	TN	T	0 - 31	R	Dec
Counter (Current)	CN	C	0 - 31	R	Dec
Timer (Preset)	TP	T	0 - 31	R/W	Dec
Counter (Preset)	CP	C	0 - 31	R/W	Dec
Error Register	E	-	0 - 5	R/W	Dec

*1. Set this device using a multiplier of 20.

Usage limitations may exist for PLC devices depending on the operating conditions. Refer to the PLC manual to confirm performance under your actual operating conditions.

1.5.4 OpenNet Controller/MICROSmart (uses Web Server Unit)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Internal Relay (Bit)	M	M	0 - 2557, 8000 - 8317	R/W	*1
Input (Bit)	I	I	0 - 627	R	*1
Output (Bit)	Q	Q	0 - 627	R/W	*1
Timer (Contact)	T	T	0 - 255	R	Dec
Counter (Contact)	C	C	0 - 255	R	Dec
Shift Register (Bit)	R	R	0 - 255	R	Dec

*1. Set position 1 for this device in octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Data Register	D	D	0 - 49999	R/W	Dec
Input (Word)	WI	I	0 - 620	R	Dec*1
Output (Word)	WQ	Q	0 - 620	R/W	Dec*1
Internal Relay (Word)	WM	M	0 - 2540, 8000 - 8300	R/W	Dec*1
Timer (Current)	TC	T	0 - 255	R	Dec
Counter (Current)	CC	C	0 - 255	R	Dec
Timer (Preset)	TP	T	0 - 255	R/W	Dec
Counter (Preset)	CP	C	0 - 255	R/W	Dec
Link Register	L	L	100 - 1317	R/W	*2
Shift Register (Word)	WR	R	0 - 240	R	Dec*3
Error Register	E	-	0 - 5	R/W	Dec

*1. 11Set this device using a multiplier of 20.
*2. Set position 1 for this device in octal.
*3. Set this device using a multiplier of 16.

Usage limitations may exist for PLC devices depending on the operating conditions. Refer to the PLC manual to confirm performance under your actual operating conditions.

2 Mitsubishi

Selecting MELSEC-Q (CPU), MELSEC-FX (CPU), MELSEC-FX2N (CPU), or MELSEC-FX3U (CPU) for the Host I/F Driver allows the user to use the Pass-through function.

Selecting MELSEC-Q/QnA (Ethernet) for the Host I/F Driver allows the user to use the 1: N Communication.

- Pass-through function (Refer to “Pass-Through Function” in the Instruction Manual)
- 1: N Communication function (Refer to Chapter 6 “1: N Communication (Multi-drop)” on page 579)

2.1 Connection Table

2.1.1 Compatible PLCs

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name			MICRO\/I Type	
			Interface	Flow Control	Host I/F Driver	HG2G /3G	HG1F / 2F/ 2S/ 3F/ 4F
MELSEC-A	A1N, A2N, A3N	AJ71C24 AJ71C24-S3 /-S6/-S8 AJ71UC24	RS-232C Connection Diagram 1 (refer to P75)	ER control	MELSEC-AnN (LINK)	X	X
			RS-485 (422)-4 Connection Diagram 2 (refer to P78)				
	A1SH[*1]	A1SJ71C24-R2[*1] A1SJ71UC24-R2 A1SJ71C24-R4 A1SJ71UC24-R4	RS-232C Connection Diagram 3 (refer to P81)			X	X
			RS-485 (422)-4 Connection Diagram 2 (refer to P78)				
	A2CCPUC24	Not required (connects to CPU unit)	RS-232C Connection Diagram 3 (refer to P81)			X	X
	A0J2, A0J2H	A0J2-C214-S1	RS-232C Connection Diagram 1 (refer to P75)			X	X
			RS-485 (422)-4 Connection Diagram 2 (refer to P78)				
	A2A, A3A, A2U, A3U, A4U	AJ71C24-S6/-S8 AJ71UC24	RS-232C Connection Diagram 1 (refer to P75)			X	X
			RS-485 (422)-4 Connection Diagram 2 (refer to P78)				

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name			MICRO\I Type	
			Interface	Flow Control	Host I/F Driver	HG2G /3G	HG1F / 2F/ 2S/ 3F/ 4F
MELSEC-A	A2US, A2USH-S1*1	A1SJ71C24-R2 A1SJ71UC24-R2*1 A1SJ71C24-R4 A1SJ71UC24-R2	RS-232C Connection Diagram 3 (refer to P81)	ER control	MELSEC-AnN (LINK)	X	X
			RS-485 (422)-4 Connection Diagram 2 (refer to P78)				
	A2N	Not required (Connects to CPU unit)	RS-485 (422)-4 Connection Diagram 4 (refer to P84)	None	MELSEC-AnN (CPU)	---	X
	A1SJH A1SH*1, A2SH, A2C, A0J2H	Not required (Connects to CPU unit)	RS-485 (422)-4 Connection Diagram 4 (refer to P84)	None	MELSEC-A1S/ A2C(CPU)	---	X
	A2A, A3A, A2US, A2USH	Not required (Connects to CPU unit)	RS-485 (422)-4 Connection Diagram 4 (refer to P84)	None	MELSEC-AnA (CPU)	---	X
	A2U*1, A2USH-S1*1	Not required (Connects to CPU unit)	RS-485 (422)-4 Connection Diagram 4 (refer to P84)	None	MELSEC-AnU (CPU)	---	X

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name			MICRO\/I Type	
			Interface	Flow Control	Host I/F Driver	HG2G /3G	HG1F / 2F/ 2S/ 3F/ 4F
MELSEC-QnA	Q4A CPU Q4ARCPU Q3ACPU Q2ACPU-S1 Q2ACPU	AJ71QC24N-R2	RS-232C Connection Diagram 1 (refer to P75)	None	MELSEC-Q /QnA (LINK)	X	X
		AJ71QC24N	RS-485/422 Connection Diagram 2 (refer to P78)				
		AJ71QC24N-R4					
			RS-485/422 Connection Diagram 9 (refer to P95)				
		AJ71QE71N3-T	Ethernet	-	MELSEC-Q/ QnA (Ethernet)		
		AJ71QE71N-B2					
		AJ71QE71N-B5					
	Q2ASH CPU-S1 Q2ASHCPU Q2ASCPU-S1 Q2ASCPU	A1SJ71QC24N-R2	RS-232C Connection Diagram 3 (refer to P81)	None	MELSEC-Q /QnA (LINK)	X	X
		A1SJ71QC24N	RS-485(422)-4 Connection Diagram 2 (refer to P78)				
		A1SJ71QE71N3-T	Ethernet	-	MELSEC-Q/ QnA (Ethernet)		
		A1SJ71QE71N-B2					
		A1SJ71QE71N-B5					

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name			MICRO\I Type	
			Interface	Flow Control	Host I/F Driver	HG2G /3G	HG1F / 2F/ 2S/ 3F/ 4F
MELSEC-Q	Q00CPU*1, Q01CPU*1	Not required (connects to CPU unit)	RS-232C Connection Diagram 6 (refer to P89) Connection Diagram 7 (refer to P91)	ER control	MELSEC-Q /QnA (LINK)	X	X
	Q02CPU*1 Q02HCPU Q06HCPU*1 Q12PHCPU*1 Q25HCPU	QJ71C24*1 QJ71C24N*1 QJ71C24N-R2*1	RS-232C Connection Diagram 3 (refer to P81)	ER control		X	X
			RS-485(422)-4 Connection Diagram 2 (refer to P78)				
	Q02CPU*1 Q02HCPU*1	Not required (connects to CPU unit)	RS-232C Connection Diagram 6 (refer to P89) Connection Diagram 7 (refer to P91)	ER control	MELSEC-Q (CPU)	X	X
	Q02CPU-A mode	Not required (connects to CPU unit)	RS-232C Connection Diagram 6 (refer to P89) Connection Diagram 7 (refer to P91)	ER control	MELSEC-AnU (CPU)	---	X
	Q00JCPU Q00CPU Q01CPU	QJ71E71-100*1 QJ71E71-B5 QJ71E71-B2	Ethernet	-	MELSEC-Q/ QnA (Ethernet)	X	X
	Q02CPU*1 Q02HCPU Q06HCPU Q12HCPU Q25HCPU					X	X
MELSEC-FX	FX1, FX2, FX2C,	Not required (connects to CPU unit)	RS-485 (422)-4 Connection Diagram 4 (refer to P84)	ER control	MELSEC-FX (CPU)	X	X
	FX0, FX0N, (FX1N)*1, FX0S*1, FX1S*1	Not required (connects to CPU unit)	RS-485 (422)-4 Connection Diagram 4 (refer to P84)			X	X
			RS-485 (422) Connection Diagram 10 (refer to P98)				

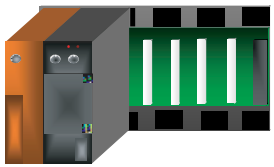
Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name			MICRO\/I Type	
			Interface	Flow Control	Host I/F Driver	HG2G /3G	HG1F / 2F/ 2S/ 3F/ 4F
MELSEC-FX	FX2N, FX2NC, FX1N[*1], FX1NC[*1]	Not required (connects to CPU unit)	RS-485 (422)-4 Connection Diagram 4 (refer to P84)	ER control	MELSEC-FX2N (CPU)	X	X
			RS-485 (422) Connection Diagram 10 (refer to P98)				
		FX2NC-232ADP	RS-232C Connection Diagram 8 (refer to P93)				
	FX2N	FX2N-232-BD [*2]	RS-232C Connection Diagram 5 (refer to P87)			X	X
		FX2N-422-BD[*1]	RS-485 (422)-4 Connection Diagram 4 (refer to P84)				
			RS-485 (422) Connection Diagram 10 (refer to P98)				
	FX1N	FX1N-232-BD[*2]	RS-232C Connection Diagram 5 (refer to P87)			X	X
		FX1N-422-BD[*2]	RS-485 (422)-4 Connection Diagram 4 (refer to P84)				
			RS-485 (422) Connection Diagram 10 (refer to P98)				
	FX3UC FX3U FX3G	Not required (connects to CPU unit)	RS-485 (422)-4 Connection Diagram 4 (refer to P84)			X	X
			RS-485 (422) Connection Diagram 10 (refer to P98)				
		FX3U-232ADP	RS-232C Connection Diagram 8 (refer to P93)				
		FX3U-232-BD					

*1. We tested with the PLC of these parts.xxx
*2. These are communication boards.

2.2 System Configuration

This is the system configuration for connection of Mitsubishi PLCs to the MICRO/I.

2.2.1 MELSEC-A Series (using the Computer Link Unit)



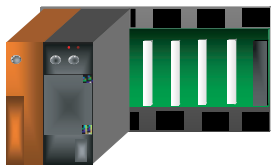
RS-232C
Connection Diagram 1

RS-485
Connection Diagram 2

MICRO/I

A1N, A2N, A3N	⟷	AJ71C24 AJ71C24-S3
A1N, A2N, A3N A2A, A3	⟷	AJ71C24-S6 AJ71C24-S8
A1N, A2N, A3N A2A, A3A A2U, A3U, A4U	⟷	AJ71UC24
AQJ2, A0J2H	⟷	A0J2-C214-S1

- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC145).



RS-232C
Connection Diagram 3

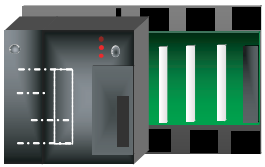
RS-485
Connection Diagram 2

MICRO/I

A1SH, A2US, A2USH	⟷	A1SJ71C24-R2 A1SJ71UC24-R2 A1SJ71C24-R4 A1SJ71UC24-R4

- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 3 (part number: HG9Z-3C145).
- In case of HG1F a connection cable is available for Connection Diagram 3 (part number: HG9Z-XC203).

2.2.2 MELSEC-A Series (connected to the CPU Unit Link I/F)



RS-232C

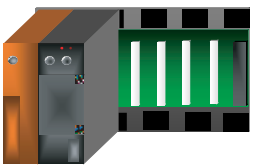
Connection Diagram 3

MICRO/I

A2CCPU24

- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 3 (part number: HG9Z-3C145).
- In case of HG1F a connection cable is available for Connection Diagram 3 (part number: HG9Z-XC203).

2.2.3 MELSEC-A Series (connected to the CPU Unit Programming Port)



RS-422

Connection Diagram 4

MICRO/I

Mitsubishi 2-point adapter

X-2PIF

A0J2H

A1SJH, AISH

A2N, A2SH, A2C

A2A, A3A, A2US

A2USH, A2U

Mitsubishi Cable

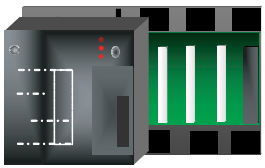
FX-422CAB

RS-422

(Connection Diagram 4)

- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 4 (part number: HG9Z-3C165).
- In case of HG1F a connection cable is available for Connection Diagram 4 (part number: HG9Z-XC255).

2.2.4 MELSEC-Q/QnA Series (using the Computer Link Unit)



RS-232C

Connection Diagram 3

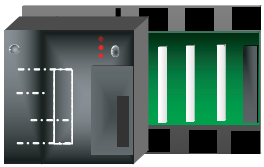
MICRO/I

RS-485

Connection Diagram 2

Q02CPU

QJ71C24



Q4ACPU
Q4ARCPU
Q3ACPU
Q2ACPU-S1
Q2ACPU

A71QC24N

RS-232C
Connection Diagram 1

RS-485
Connection Diagram 2

MICRO/I

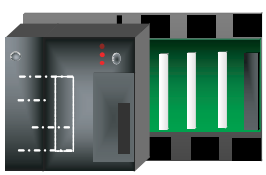
AJ71QC24N-R2

RS-232C
Connection Diagram 1

A71QC24N-R4

RS-485
Connection Diagram 2

RS-485
Connection Diagram 9



Q2ASHCPU-S1
Q2ASHCPU
Q2ASCPU-S1
Q2ASCPU

A1S71QC24N

RS-232C
Connection Diagram 3

RS-485
Connection Diagram 2

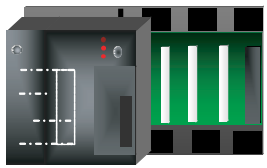
MICRO/I

A1SJ71QC24N-R2

RS-485
Connection Diagram 2

- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 3 (part number: HG9Z-3C145).
- In case of HG1F a connection cable is available for Connection Diagram 3 (part number: HG9Z-XC203).

2.2.5 MELSEC-Q Series (connected to the CPU Unit Programming Port)

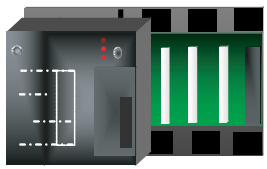


Mitsubishi Cable
QC30R2

RS-232C
Connection Diagram 6

MICRO/I

Q00CPU, Q01CPU,
Q02CPU, Q02HCPU



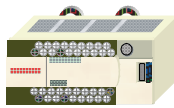
RS-232C
Connection Diagram 7

MICRO/I

Q00CPU, Q01CPU,
Q02CPU, Q02HCPU

- In case of HG3G connection cable is available for Connection Diagram 7 (part number: HG9Z-XC315).
- In case of HG1F connection cable is available for Connection Diagram 7 (part number: HG9Z-XC265).

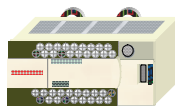
2.2.6 MELSEC-FX Series (connects to the CPU unit programming port)



FX1, FX2, FX2C

RS-422
Connection Diagram 4

MICRO/I

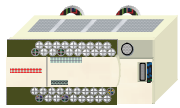


FX0, FX0N, FX2N, FX2NC
FX3UC, FX3U, FX3G

Mitsubishi Cable
FX20P-CADP

RS-422
Connection Diagram 4

MICRO/I



RS-422

Connection Diagram 10

MICRO/I

FX0, FX0N, FX2N, FX2NC

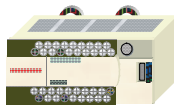
FX3UC, FX3U, FX3G

- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 4 (part number: HG9Z-3C165).
- In case of HG1F a connection cable is available for Connection Diagram 4 (part number: HG9Z-XC255).
- In case of HG3G a connection cable is available (part number: HG9Z-XC305). Please do not use HG9Z-XC305 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.
- In case of HG2G/3G a connection cable is available (part number: HG9Z-XC275). Please do not use HG9Z-XC275 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.
- In case of HG1F a connection cable is available for Connection Diagram 10 (part number: HG9Z-XC245).

Mitsubishi 2-port adapter

FX-2PIF

MICRO/I



Mitsubishi Electric Cable

FX-422CAB

RS-422

Connection Diagram 4

FX1, FX2, FX2C

Mitsubishi 2-port adapter

FX-2PIF

MICRO/I

Mitsubishi Cable

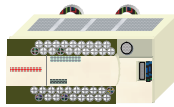
FX20P-CADP

Mitsubishi Cable

FX-422CAB

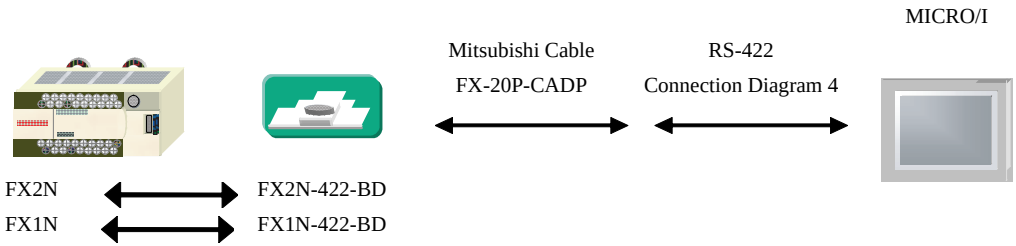
RS-422

Connection Diagram 4

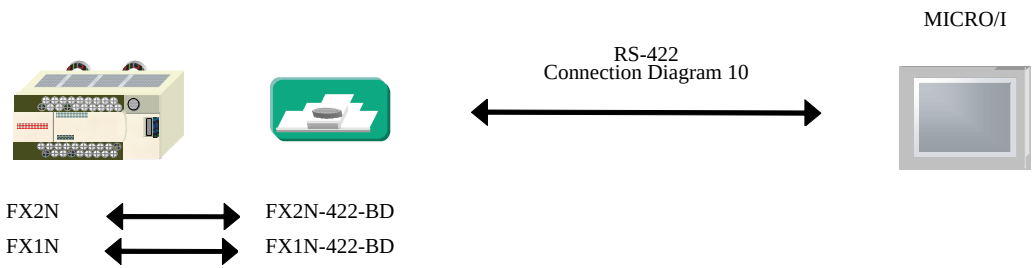


FX0, FX0N,
FX2N, FX2NC
FX3UC, FX3U
FX3G

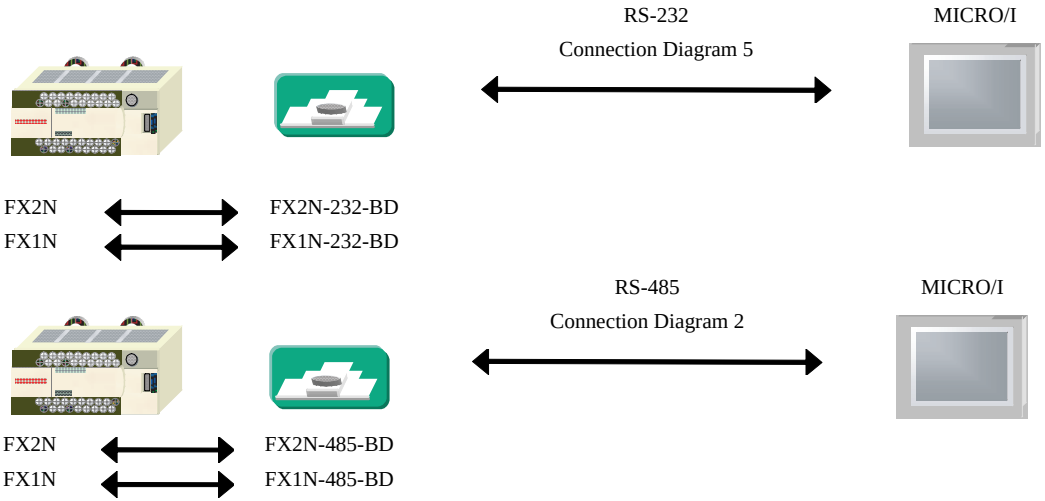
- In case of HG3G a connection cable is available (part number: HG9Z-XC305). Please do not use HG9Z-XC305 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.
- In case of HG2G/3G a connection cable is available (part number: HG9Z-XC275). Please do not use HG9Z-XC275 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.
- In case of HG1F a connection cable is available for Connection Diagram 10 (part number: HG9Z-XC245).



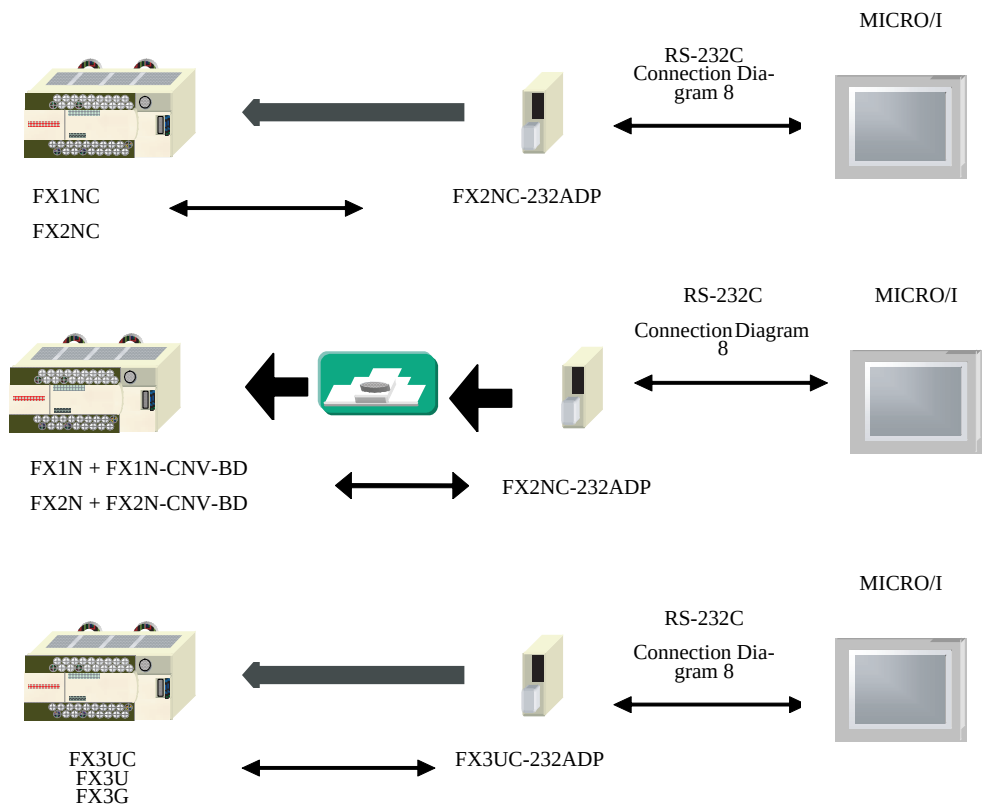
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 4 (part number: HG9Z-3C165).
- In case of HG1F a connection cable is available for Connection Diagram 4 (part number: HG9Z-XC255).



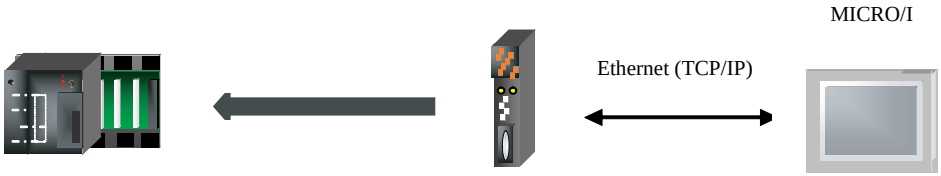
- In case of HG3G a connection cable is available (part number: HG9Z-XC305). Please do not use HG9Z-XC305 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.
- In case of HG2G/3G a connection cable is available (part number: HG9Z-XC275). Please do not use HG9Z-XC275 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.
- In case of HG1F a connection cable is available for Connection Diagram 10 (part number: HG9Z-XC245).



2.2.7 MELSEC-FX Series (connects to FX2NC-232ADP/FX3U-232ADP)

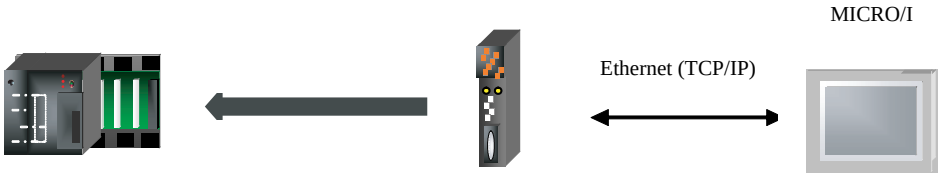


2.2.8 MELSEC-Q/QnA Series (Using the Ethernet Unit)



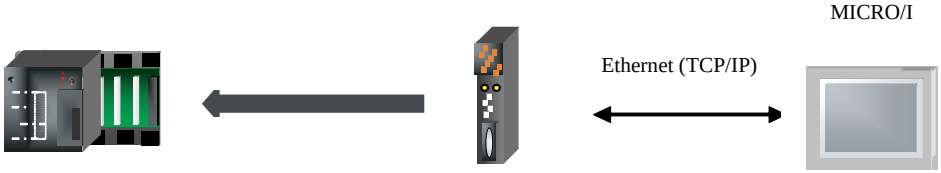
Q00JCPU, Q00CPU
Q01CPU, Q02CPU
Q02HCPU, Q06HCPU
Q12HCPU, Q25HCPU

QJ71E71-100
QJ71E71-B5
QJ71E71-B2



Q4ACPU
Q4ARCPU
Q3ACPU
Q2ACPU-S1
Q2ACPU

AJ71QE71N3-T
AJ71QE71N3-T
AJ71QE71N-B5



Q2ASHCPU-S1
Q2ASHCPU
Q2ASCPU-S1
Q2ASHCPU

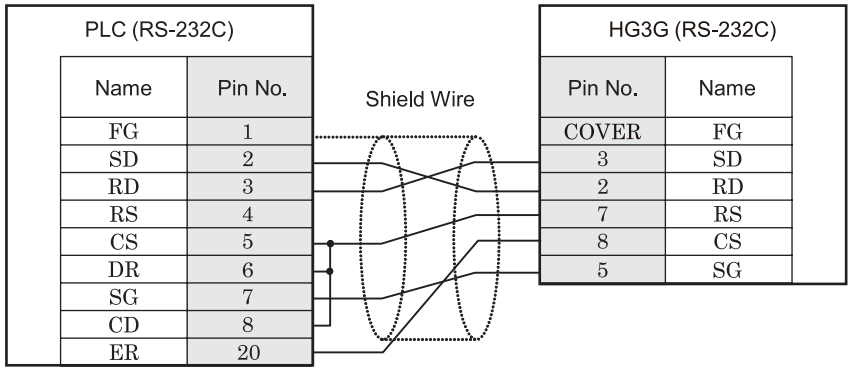
A1SJ71QE71N3-T
A1SJ71QE71N-B2
A1SJ71QE71N-B5

2.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable.

2.3.1 Connection Diagram 1: Computer Link Unit (RS-232) to MICRO/I

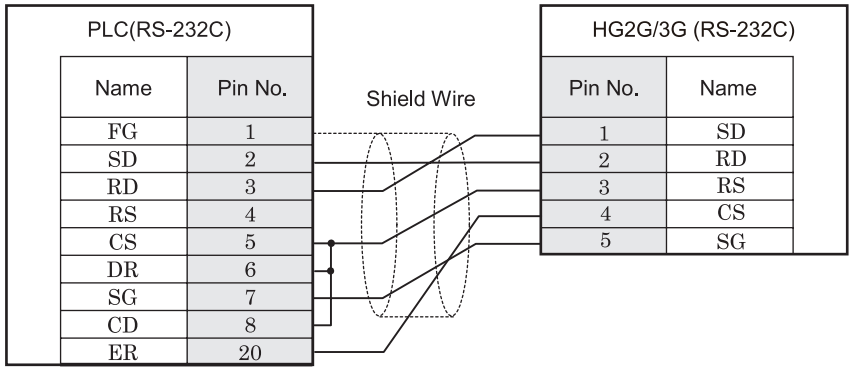
HG3G (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector plug type

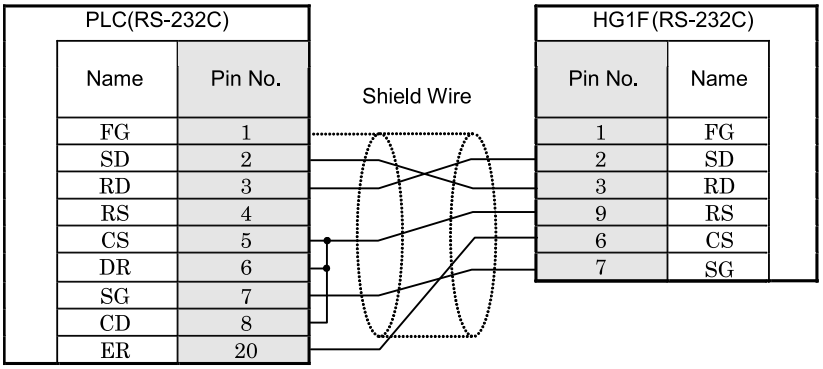
HG2G/3G (Terminal)



D-sub, 25P connector socket type

Terminal

HG1F (Connector)

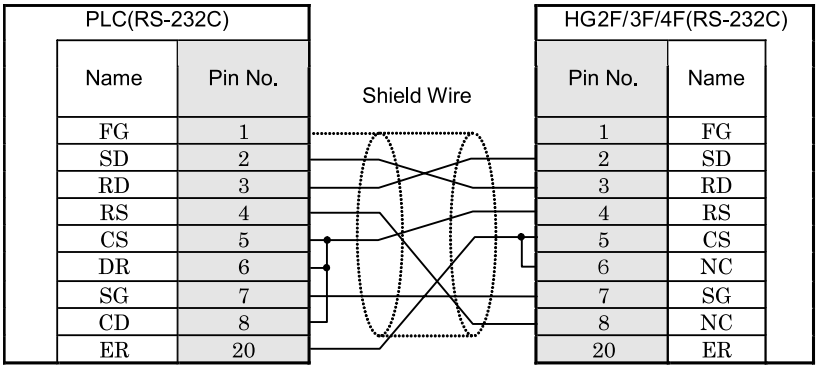


D-sub, 25P connector socket type

D-sub, 9P connector socket type

- In case of HG1F a connection cable is available (part number: HG9Z-XC145).
- The connection diagram 1 is not same as HG9Z-XC145. But both diagrams are available. Refer to Chapter 7 “1.13 PLC connection cable: HG9Z-XC145” on page 599 about the connection diagram of HG9Z-XC145.

HG2F/3F/4F

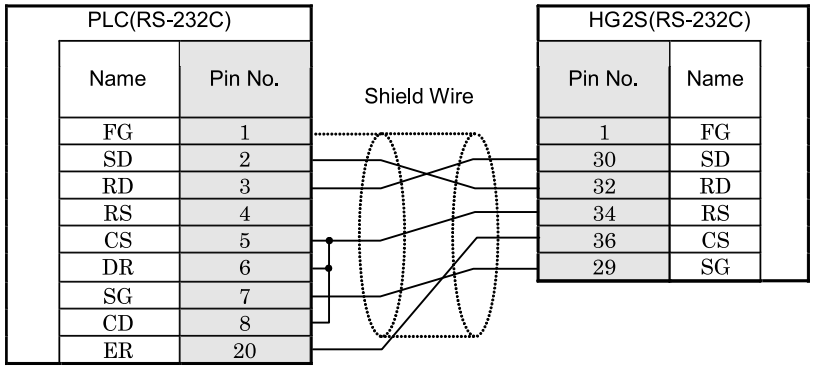


D-sub, 25P connector socket type

D-sub, 25P connector socket type

- In case of HG2F/3F/4Fa connection cable is available (part number: HG9Z-3C135).
- The connection diagram 1 is not same as HG9Z-3C135. But both diagrams are available. Refer to Chapter 7 “1.6 PLC connection cable: HG9Z-3C135” on page 594 about the connection diagram of HG9Z-3C135.

HG2S

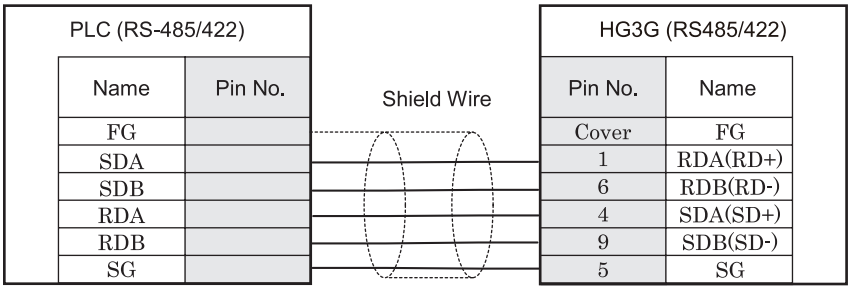


D-sub, 25P connector socket type

D-sub, 37P connector socket type

2.3.2 Connection Diagram 2: Computer Link Unit (RS-485) to MICRO/I

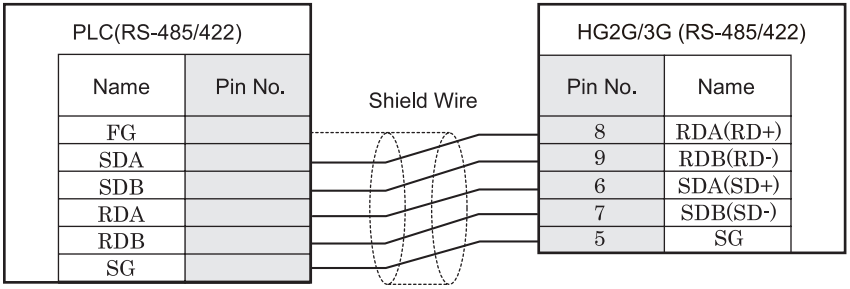
HG3G (Connector)



Screw down terminal block — D-sub, 9P connector plug type

When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.

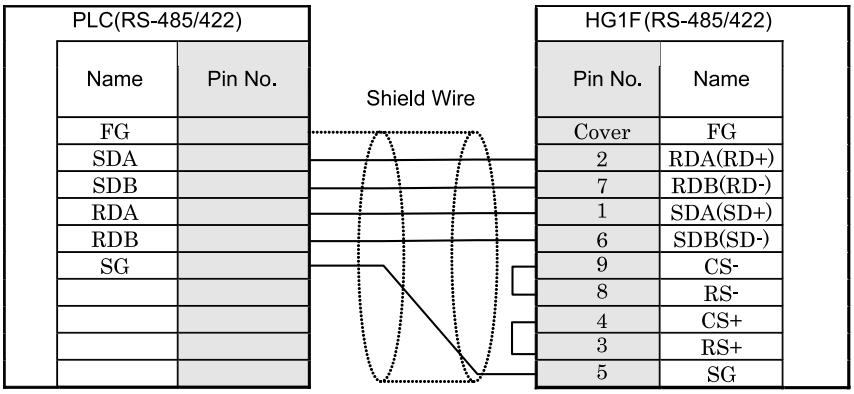
HG2G/3G (Terminal)



Screw down terminal block — Terminal

- When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

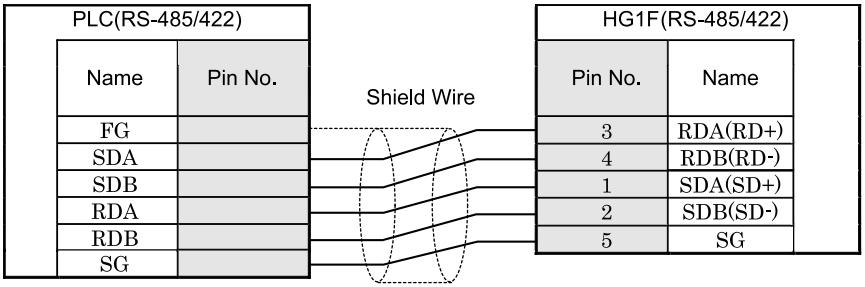
HG1F (Connector)



Screw down terminal block

D-sub, 9P connector socket type

HG1F (Terminal)



Screw down terminal block

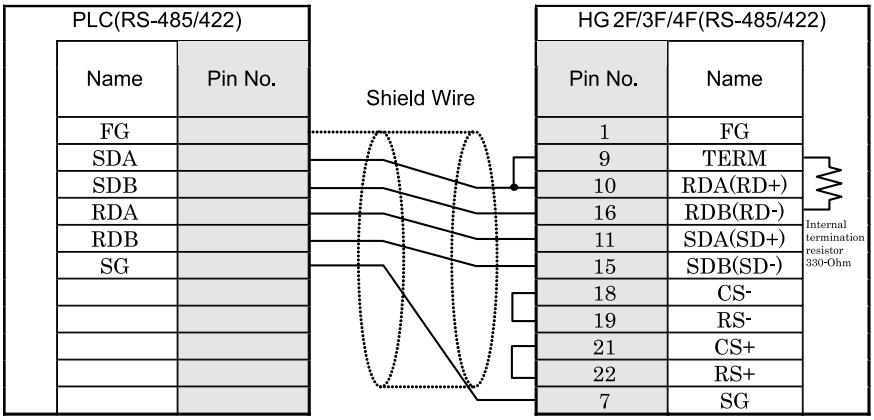
Terminal

- When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F

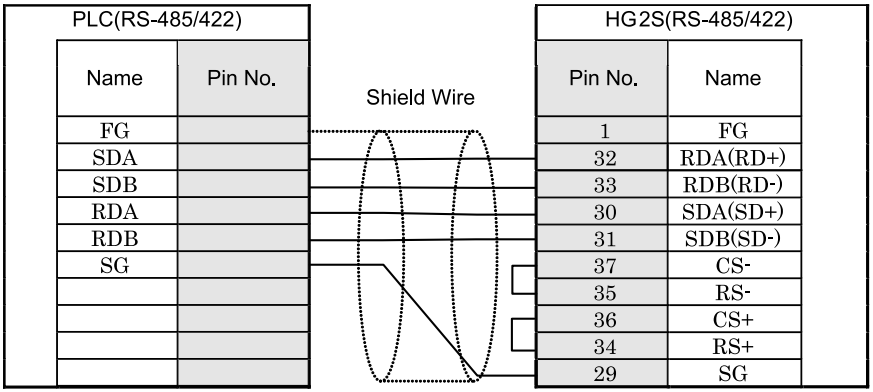


Screw down terminal block

D-sub, 25P connector socket type

When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.

HG2S



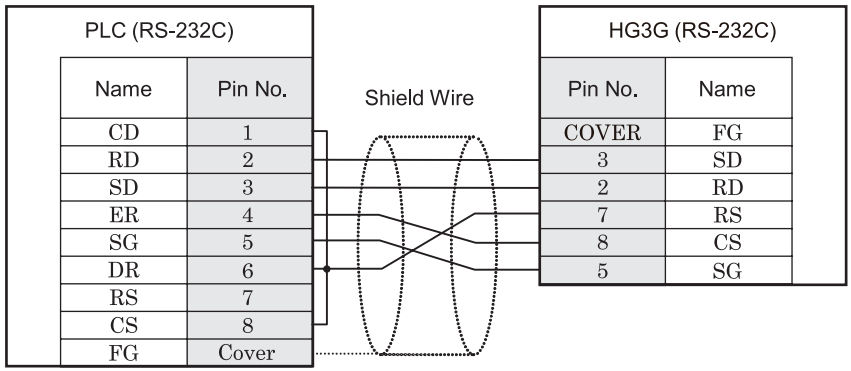
Screw down terminal block

D-sub, 37P connector socket type

- When using the QJ71C24 Serial Communication Unit, connect a terminator resistor in accordance with the instruction manual.
- There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

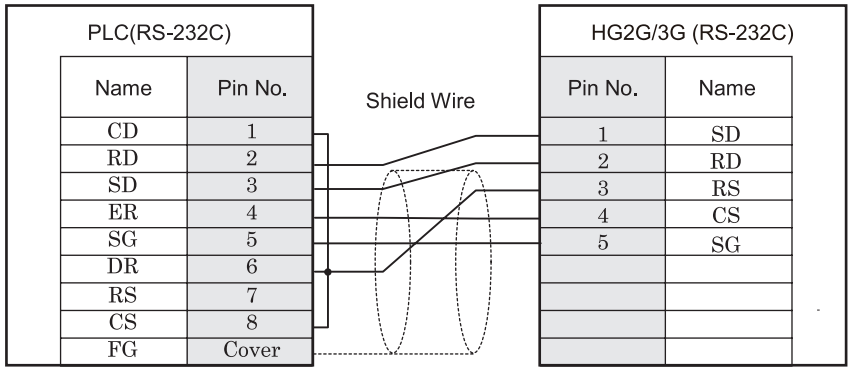
2.3.3 Connection Diagram 3: Computer Link Unit (RS-232C) to MICRO/I

HG3G (Connector)



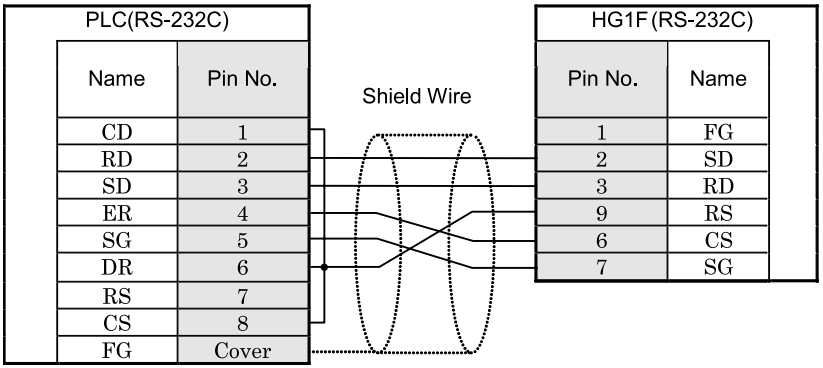
D-sub, 9P connector socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 9P connector socket type — Terminal

HG1F (Connector)

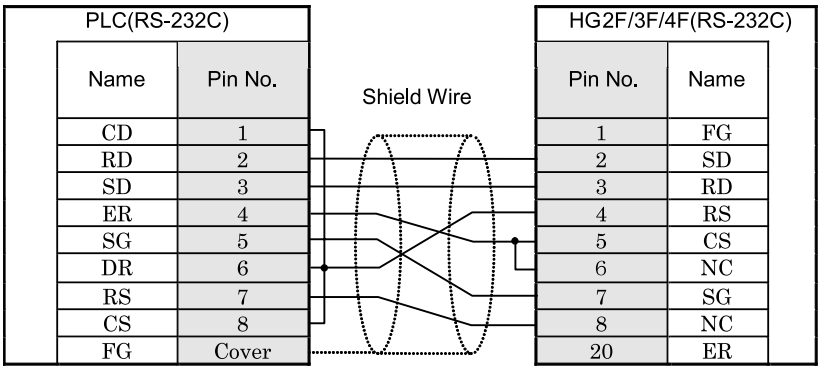


D-sub, 9P connector socket type

D-sub, 9P connector socket type

- In case of HG1F a connection cable is available (part number: HG9Z-XC203).
- The connection diagram 3 is not same as HG9Z-XC203. But both diagrams are available. Refer to Chapter 7 “1.16 PLC connection cable: HG9Z-XC203” on page 600 about the connection diagram of HG9Z-XC203.

HG2F/3F/4F

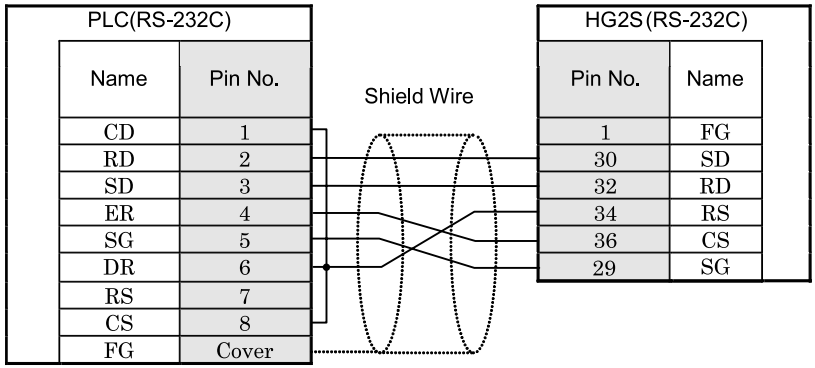


D-sub, 9P connector socket type

D-sub, 25P connector socket type

- In case of HG2F/3F/4F a connection cable is available (part number: HG9Z-3C145).
- The connection diagram 3 is not same as HG9Z-3C145. But both diagrams are available. Refer to Chapter 7 “1.7 PLC connection cable: HG9Z-3C145” on page 595 about the connection diagram of HG9Z-3C145.

HG2S

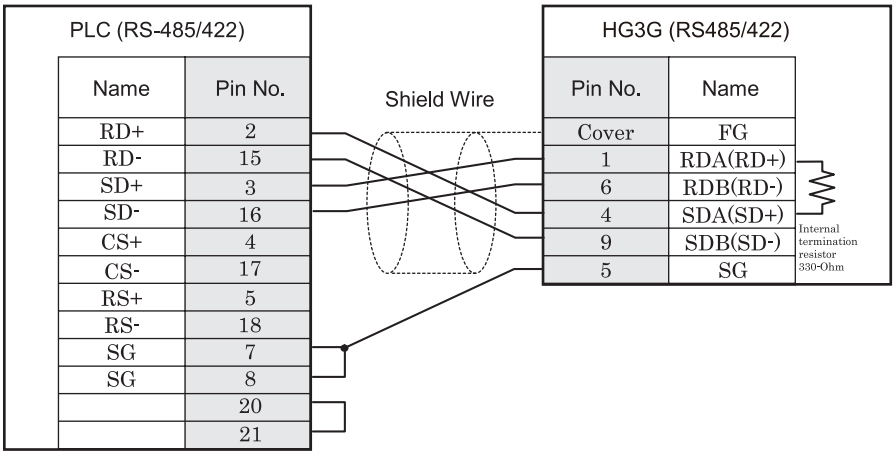


D-sub, 9P connector socket type

D-sub, 37P connector socket type

2.3.4 Connection Diagram 4: PLC, 2-port Adapter to MICRO/I

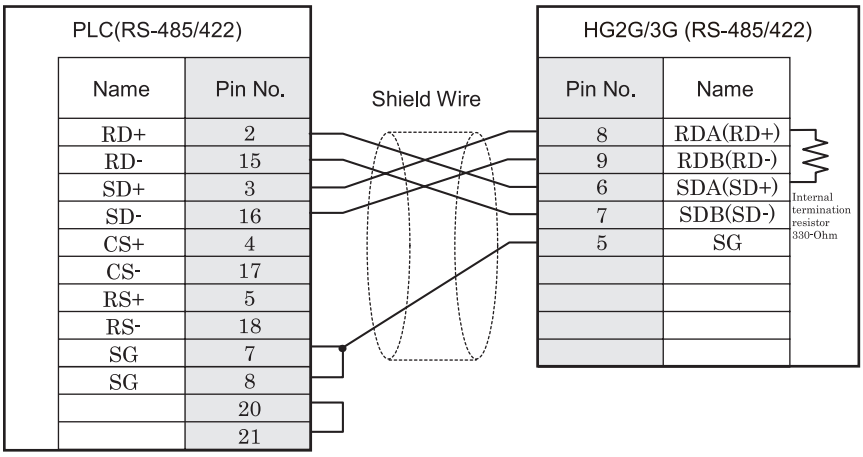
HG3G (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector plug type

HG2G/3G (Terminal)

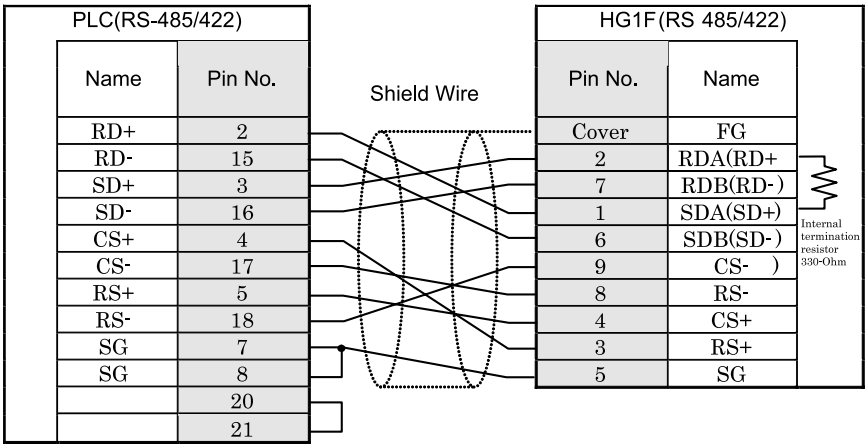


D-sub, 25P connector socket type (unit side)

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Appendix “3 Important Points Regarding Wiring” on page 18.

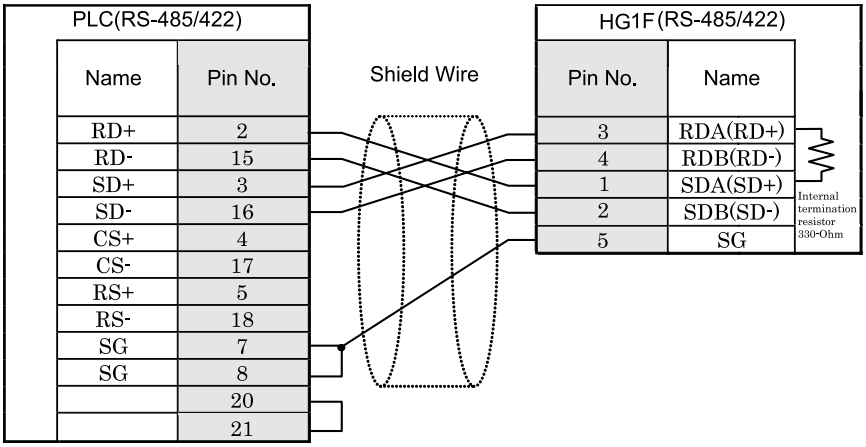
HG1F (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

HG1F (Terminal)



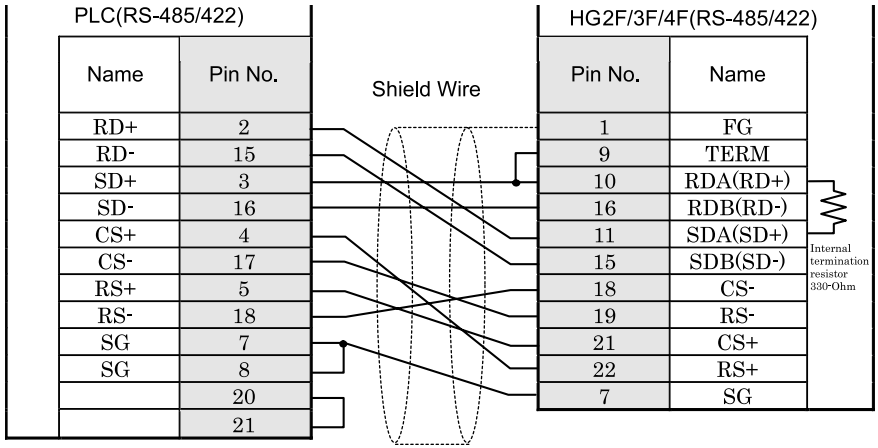
D-sub, 25P connector socket type (unit side)

Terminal

- In case of HG1F a connection cable is available (part number: HG9Z-XC255).
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING When you connect to the CPU port of MELSEC-A series and MELSEC-FX series of Mitsubishi Electric, use D-sub 9Pin connector, NOT the Terminal Block type.

HG2F/3F/4F

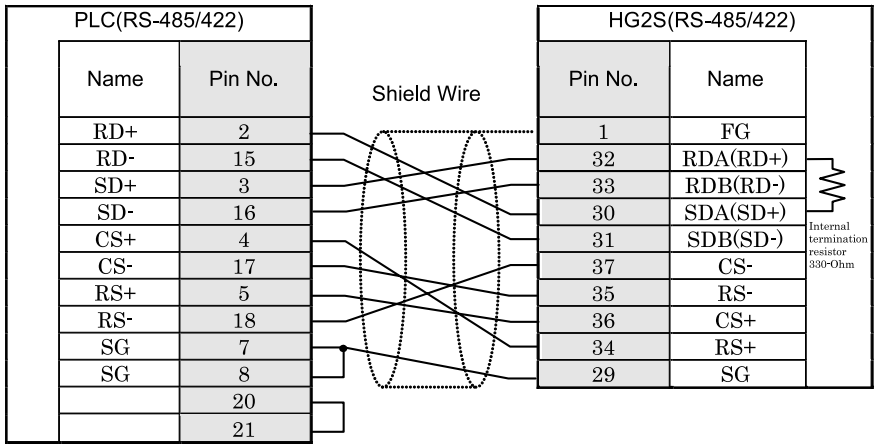


D-sub, 25P connector socket type (unit side)

D-sub, 25P connector socket type

In case of HG2F/3F/4F a connection cable is available (part number: HG9Z-3C165).

HG2S



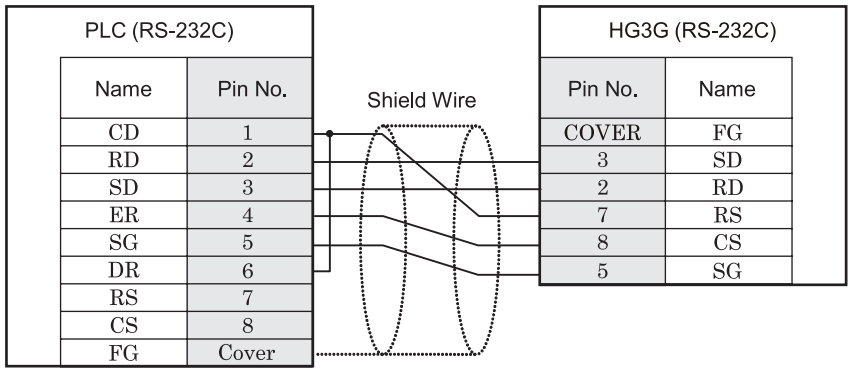
D-sub, 25P connector socket type (unit side)

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Appendix “3 Important Points Regarding Wiring” on page 18.

2.3.5 Connection Diagram 5: FX2N-232BD to MICRO/I

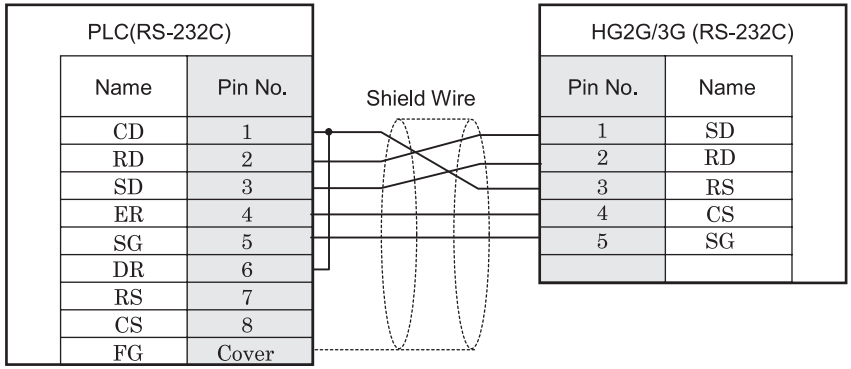
HG3G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

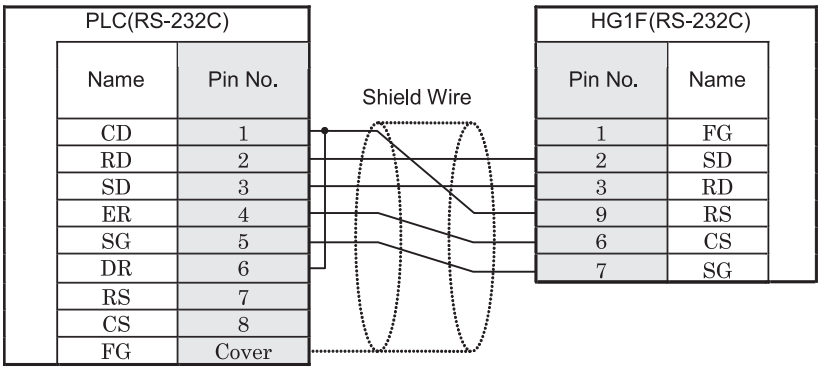
HG2G/3G (Terminal)



D-sub, 9P connector plug type

Terminal

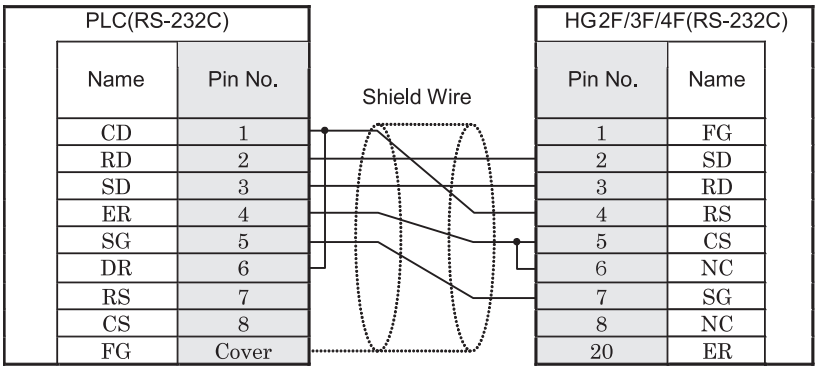
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

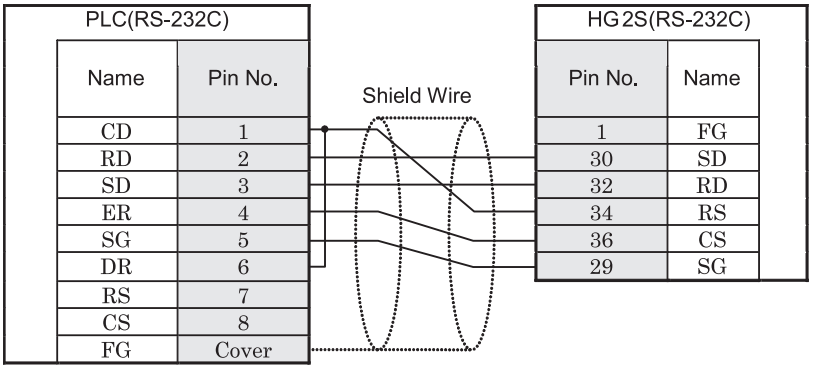
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

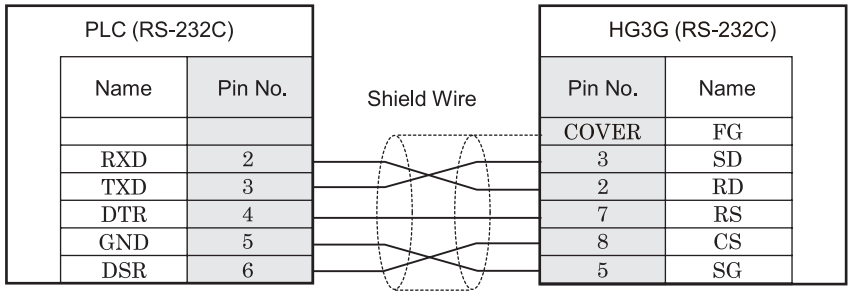


D-sub, 9P connector plug type

D-sub, 37P connector socket type

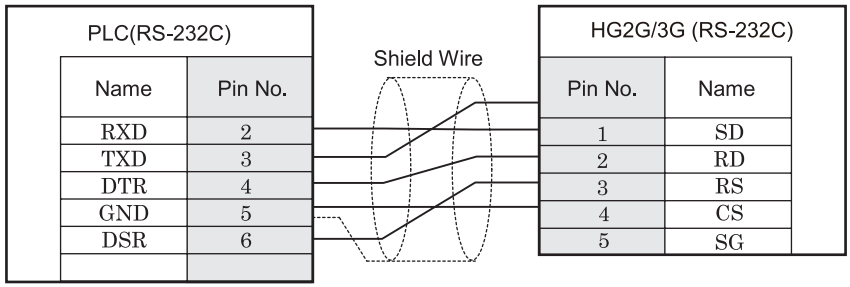
2.3.6 Connection Diagram 6: MELSEC-Q (Mitsubishi cable QC30R2) to MICRO/I

HG3G (Connector)



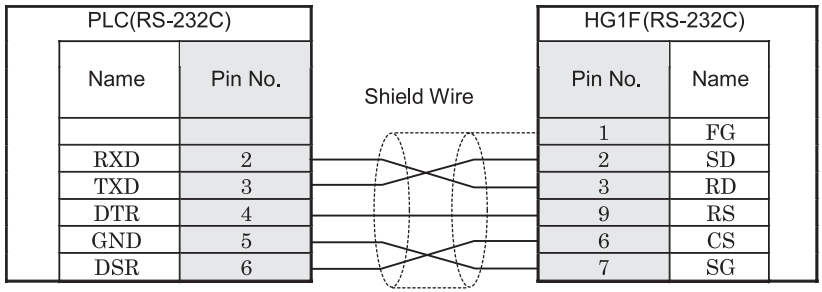
D-sub, 9P connector socket type (cable side) D-sub, 9P connector plug type

HG2G/3G (Terminal)



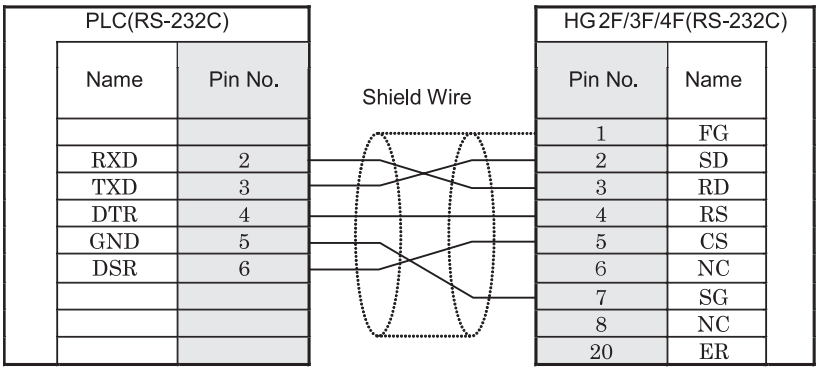
D-sub, 9P connector socket type (cable side) Terminal

HG1F (Connector)



D-sub, 9P connector socket type (cable side) D-sub, 9P connector socket type

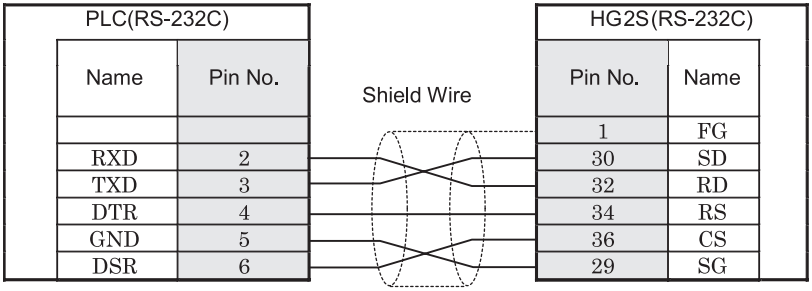
HG2F/3F/4F



D-sub, 9P connector socket type (cable side)

D-sub, 25P connector socket type

HG2S



D-sub, 9P connector socket type (cable side)

D-sub, 37P connector socket type

2.3.7 Connection Diagram 7: MELSEC-Q (CPU unit programming port) to MICRO/I

HG3G (Connector)

PLC (RS-232C)			HG3G (RS-232C)	
Name	Pin No.	Shield Wire	Pin No.	Name
RXD(RD)	1		COVER	FG
TXD(SD)	2		3	SD
SG	3		2	RD
-	4		7	RS
DSR(DR)	5		8	CS
DTR(ER)	6		5	SG

Mini Din 6P socket connector (unit side) D-sub, 9P connector plug type

In case of HG3G a connection cable is available (part number: HG9Z-XC315).

HG2G/3G (Terminal)

PLC(RS-232C)		HG2G/3G (RS-232C)	
Name	Pin No.	Pin No.	Name
RXD(RD)	1	1	SD
TXD(SD)	2	2	RD
SG	3	3	RS
-	4	4	CS
DSR(DR)	5	5	SG
DTR(ER)	6		

Mini Din 6P socket connector (unit side) Terminal

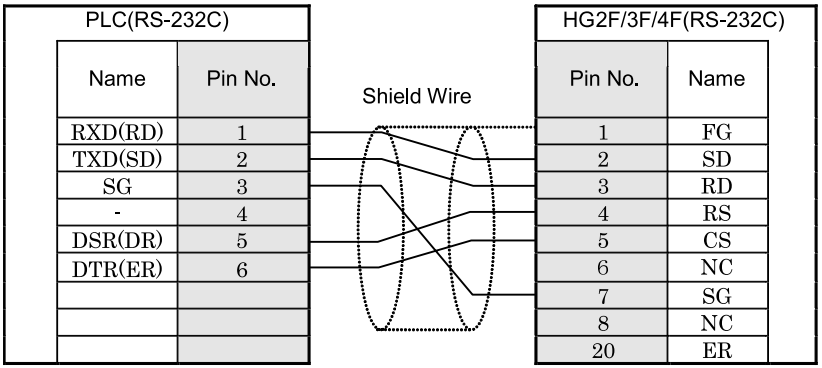
HG1F (Connector)

PLC(RS-232C)			HG1F(RS-232C)	
Name	Pin No.	Shield Wire	Pin No.	Name
RXD(RD)	1		1	FG
TXD(SD)	2		2	SD
SG	3		3	RD
-	4		9	RS
DSR(DR)	5		6	CS
DTR(ER)	6		7	SG

Mini Din 6P socket connector (unit side) D-sub, 9P connector socket type

In case of HG1F a connection cable is available (part number: HG9Z-XC265).

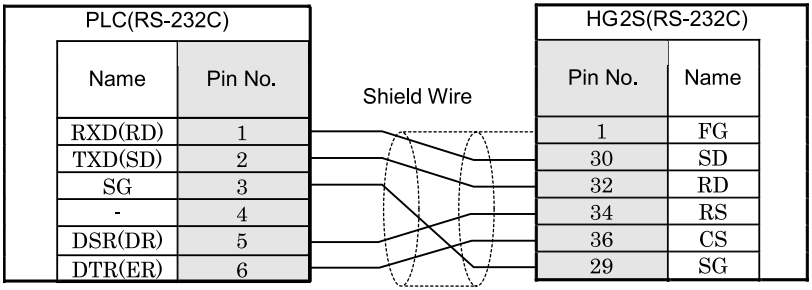
HG2F/3F/4F



Mini Din 6P socket connector (unit side)

D-sub, 25P connector socket type

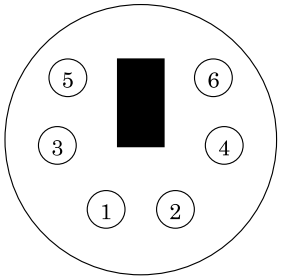
HG2S



Mini Din 6P socket connector (unit side)

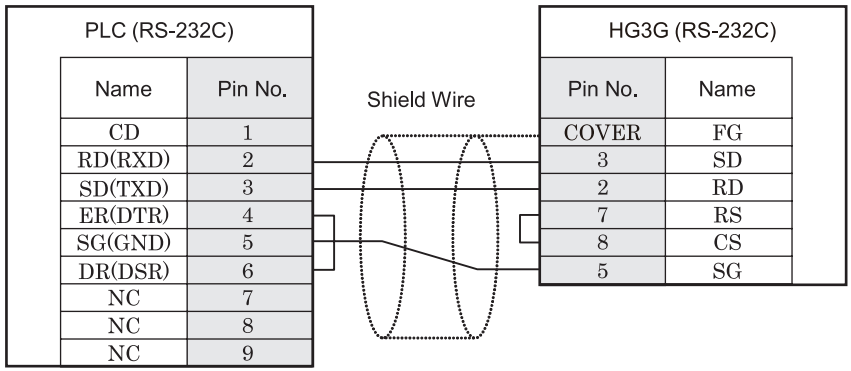
D-sub, 37P connector socket type

Mini-Din 6 Pin plug pin assignment by the side of the Mitsubishi Q series



2.3.8 Connection Diagram 8: FX2NC-232ADP/FX3U-232ADP/FC3U-232BD to MICRO/I

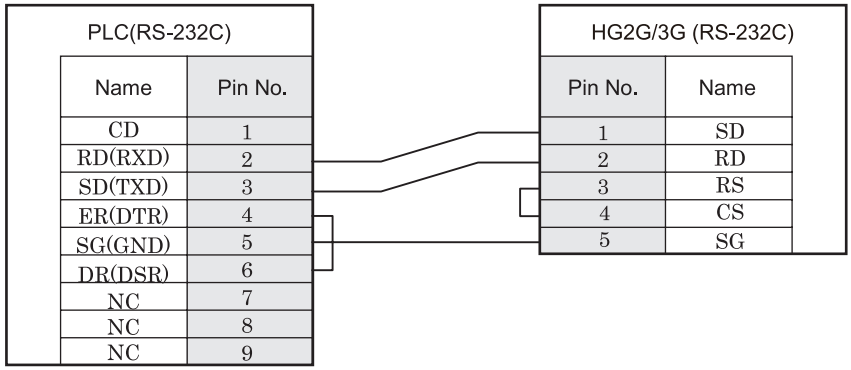
HG3G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

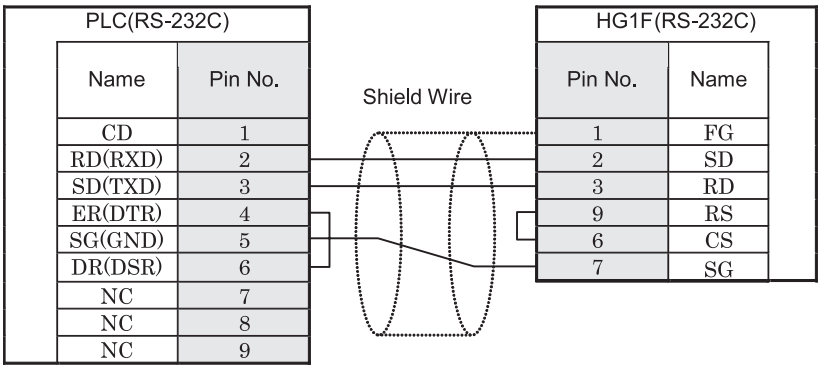
HG2G/3G (Terminal)



D-sub, 9P connector plug type

Terminal

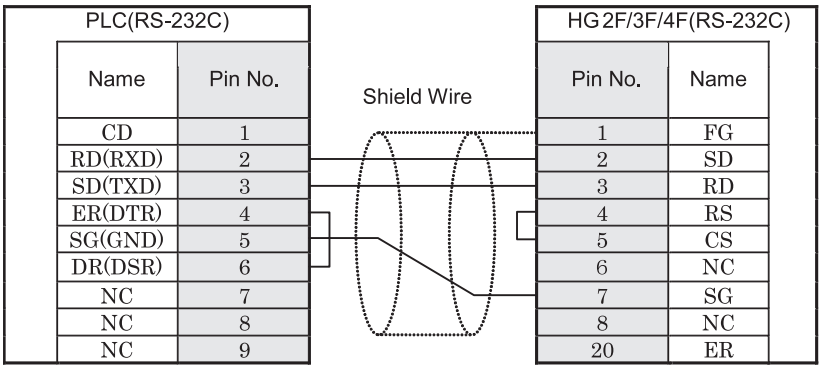
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

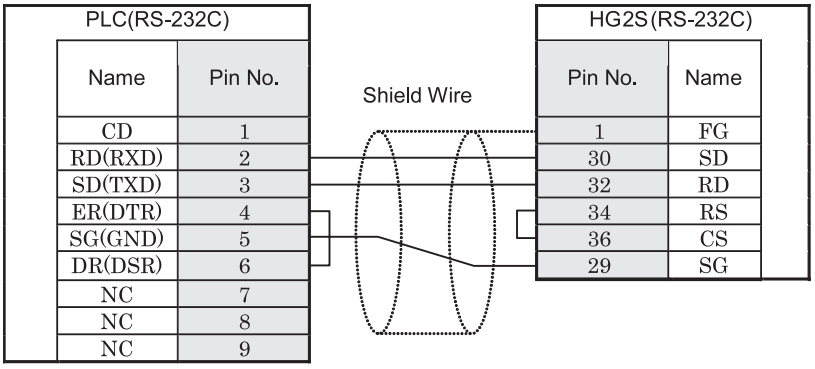
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

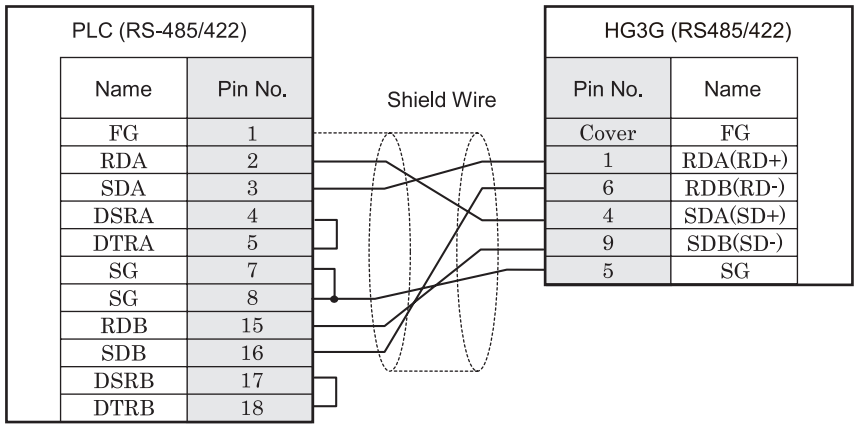


D-sub, 9P connector plug type

D-sub, 37P connector socket type

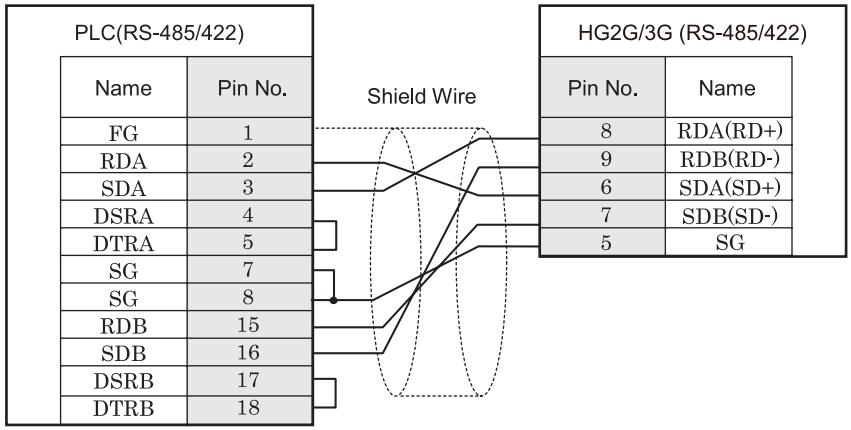
2.3.9 Connection Diagram 9: Computer Link Unit (RS-485) to MICRO/I

HG3G (Connector)



D-sub, 25P connector socket type D-sub, 9P connector plug type

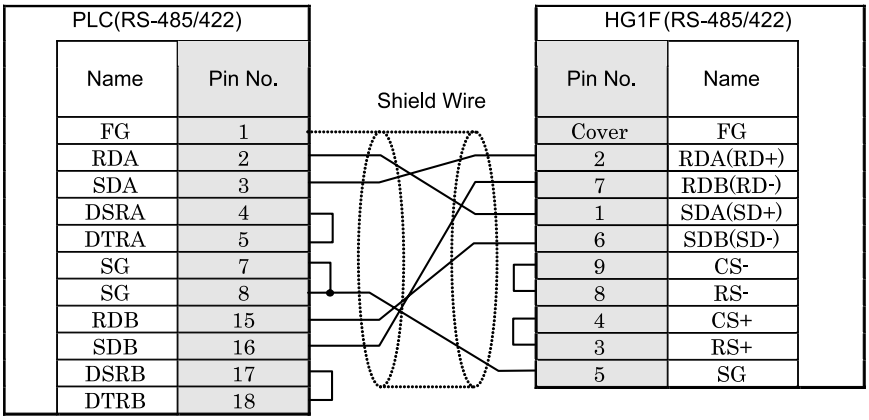
HG2G/3G (Terminal)



D-sub, 25P connector socket type Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Appendix “3 Important Points Regarding Wiring” on page 18.

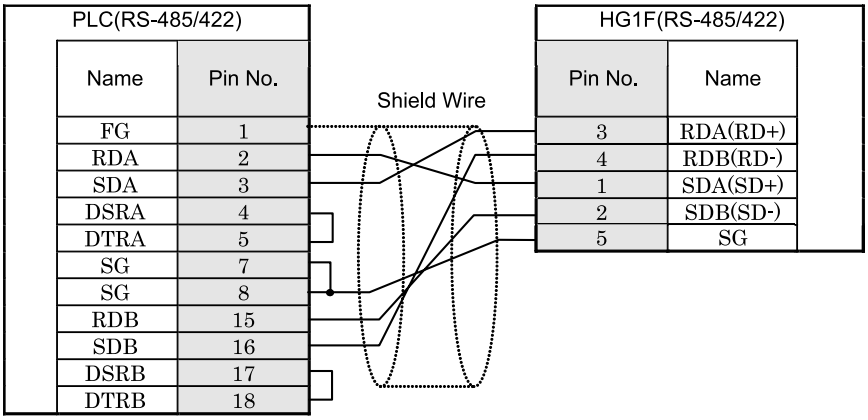
HG1F (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 25P connector socket type

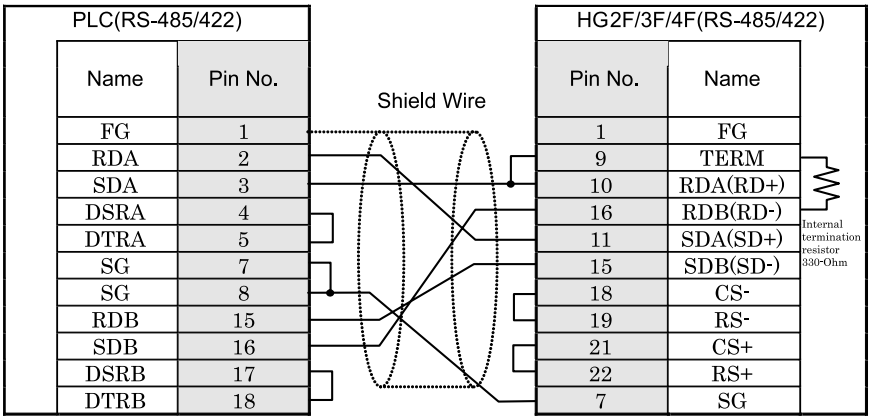
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

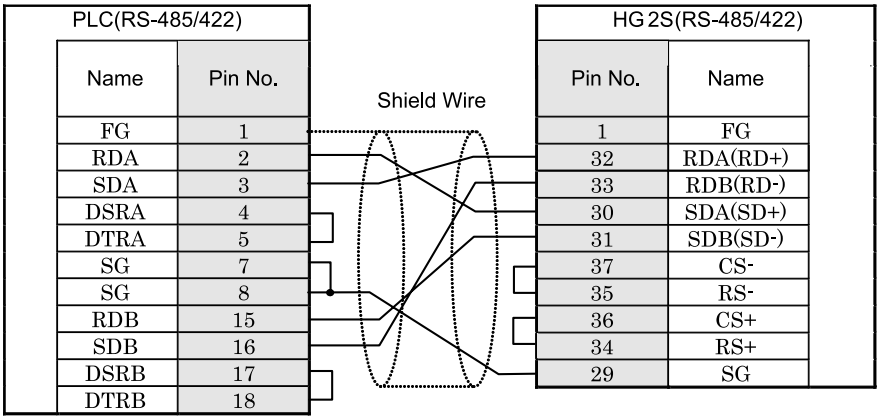
HG2F/3F/4F



D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S



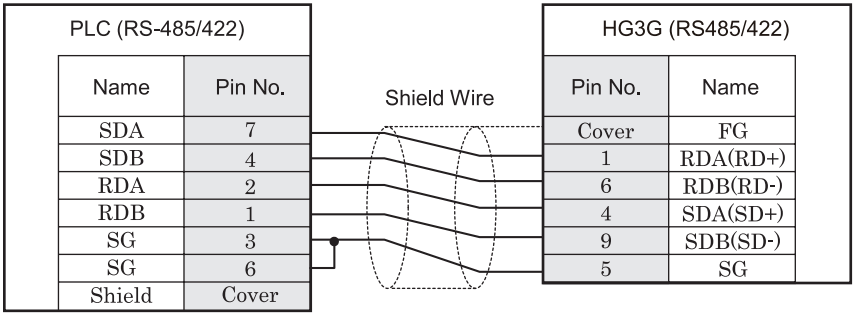
D-sub, 25P connector socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

2.3.10 Connection Diagram 10: MELSEC-FX Series CPU (RS-485) to MICRO/I

HG3G (Connector)

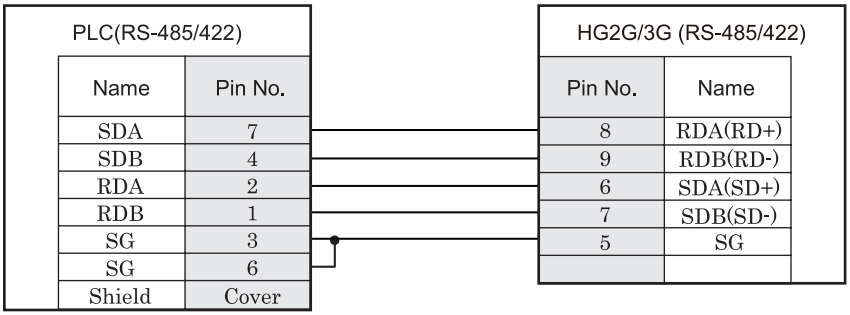


Mini Din 8P Connector

D-sub, 9P connector plug type

In case of HG3G a connection cable is available (part number: HG9Z-XC305). Please do not use HG9Z-XC305 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.

HG2G/3G (Terminal)

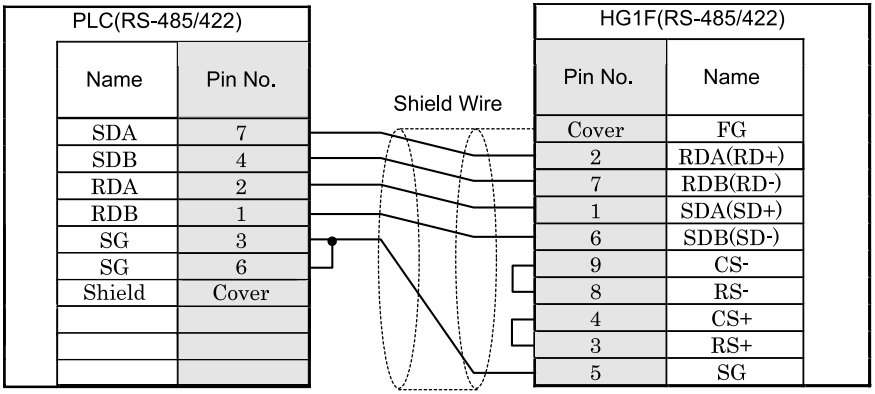


Mini Din 8P Connector

Terminal

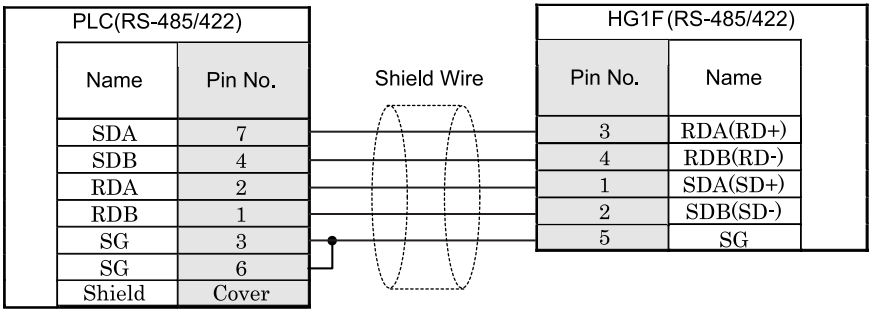
- In case of HG2G/3G a connection cable is available (part number: HG9Z-XC275). Please do not use HG9Z-XC275 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG1F (Connector)



Mini Din 8P Connector — D-sub, 9P connector socket type

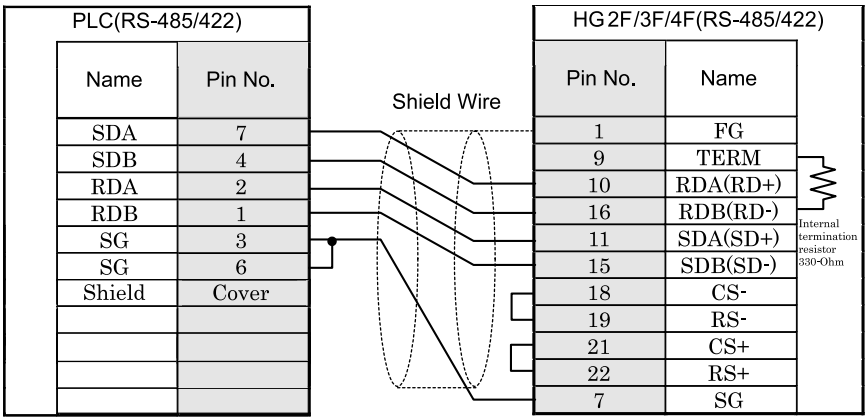
HG1F (Terminal)



Mini Din 8P Connector — Terminal

- In case of HG1F a connection cable is available (part number: HG9Z-XC245).
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

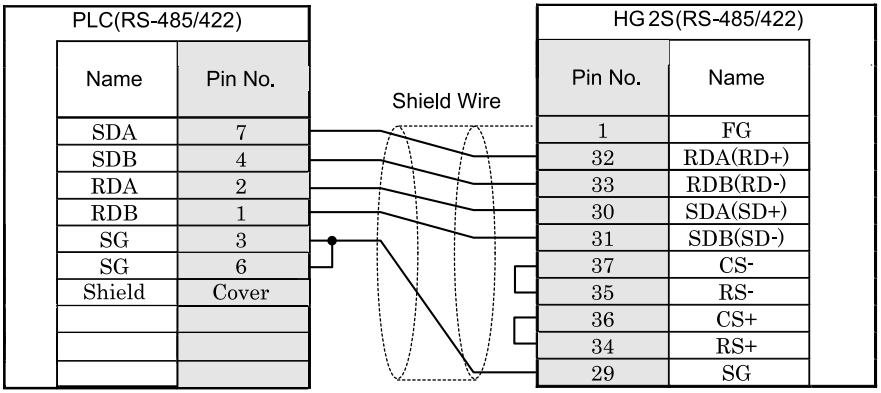
HG2F/3F/4F



Mini Din 8P Connector

D-sub, 25P connector socket type

HG2S



Mini Din 8P Connector

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

2.4 Environment Settings

2.4.1 MELSEC-A Series: Settings for the Computer Link Unit and CPU Unit Link I/F

Item		Setting	
Communication Interface		RS-232C	RS-485
Transmission Control Protocol		Format 4 protocol mode	
		Set the mode setting switch to 4.	Set the mode setting switch to 8.
Station Number	Use the same settings as for the MICRO/I.	Set using the Station Number setting switch.	
Data Bits		7 or 8 (set using the Transmission Specifications setting switch)	
Baud Rate		1200, 2400, 4800, 9600 or 19200 bps (set using the Transmission Specifications setting switch)	
Parity		None, Even or Odd (set using the Transmission Specifications setting switch)	
Stop Bits		1 or 2 (set using the Transmission Specifications setting switch)	
Checksum		Yes (set using the Transmission Specifications setting switch)	
Write During RUN		Possible (set using the Transmission Specifications setting switch)	
Transmission Side Termination Resistor		No	Yes (set using the Transmission Specifications setting switch)
Receive Side Termination Resistor		No	Yes (set using the Transmission Specifications setting switch)
Computer Link/Multi Drop Selection		Computer Link (set using the Transmission Specifications setting switch) Note: Only set if this item is present.	

Refer to the Link Unit manual for details.

2.4.2 MELSEC-A Series: Connection to the Programming Port or 2-port Adapter

Item		Setting
Communication Interface		RS-422
Data Bits	Use the same settings as for the MICRO/I.	8 (fixed)
Baud Rate		9600 (fixed)
Parity		Odd (fixed)
Stop Bits		1 (fixed)

When using CPU Direct for the connection, the PLC program scan time will increase when it starts communicating with the MICRO/I. Investigate this under your actual operating conditions.

2.4.3 MELSEC-Q/QnA Series: Settings for the Computer Link Unit

Item		Setting
Communication Interface		RS-232C, RS-422
Communication protocol		MC Protocol (Format 4)
Station Number	Use the same settings as for the MICRO/I.	0(DEC)
Data Bits		7 or 8
Baud Rate		1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200 bps
Parity		None, Even or Odd
Stop Bits		1 or 2
Checksum Code		Yes
Write During RUN		Possible

The PLC settings are performed using the I/O allocation for the GPPW.

Refer to the Q-compatible Serial Communication Unit user manual (Basic) for details.

2.4.4 MELSEC-Q00, 01CPU: Connection to the Programming Port

Please confirm by parameter setup of MELSEC-Q00 and 01CPU “using a serial communication function.”

Item		Setting
Station Number	Use the same settings as for the MICRO/I.	0(DEC)
Data Bits		8bit(fixed)
Baud Rate		19200/38400/57600/115200 bps
Parity		Odd
Stop Bits		1bit
Checksum Code		Yes

2.4.5 MELSEC-Q02CPU: Connection to the Programming Port

Item	Setting
Data Bits	8bit(fixed)
Baud Rate	9600/19200/38400/57600/115200 bps
Parity	Odd
Stop Bits	1bit

2.4.6 MELSEC-FX Series

Item		Setting
Communication Interface		RS-232C/RS-422
Data Bits	Use the same settings as for the MICRO/I.	7 (fixed)
Baud Rate		9600 bps (fixed)
Parity		Even (fixed)
Stop Bits		1 (fixed)

- When using CPU Direct for the connection, the PLC program scan time will increase when it starts communicating with the MICRO/I. Investigate this under your actual operating conditions.

- To connect MELSEC-FX series PLC and MICRO/I, check the following two things.
  Unchecked the communication setting by the programming software.
  Data Register 8120 (D8120) must be 0.

- If the PLC is MELSEC-FX3U or MELSEC-3UC, check the following two thins too.
  If MICRO/I connects to CH1 on the PLC, Data Register 8400 (D8400) must be 0.
  If MICRO/I connects to CH2 on the PLC, Data Register 8420 (D8420) must be 0.

2.4.7 MELSEC-Q/QnA: in case using Ethernet Unit setting

1. MICRO/I setting

Item	Setting
IP Address	Set IP Address to MICRO/I
Sub net mask	Set Sub net mask to MICRO/I
Default Gateway	Set Default Gateway to MICRO/I

Item	Setting
IP Address	Set IP Address to PLC
PORT	Set Port number for communicate with PLC by MICRO/I

WARNING Refer to the Q Corresponding Ethernet Interface Module User's Manual or QnA Corresponding Ethernet Interface Module User's Manual for detail

2. PLC Settings

Item			setting	notes
Network parameter	Network type		Ethernet	*1
	Starting I/O No.		0020	*2
	Network No.		1	*2
	Total stations		-	-
	Group No.		0	*2
	Station No.		1	*2
	Mode		On line	*1
Operation Setting	Communication data code		Binary code	*1
	Initial Timing		Always wait for OPEN	*1
	IP Address	Input format	Decimal	*2
		IP address	Set IP Address of PLC	*2
	Send frame setting		Ethernet	*1
	Enable Write at RUN time		Check mark (enable)	*1
	TCP Existence confirmation setting		Use the Keep Alive	*1
Open Setting	Protocol		TCP/IP	*1
	Open system		Impassive open	*1
	Fixed buffer		Send	*1
	Fixed buffer communication		Procedure exist	*1
	Pairing open		No pairs	*1
	Existence confirmation		No confirm	*1
	Local station Port No.		set an arbitrary port number	*2 *3
	Destination IP address		-	-
	Dest. Port No.		-	-

*1. The setting of the above-mentioned is recommended.
*2. Set it according to the environment.
*3. MICRO/I is set by the decimal number though PLC is set by the hexadecimal number.

Refer to the Q Corresponding Ethernet Interface Module User's Manual or Q Corresponding Ethernet Interface Module User's Manual for detail.

2.5 Usable Devices

2.5.1 MELSEC-AnA (LINK)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 1FFF	R	*1
Output Relay	Y	Y	0 - 1FFF	R/W	*1
Internal Relay	M	M	0 - 8191	R/W	
Link Relay	B	B	0 - 1FFF	R/W	*1
Latch Relay	L	L	0 - 8191	R/W	
Timer (contact)	TS	T	0 - 2047	R	
Timer (coil)	TC	T	0 - 2047	R/W	
Counter (contact)	CS	C	0 - 1023	R	
Counter (coil)	CC	C	0 - 1023	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 2047	R/W	

*1. Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 1FF0	R	*1 *2
Output Relay	WY	Y	0 - 1FF0	R/W	*1 *2
Internal Relay	WM	M	0 - 8176	R/W	*2
Link Relay	WB	B	0 - 1FF0	R/W	*1 *2
Latch Relay	WL	L	0 - 8176	R/W	*2
Timer (current value)	TN	T	0 - 2047	R	
Counter (current value)	CN	C	0 - 1023	R	
Data Register	D	D	0 - 8191	R/W	
Link Register	W	W	0 - 1FFF	R/W	*1
Annunciator	WF	F	0 - 2032	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special register	SD	SD	9000 - 9255	R	
File register	R	R	0 - 8191	R/W	
Expansion file register	ER	ZR	0 - 58191	R/W	

*1. Set this device using hexadecimal.
*2. Set this device using a multiplier of 16.

2.5.2 MELSEC-AnN (LINK)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 7FF	R	*1
Output Relay	Y	Y	0 - 7FF	R/W	*1
Internal Relay	M	M	0 - 2047	R/W	
Link Relay	B	B	0 - 3FF	R/W	*1
Latch Relay	L	L	0 - 2047	R/W	
Timer (contact)	TS	T	0 - 255	R	
Timer (coil)	TC	T	0 - 255	R/W	
Counter (contact)	CS	C	0 - 255	R	
Counter (coil)	CC	C	0 - 255	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 255	R/W	

*1. Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 7F0	R	*1 *2
Output Relay	WY	Y	0 - 7F0	R/W	*1 *2
Internal Relay	WM	M	0 - 2032	R/W	*2
Link Relay	WB	B	0 - 3F0	R/W	*1 *2
Latch Relay	WL	L	0 - 2032	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 255	R	
Data Register	D	D	0 - 1023	R/W	
Link Register	W	W	0 - 3FF	R/W	*1
Annunciator	WF	F	0 - 240	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special register	SD	SD	9000 - 9255	R	
File register	R	R	0 - 8191	R/W	

*1. Set this device using hexadecimal.
*2. Set this device using a multiplier of 16.

2.5.3 MELSEC-AnA (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 7FF	R	*1
Output Relay	Y	Y	0 - 7FF	R/W	*1
Internal Relay	M	M	0 - 8191	R/W	
Link Relay	B	B	0 - 7FF	R/W	*1
Latch Relay	L	L	0 - 8191	R/W	
Timer (contact)	TS	T	0 - 2047	R	
Timer (coil)	TC	T	0 - 2047	R/W	
Counter (contact)	CS	C	0 - 1023	R	
Counter (coil)	CC	C	0 - 1023	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 2047	R/W	

*1. Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 7F0	R	*1 *2
Output Relay	WY	Y	0 - 7F0	R/W	*1 *2
Internal Relay	WM	M	0 - 8176	R/W	*2
Link Relay	WB	B	0 - 7F0	R/W	*1 *2
Latch Relay	WL	L	0 - 8176	R/W	*2
Timer (current value)	TN	T	0 - 2047	R	
Counter (current value)	CN	C	0 - 1023	R	
Data Register	D	D	0 - 6143	R/W	
Link Register	W	W	0 - FFF	R/W	*1
Annunciator	WF	F	0 - 2032	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special Register	SD	SD	9000 - 9255	R	

*1. Set this device using hexadecimal.
*2. Set this device using a multiplier of 16.

2.5.4 MELSEC-AnN (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 7FF	R	*1
Output Relay	Y	Y	0 - 7FF	R/W	*1
Internal Relay	M	M	0 - 2047	R/W	
Link Relay	B	B	0 - 3FF	R/W	*1
Latch Relay	L	L	0 - 2047	R/W	
Timer (contact)	TS	T	0 - 255	R	
Timer (coil)	TC	T	0 - 255	R/W	
Counter (contact)	CS	C	0 - 255	R	
Counter (coil)	CC	C	0 - 255	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 255	R/W	

*1. Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 7F0	R	*1 *2
Output Relay	WY	Y	0 - 7F0	R/W	*1 *2
Internal Relay	WM	M	0 - 2032	R/W	*2
Link Relay	WB	B	0 - 3F0	R/W	*1 *2
Latch Relay	WL	L	0 - 2032	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 255	R	
Data Register	D	D	0 - 1023	R/W	
Link Register	W	W	0 - 3FF	R/W	*1
Annunciator	WF	F	0 - 240	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special Register	SD	SD	9000 - 9255	R	

*1. Set this device using hexadecimal.
*2. Set this device using a multiplier of 16.

2.5.5 MELSEC-AnU (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 1FFF	R	*1
Output Relay	Y	Y	0 - 1FFF	R/W	*1
Internal Relay	M	M	0 - 8191	R/W	
Link Relay	B	B	0 - 1FFF	R/W	*1
Latch Relay	L	L	0 - 8191	R/W	
Timer (contact)	TS	T	0 - 2047	R	
Timer (coil)	TC	T	0 - 2047	R/W	
Counter (contact)	CS	C	0 - 1023	R	
Counter (coil)	CC	C	0 - 1023	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 2047	R/W	

*1. Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 1FF0	R	*1 *2
Output Relay	WY	Y	0 - 1FF0	R/W	*1 *2
Internal Relay	WM	M	0 - 8176	R/W	*2
Link Relay	WB	B	0 - 1FF0	R/W	*1 *2
Latch Relay	WL	L	0 - 8176	R/W	*2
Timer (current value)	TN	T	0 - 2047	R	
Counter (current value)	CN	C	0 - 1023	R	
Data Register	D	D	0 - 8191	R/W	
Link Register	W	W	0 - 1FFF	R/W	*1
Annunciator	WF	F	0 - 2032	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*2
Special Register	SD	SD	9000 - 9255	R	

*1. Set this device using hexadecimal.
*2. Set this device using a multiplier of 16.

2.5.6 MELSEC-A1S/A2C (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 1FF	R	*1
Output Relay	Y	Y	0 - 1FF	R/W	*1
Internal Relay	M	M	0 - 2047	R/W	
Link Relay	B	B	0 - 3FF	R/W	*1
Latch Relay	L	L	0 - 2047	R/W	
Timer (contact)	TS	T	0 - 255	R	
Timer (coil)	TC	T	0 - 255	R/W	
Counter (contact)	CS	C	0 - 255	R	
Counter (coil)	CC	C	0 - 255	R/W	
Special Internal Relay	SM	SM	9000 - 9255	R	
Annunciator	F	F	0 - 255	R/W	

*1. Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 1F0	R	*1 *2
Output Relay	WY	Y	0 - 1F0	R/W	*1 *2
Internal Relay	WM	M	0 - 2032	R/W	*2
Link Relay	WB	B	0 - 3F0	R/W	*1 *2
Latch Relay	WL	L	0 - 2032	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 255	R	
Data Register	D	D	0 - 1023	R/W	
Link Register	W	W	0 - 3FF	R/W	*1
Annunciator	WF	F	0 - 240	R/W	*2
Special Internal Relay	WSM	SM	9000 - 9240	R	*3
Special Register	SD	SD	9000 - 9255	R	
File Register	R	R	0 - 8191	R/W	

*1. Set this device using hexadecimal.
*2. Set this device using a multiplier of 16.
*3. This can only be used when the Link Unit is being used.

- File Register is not available, if Memory Cassettes is used.
- File Register is tested only MELSEC-A1S/A1SH/A1SJH/A2SH/A2C.
  Don't use expect those CPU Unit.
- In case of using File Register, must reset to MICRO/I if PLC parameter is changed.

2.5.7 MELSEC-Q/QnA (Link)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Internal Relay	M	M	0 - 32767	R/W	
Input Relay	X	X	0 - 1FFF	R	*1
Output Relay	Y	Y	0 - 1FFF	R/W	*1
Link Special Relay	SB	SB	0 - 7FF	R/W	*1
Link Relay	B	B	0 - 7FFF	R/W	*1
Latch Relay	L	L	0 - 32767	R/W	
Timer (contact)	TS	T	0 - 8191	R	
Timer (coil)	TC	T	0 - 8191	R/W	
Counter (contact)	CS	C	0 - 8191	R	
Counter (coil)	CC	C	0 - 8191	R/W	
Special Relay	SM	SM	0 - 2047	R	
Annunciator	F	F	0 - 32767	R/W	
Retentive Timer (contact)	SS	ST	0 - 2047	R	
Retentive Timer (coil)	SC	ST	0 - 2047	R/W	
Step Relay	S	S	0 - 32767	R/W	
Edge Relay	V	V	0 - 32767	R/W	

*1. Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 1FF0	R	*1 *2
Output Relay	WY	Y	0 - 1FF0	R/W	*1 *2
Internal Relay	WM	M	0 - 32752	R/W	*2
Link Special Relay	WSB	SB	0 - 7F0	R/W	*1 *2
Link Relay	WB	B	0 - 7FF0	R/W	*1 *2
Latch Relay	WL	L	0 - 32752	R/W	*2
Timer (current value)	TN	T	0 - 8191	R	
Counter (current value)	CN	C	0 - 8191	R	
Data Register	D	D	0 - 25599	R/W	
Link Register	W	W	0 - 24FF	R/W	*1
File register	R	R	0 - 32767	R/W	
Annunciator	WF	F	0 - 32752	R/W	*2
Special Relay	WSM	SM	0 - 2032	R	*2
Special register	SD	SD	0 - 2047	R	
Edge Relay	WV	V	0 - 32752	R/W	*2
Step Relay	WS	S	0 - 32752	R/W	*2
Retentive Timer (current value)	SN	ST	0 - 2047	R/W	
Special Link Register	SW	SW	0 - 7FF	R/W	*1
Ext File Register	ZR	ZR	0 - FFFF	R/W	*1

*1. Set this device using hexadecimal.
*2. Set this device using a multiplier of 16.

2.5.8 MELSEC-Q (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Internal Relay	M	M	0 - 32767	R/W	
Input Relay	X	X	0 - 1FFF	R	*1
Output Relay	Y	Y	0 - 1FFF	R/W	*1
Link Special Relay	SB	SB	0 - 7FF	R/W	*1
Link Relay	B	B	0 - 1FFF	R/W	*1
Latch Relay	L	L	0 - 32767	R/W	
Annunciator	F	F	0 - 32767	R/W	
Step Relay	S	S	0 - 8191	R/W	
Edge Relay	V	V	0 - 32767	R/W	
Timer (contact)	TS	T	0 - 23087	R	
Timer (coil)	TC	T	0 - 23087	R/W	
Counter (contact)	CS	C	0 - 23087	R	
Counter (coil)	CC	C	0 - 23087	R/W	
Retentive Timer (contact)	SS	ST	0 - 23087	R	
Retentive Timer (coil)	SC	ST	0 - 23087	R/W	
Special Relay	SM	SM	0 - 2047	R	

*1. Set this device using hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 1FF0	R	*1 *2
Output Relay	WY	Y	0 - 1FF0	R/W	*1 *2
Internal Relay	WM	M	0 - 32752	R/W	*2
Link Relay	WB	B	0 - 7FF0	R/W	*1 *2
Latch Relay	WL	L	0 - 32752	R/W	*2
Annunciator	WF	F	0 - 32752	R/W	*2
Edge Relay	WV	V	0 - 32752	R/W	*2
Step Relay	WS	S	0 - 8176	R/W	*2
Timer (current value)	TN	T	0 - 23087	R	
Counter (current value)	CN	C	0 - 23087	R	
Retentive Timer (current value)	SN	ST	0 - 23087	R/W	
Data Register	D	D	0 - 25983	R/W	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Link Register	W	W	0 - 657F	R/W	
Special Relay	WSM	SM	0 - 2032	R	*2
Link Special Relay	WSB	SB	0 - 7F0	R/W	*1 *2
Special Register	SD	SD	0 - 2047	R	
Special link Register	SW	SW	0 - 7FF	R/W	
File Register	R	R	0 - 32767	R/W	
Extend file Register	ZR	ZR	0 - 131072	R/W	

*1. Set this device using hexadecimal.
*2. Set this device using a multiplier of 16.

2.5.9 MELSEC-FX (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 337	R	*1
Output Relay	Y	Y	0 - 337	R/W	*1
Internal Relay	M	M	0 - 1535	R/W	
Timer (contact)	TS	T	0 - 255	R	
Counter (contact)	CS	C	0 - 255	R	
State	S	S	0 - 999	R/W	

*1. Set this device using octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 320	R	*1 *2
Output Relay	WY	Y	0 - 320	R/W	*1 *2
Internal Relay	WM	M	0 - 1520	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 199	R	
32-Bit Counter (current value)	DCN	C	2000 - 2551	R	*3
Data Register	D	D	0 - 999	R/W	
State	WS	WS	0 - 976	R/W	*2

*1. Set this device using octal.
*2. Set this device using a multiplier of 16.
*3. This device is a 32-bit device.

In the case of the FX2N and FX2NC Series, when the Host I/F is set to CPU Direct (Mitsubishi FX) using WindO/I-NV, there is a limit to the number of devices that can be used.

2.5.10 MELSEC-FX2N (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 337	R	*1
Output Relay	Y	Y	0 - 337	R/W	*1
Internal Relay	M	M	0 - 3071	R/W	
Timer (contact)	TS	T	0 - 255	R	
Counter (contact)	CS	C	0 - 255	R	
Special Int. Relay	SM	SM	8000 - 8255	R	
State	S	S	0 - 999	R/W	

*1. Set this device using octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 360	R	*1 *2
Output Relay	WY	Y	0 - 360	R/W	*1 *2
Internal Relay	WM	M	0 - 3056	R/W	*2
Timer (current value)	TN	T	0 - 255	R	
Counter (current value)	CN	C	0 - 199	R	
32-Bit Counter (current value)	DCN	C	2000 - 2551	R	*3
Data Register	D	D	0 - 7999	R/W	
State	WS	S	0 - 976	R/W	*2
Special Int. Relay	WSM	SM	8000 - 8240	R	
Special Register	SD	SD	8000 - 8255	R	

*1. Set this device using octal.
*2. Set this device using a multiplier of 16.
*3. This device is a 32-bit device.

2.5.11 MELSEC-FX3UC (CPU)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 377	R	*1
Output Relay	Y	Y	0 - 377	R/W	*1
Internal Relay	M	M	0 - 7679	R/W	
Timer (contact)	TS	T	0 - 511	R	
Counter (contact)	CS	C	0 - 255	R	
Special Internal Relay	SM	SM	8000 - 8511	R	
State	S	S	0 - 4095	R/W	

*1. Set this device using octal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 - 360	R	*1 *2
Output Relay	WY	Y	0 - 360	R/W	*1 *2
Internal Relay	WM	M	0 - 7664	R/W	*2
Timer (current value)	TN	T	0 - 511	R	
Counter (current value)	CN	C	0 - 199	R	
32-bit counter (current value)	DCN	C	2000 - 2551	R/W	*3
Data Register	D	D	0 - 7999	R/W	
State	WS	S	0 - 4080	R/W	*2
Special Internal Relay	WSM	SM	8000 - 8496	R	*2
Special Data Register	SD	SD	8000 - 8511	R	
Extended Register	R	R	0 - 32767	R/W	

*1. Set this device using octal.
*2. Set this device using a multiplier of 16.
*3. This device is a 32-bit device.

2.5.12 MELSEC-Q/QnA (Ethernet)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Special Relay (bit)	SM	SM	000000 - 002047	R	dec
Input Relay (bit)	X	X	000000 - 001FFF	R	hex
Output Relay (bit)	Y	Y	000000 - 001FFF	R/W	hex
Internal Relay (bit)	M	M	000000 - 475135	R/W	dec
Latch Relay (bit)	L	L	000000 - 475135	R/W	dec
Annunciator (bit)	F	F	000000 - 475135	R/W	dec
Edge Relay (bit)	V	V	000000 - 475135	R/W	dec
Link Relay (bit)	B	B	000000 - 073FFF	R/W	hex
Timer (contact)	TS	TS	000000 - 475135	R	dec
Timer (coil)	TC	TC	000000 - 475135	R/W	dec
Retentive Timer (contact)	SS	SS	000000 - 475135	R	dec
Retentive Timer (coil)	SC	SC	000000 - 475135	R/W	dec
Counter (contact)	CS	CS	000000 - 475135	R	dec
Counter (coil)	CC	CC	000000 - 475135	R/W	dec
Link Special Relay (bit)	SB	SB	000000 - 0007FF	R/W	dec
Step Relay (bit)	S	S	000000 - 008191	R/W	dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Special Register	SD	SD	000000 - 002047	R	dec
Data Register	D	D	000000 - 029695	R/W	dec
Link Register	W	W	000000 - 0073FF	R/W	hex
Timer (current value)	TN	TN	000000 - 029695	R	dec
Retentive Timer (current value)	SN	SN	000000 - 029695	R/W	dec
Counter (current value)	CN	CN	000000 - 029695	R	dec
Special Link Register	SW	SW	000000 - 0007FF	R/W	hex
File Register	R	R	000000 - 032767	R/W	dec
Extend file Register	ZR	ZR	000000 - 0FE7FF	R/W	hex
Special Relay (word)	WSM	SM	000000 - 002032	R	dec*1
Input Relay (word)	WX	X	000000 - 001FF0	R	hex*1
Output Relay (word)	WY	Y	000000 - 001FF0	R/W	hex*1
Internal Relay (word)	WM	M	000000 - 475120	R/W	dec*1
Latch Relay (word)	WL	L	000000 - 475120	R/W	dec*1

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Annunciator (word)	WF	F	000000 - 475120	R/W	dec*1
Edge Relay (word)	WV	V	000000 - 475120	R/W	dec*1
Link Relay (word)	WB	B	000000 - 073FF0	R/W	hex*1
Link Special Relay (word)	WSB	SB	000000 - 0007F0	R/W	hex*1
Step Relay (word)	WS	S	000000 - 008176	R/W	dec*1

*1. Set this device using a multiplier of 16.

3 Omron

3.1 Connection Table

3.1.1 Compatible PLCs

Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
SYSMAC-C	C500, C500F, C1000H, C2000, C2000H	C120-LK201-V1	RS-232C Connection Diagram 1 (refer to P129)	ER control	SYSMAC-C Series
		C120-LK202-V1	RS-485 (422)-4 Connection Diagram 2 (refer to P132)		
		C500-LK201-V1	RS-232C Connection Diagram 1 (refer to P129)		
			RS-485 (422)-4 Connection Diagram 2 (refer to P132)		
		C500-LK203	RS-232C Connection Diagram 1 (refer to P129)		
			RS-485 (422)-4 Connection Diagram 3 (refer to P135)		
	C1000HF	C500-LK203	RS-232C Connection Diagram 1 (refer to P129)		
			RS-485 (422)-4 Connection Diagram 3 (refer to P135)		
	C200HS	C200H-LK201	RS-232C Connection Diagram 1 (refer to P129)		
		C200H-LK202	RS-485 (422)-4 Connection Diagram 2 (refer to P132)		

Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
SYSMAC-C	C200HE, C200HG, C200HX	C200H-LK201	RS-232C Connection Diagram 1 (refer to P129)	ER control	SYSMAC-C Series
		C200H-LK202	RS-485 (422)-4 Connection Diagram 2 (refer to P132)		
		C200HW- COM02/COM04/ COM05/COM06	RS-232C Connection Diagram 6 (refer to P143)		
		C200HW- COM03/COM06	RS-485 (422)-4 Connection Diagram 7 (refer to P146)		
	C120, C120F	C120-LK201-V1	RS-232C Connection Diagram 1 (refer to P129)		
		C120-LK202-V1	RS-485 (422)-4 Connection Diagram 2 (refer to P132)		
	CQM1H, C200HS-CPU21/23 /31/33	Not required (connects to CPU unit)	RS-232C Connection Diagram 5 (refer to P140)		
	C200HE-CPU42 C200HG-CPU43/63 C200HX-CPU44/64	Not required (connects to CPU unit)	RS-232C Connection Diagram 6 (refer to P143)		
	CPM1, CPM1A, CPM2A	CPM1-CIF01	RS-232C Connection Diagram 5 (refer to P140)		
		CPM1-CIF11	RS-485 (422)-4 Connection Diagram 8 (refer to P149)		
	CPM2A	Not required (connects to CPU unit)	RS-232C Connection Diagram 5 (refer to P140)		

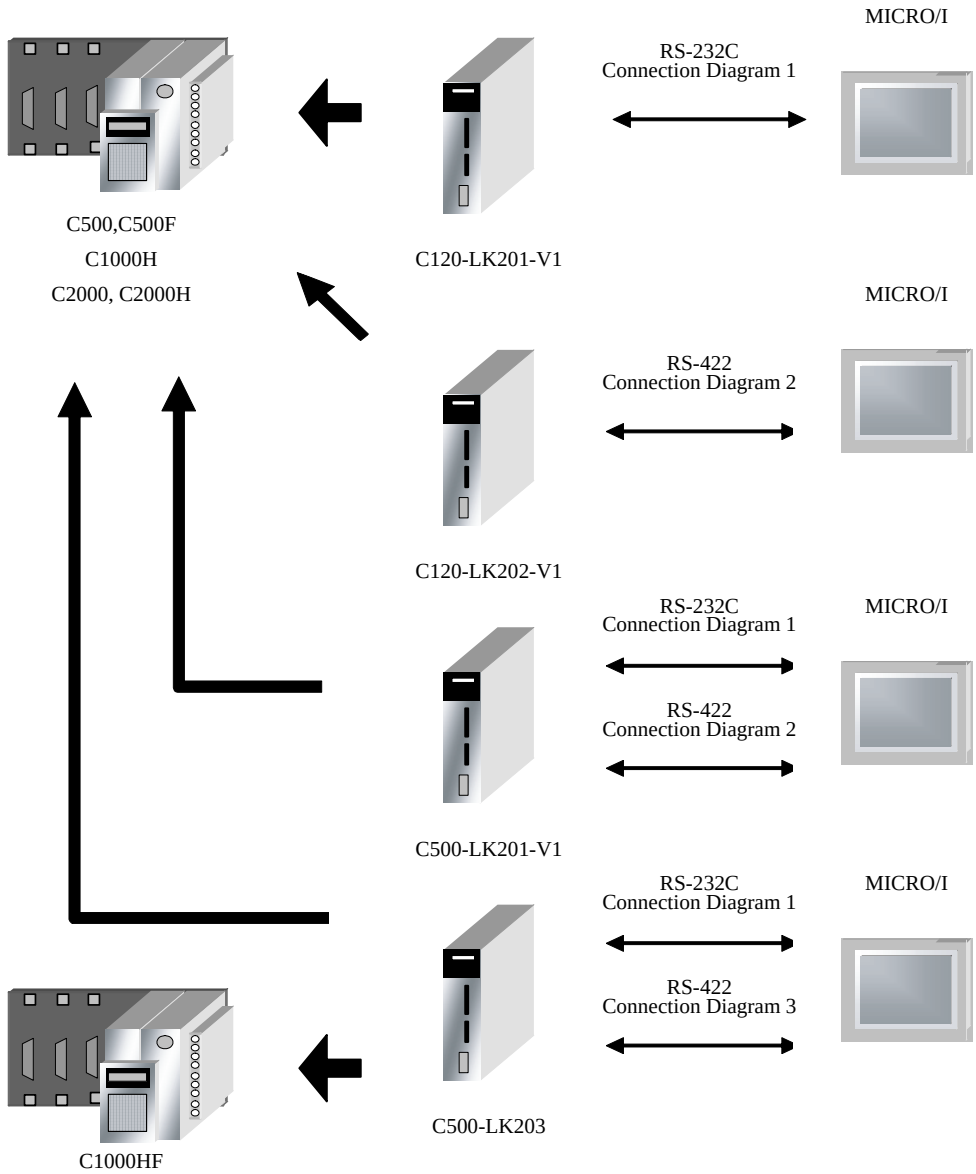
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
SYSMAC-CS1	CS1G*1, CS1H	Not required (connects to CPU unit)	RS-232C Connection Diagram 6 (refer to P143)	ER control	SYSMAC-CS1Series
	CS1G, CS1H	CS1W-SCB41 (port1)	RS-232C Connection Diagram 6 (refer to P143)		
		CS1W-SCB41 (port2)	RS-485 (422)-4 Connection Diagram 7 (refer to P146)		
		CS1W-ENT01 CS1W-ENT11 CS1W-ENT21 CJ1W-ENT21	Ethernet		SYSMAC-CS1/ CJ Series (Ethernet)
SYSMAC-CJ1	CJ1M*1, CJ1H, CJ1G	Not required (connects to CPU unit)	RS-232C Connection Diagram 6 (refer to P143)	ER control	SYSMAC-CS1Series
		CS1W-ENT01 CS1W-ENT11 CS1W-ENT21 CJ1W-ENT21	Ethernet		SYSMAC-CS1/ CJ Series (Ethernet)
SYSMAC-CJ2	CJ2H	Not required (connects to CPU unit)	Ethernet		SYSMAC-CS1/ CJ Series (Ethernet)
SYSMAC-CP1	CP1H	CP1W-CIF01	RS-232C Connection Diagram 6 (refer to P143)	ER control	SYSMAC-CS1Series
		CP1W-CIF11	RS-485 (422)-4 Connection Diagram 7 (refer to P146)		

*1. We tested with the PLC of these parts.

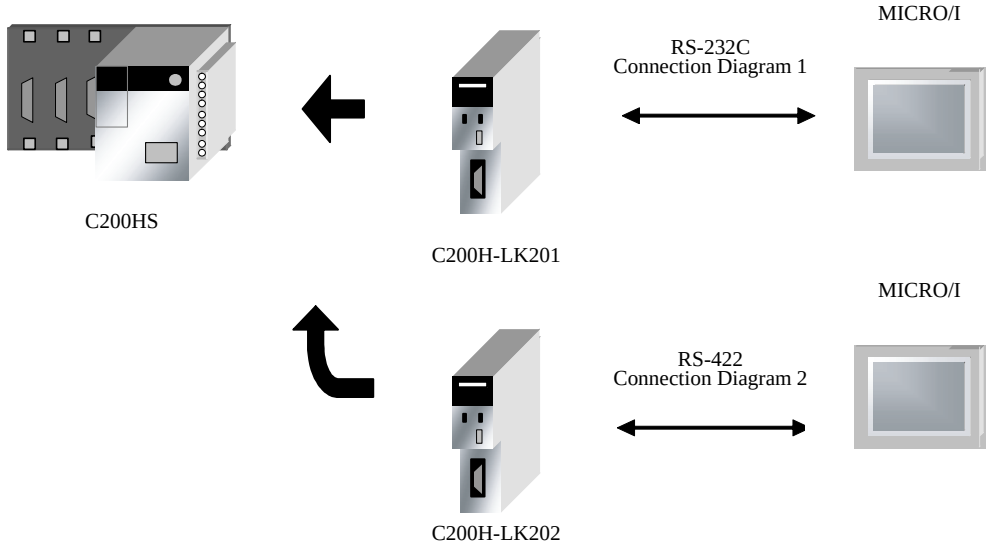
3.2 System Configuration

This is the system configuration for connection of Omron PLCs to the MICRO/I

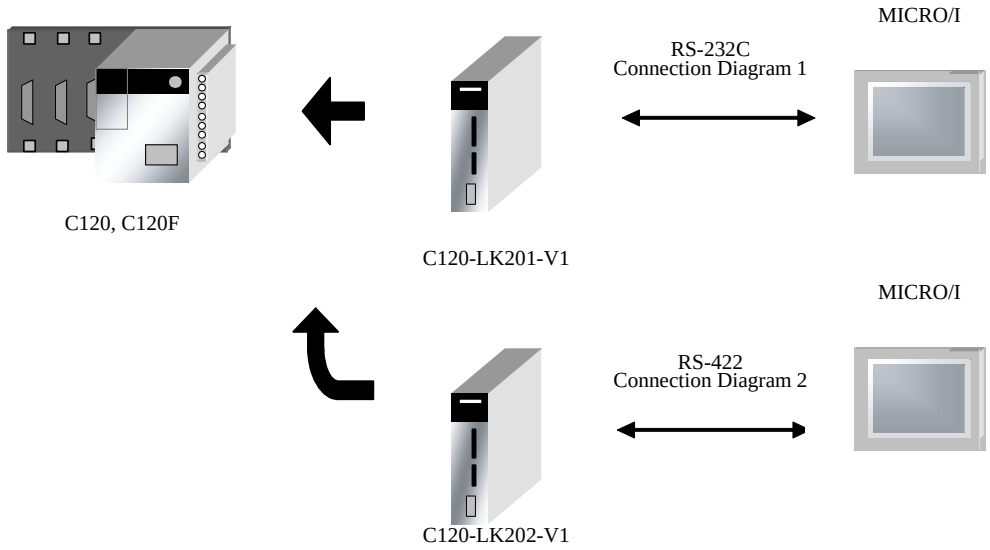
3.2.1 SYSMAC-C Series (using the PLC Link Unit)



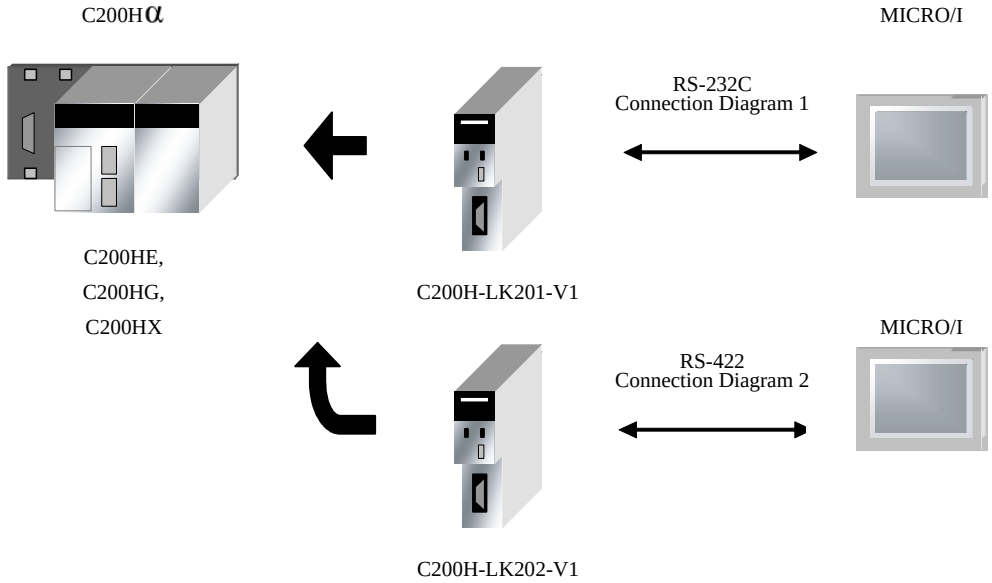
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC155).



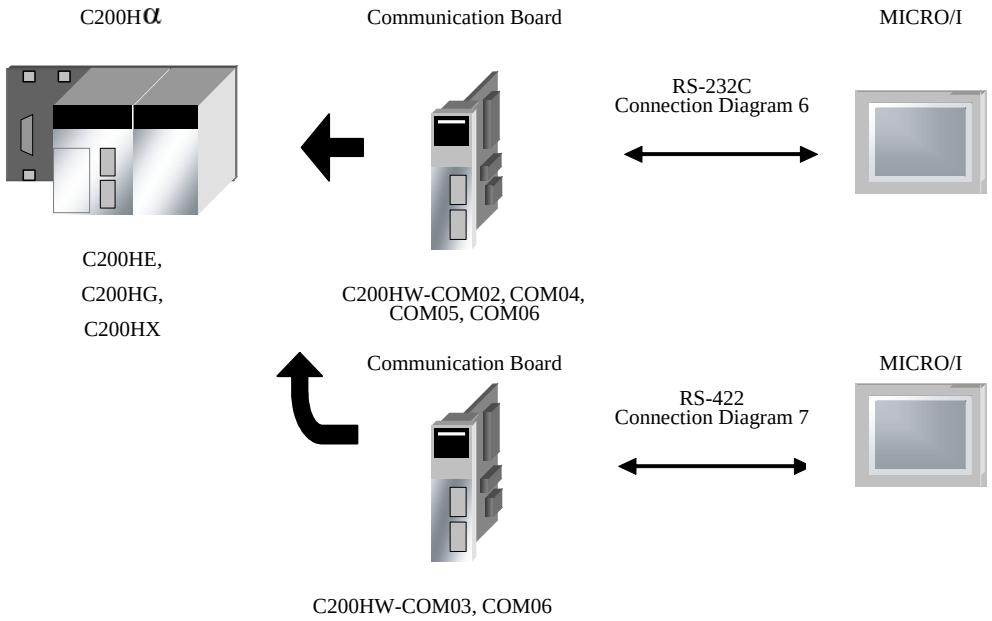
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC155)



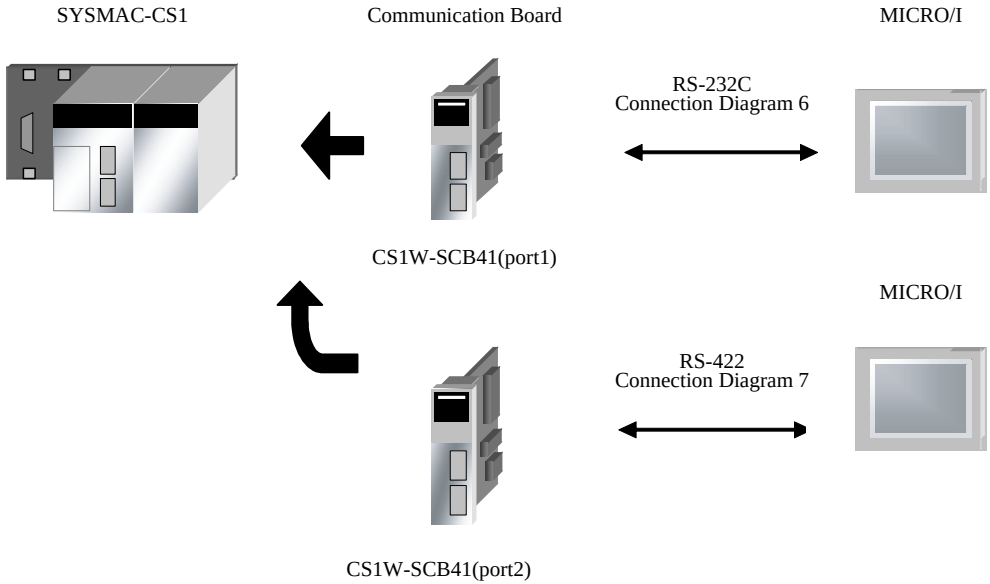
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC155)



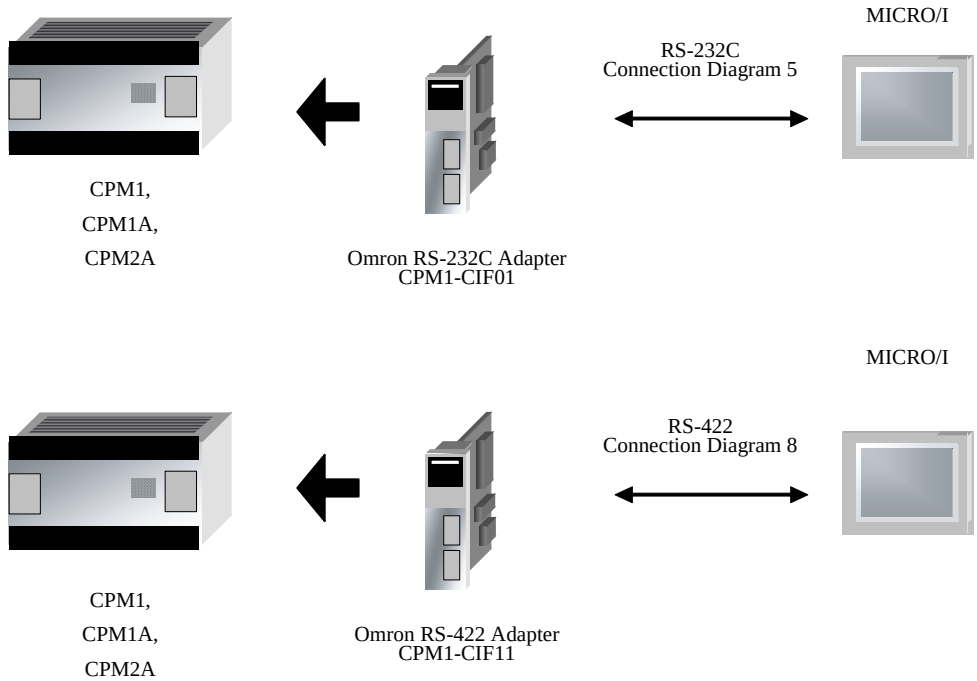
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 1 (part number: HG9Z-3C135).
- In case of HG1F a connection cable is available for Connection Diagram 1 (part number: HG9Z-XC155).



You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.



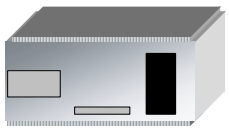
You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.



- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 5 (part number: HG9Z-3C155).
- In case of HG1F a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC213).

3.2.2 SYSMAC-C Series (using the Link I/F on the CPU Unit)

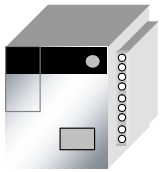
MICRO/I



RS-232C
Connection Diagram 4

C20H, C28H, C40H and C60H

MICRO/I



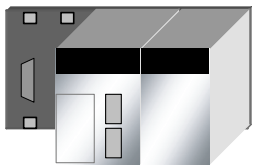
RS-232C
Connection Diagram 5

C200HS-CPU21/23/31/33
CQM1H

- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 5 (part number: HG9Z-3C155).
- In case of HG1F a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC213).

C200Hα

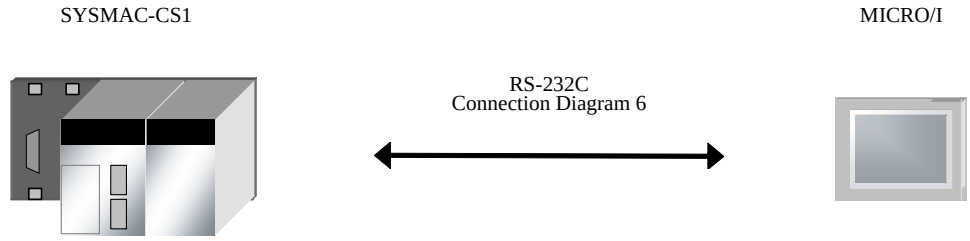
MICRO/I



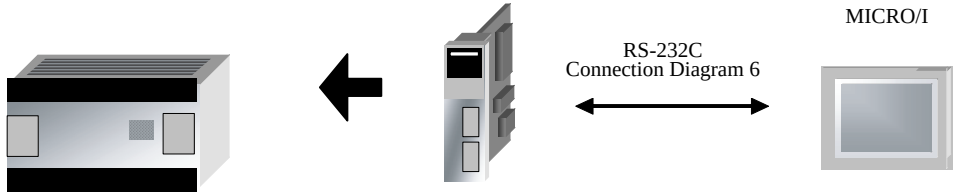
RS-232C
Connection Diagram 6

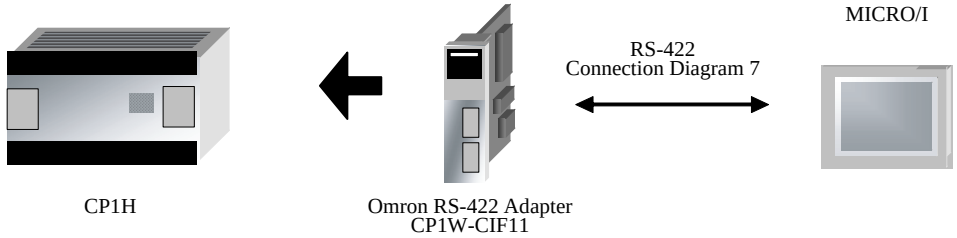
C200HE-CPU42
C200HG-CPU43/63
C200HX-CPU44/64

You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.



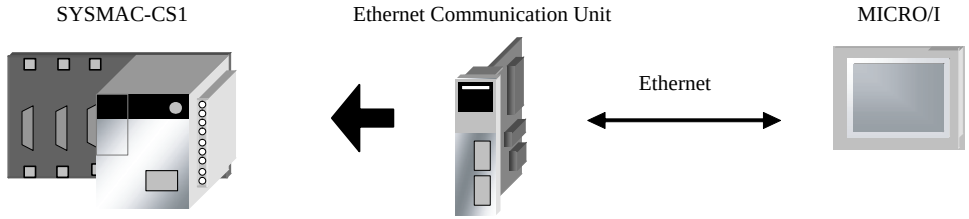
- In case of HG2F/3F/4F a connection cable is available for Connection Diagram 5 (part number: HG9Z-3C155).
- In case of HG1F a connection cable is available for Connection Diagram 5 (part number: HG9Z-XC213).

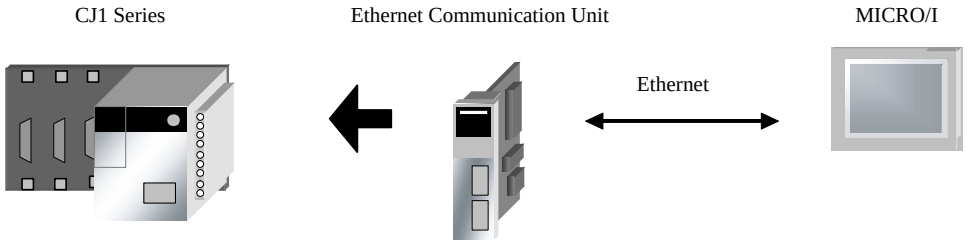


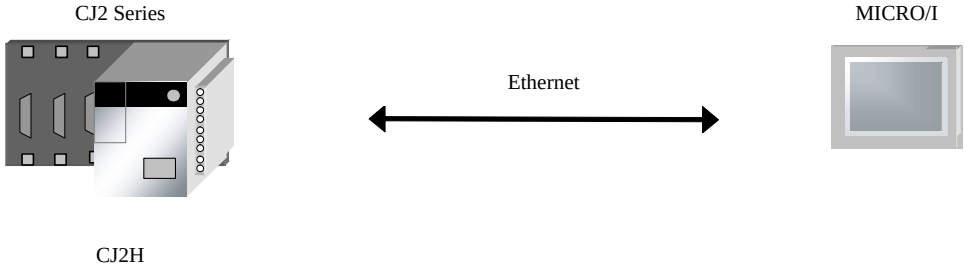


You can use the same cable for Connection Diagram 6 as for Connection Diagram 5.

3.2.3 SYSMAC-CS1/CJ1 Series (using the Ethernet Communication Unit)




CJ1 Series
Ethernet Communication Unit
MICRO/I
Ethernet
CJ1H, CJ1G, CJ1M
CS1W-ENT01
CS1W-ENT11
CS1W-ENT21
CJ1W-ENT21

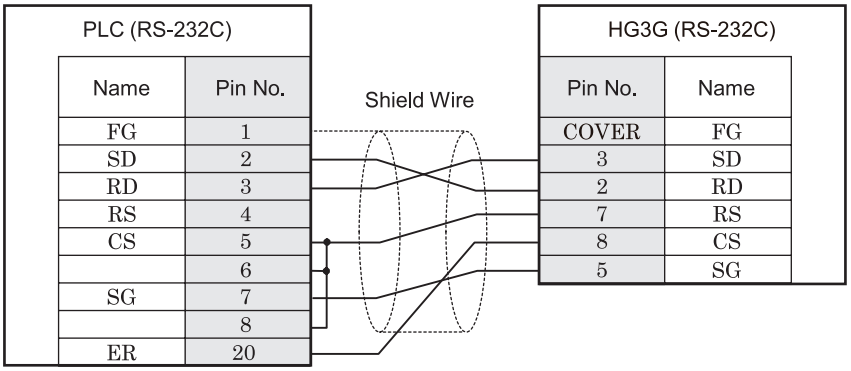

CJ2 Series
MICRO/I
Ethernet
CJ2H

3.3 Connection Diagram

For details regarding wiring refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

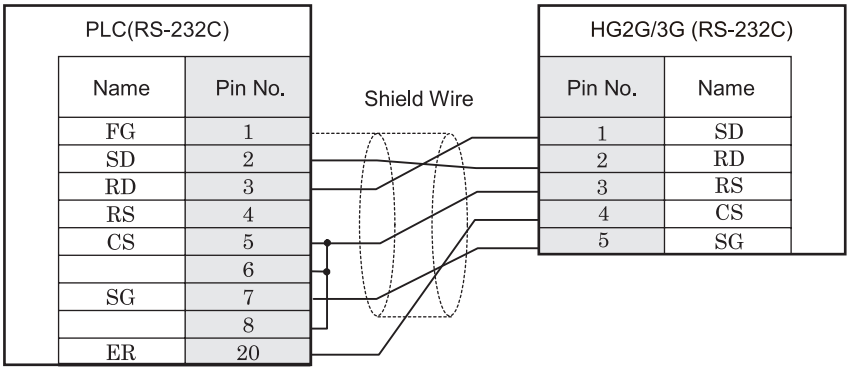
3.3.1 Connection Diagram 1: RS-232C Link Unit to MICRO/I

HG3G (Connector)



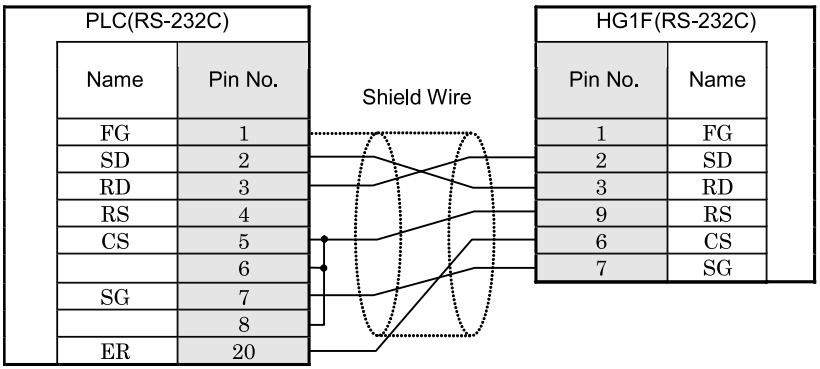
D-sub, 25P connector socket type D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 25P connector socket type Terminal

HG1F (Connector)

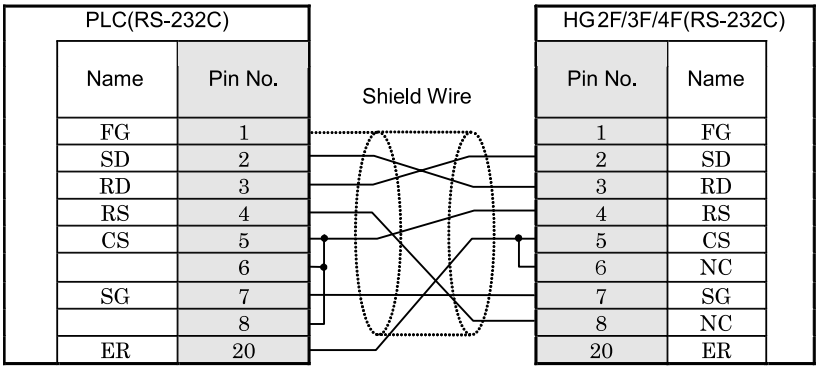


D-sub, 25P connector socket type

D-sub, 9P connector socket type

- In case of HG1F a connection cable is available (part number: HG9Z-XC155).
- The connection diagram 1 is not same as HG9Z-XC155. But both diagrams are available. Refer to Chapter 7 “1.14 PLC connection cable: HG9Z-XC155” on page 599 about the connection diagram of HG9Z-XC155.

HG2F/3F/4F

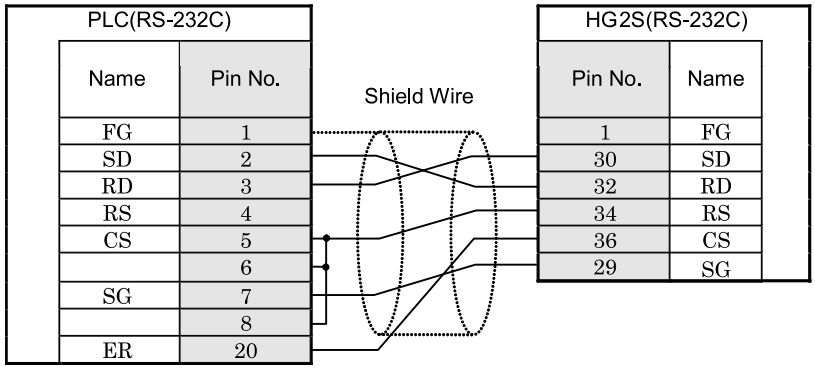


D-sub, 25P connector socket type

D-sub, 25P connector socket type

- In case of HG2F/3F/4Fa connection cable is available (part number: HG9Z-3C135).
- The connection diagram 1 is not same as HG9Z-3C135. But both diagrams are available. Refer to Chapter 7 “1.6 PLC connection cable: HG9Z-3C135” on page 594 about the connection diagram of HG9Z-3C135.

HG2S

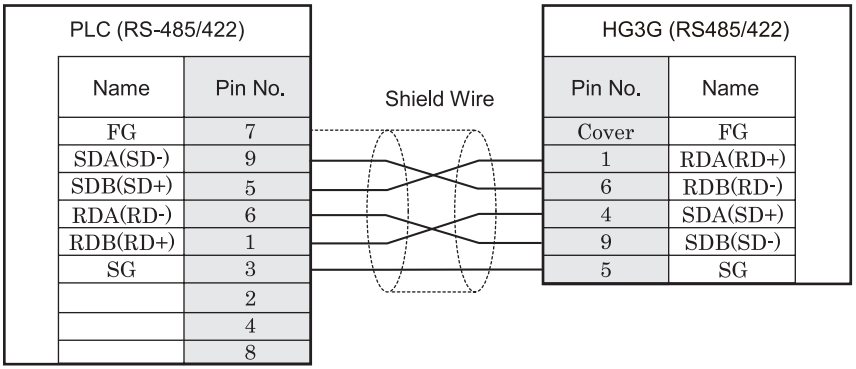


D-sub, 25P connector socket type

D-sub, 37P connector socket type

3.3.2 Connection Diagram 2: RS-422 Link unit to MICRO/I

HG3G (Connector)

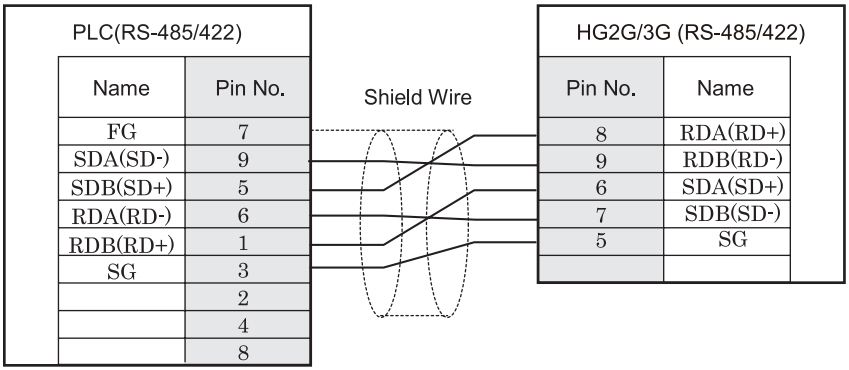


D-sub, 9P connector socket type

D-sub, 9P connector plug type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2G/3G (Terminal)

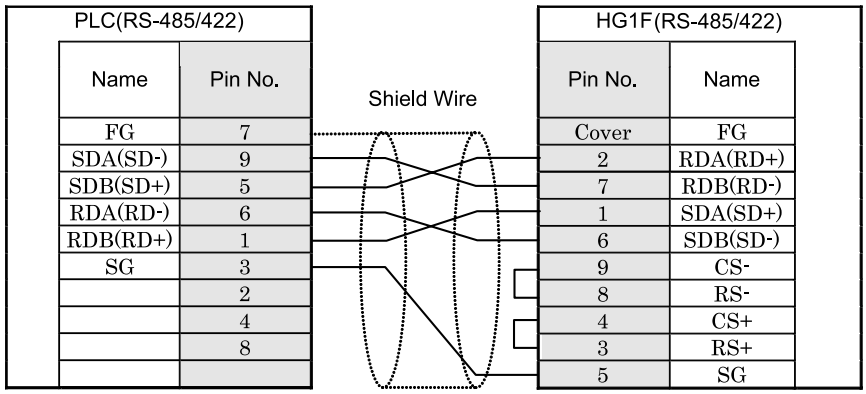


D-sub, 9P connector socket type

Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

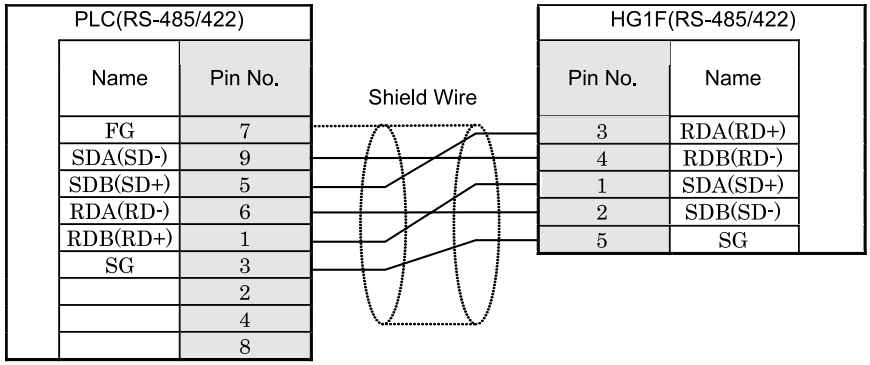
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 9P connector socket type

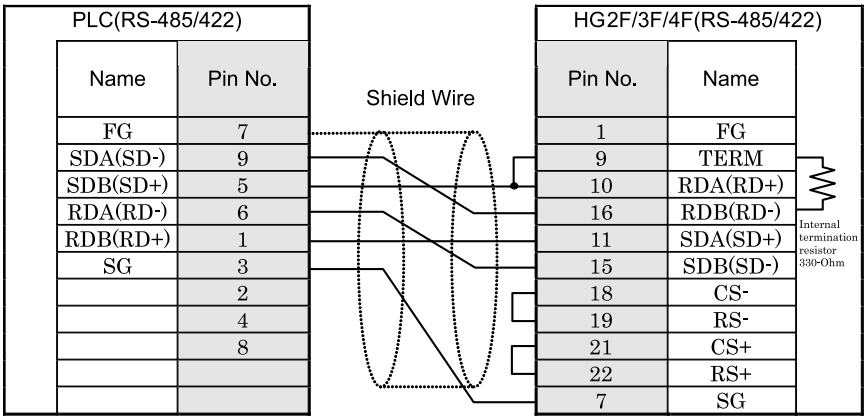
Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F

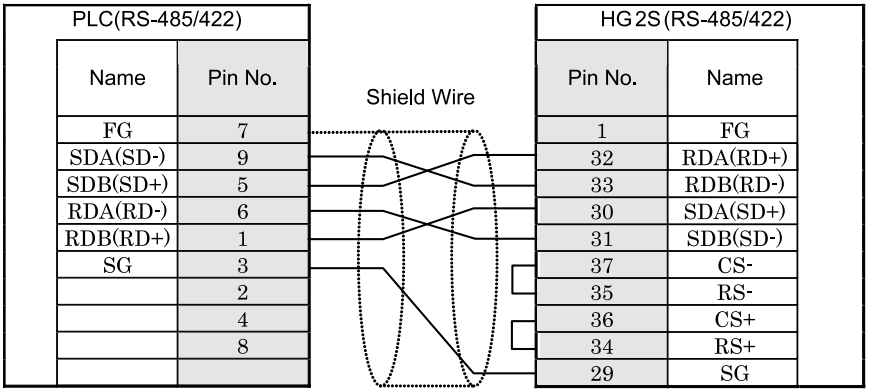


D-sub, 9P connector socket type

D-sub, 25P connector socket type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2S



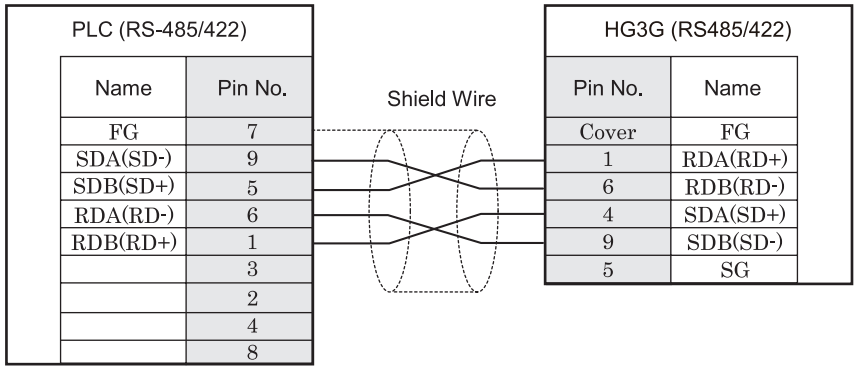
D-sub, 9P connector socket type

D-sub, 37P connector socket type

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

3.3.3 Connection Diagram 3: RS-422 Link unit to MICRO/I

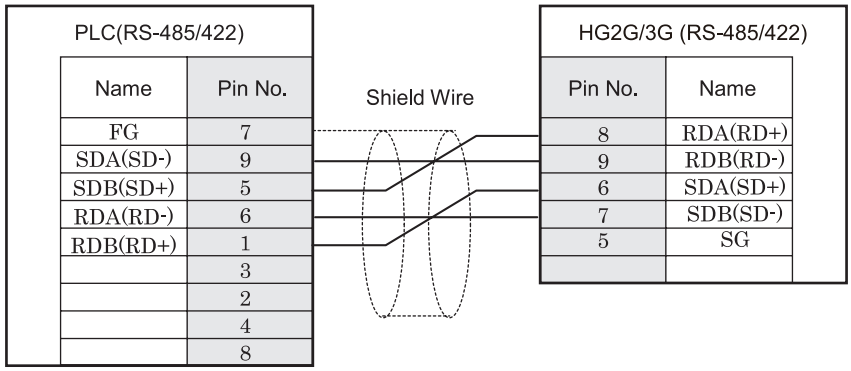
HG3G (Connector)



D-sub, 9P connector socket type — D-sub, 9P connector plug type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

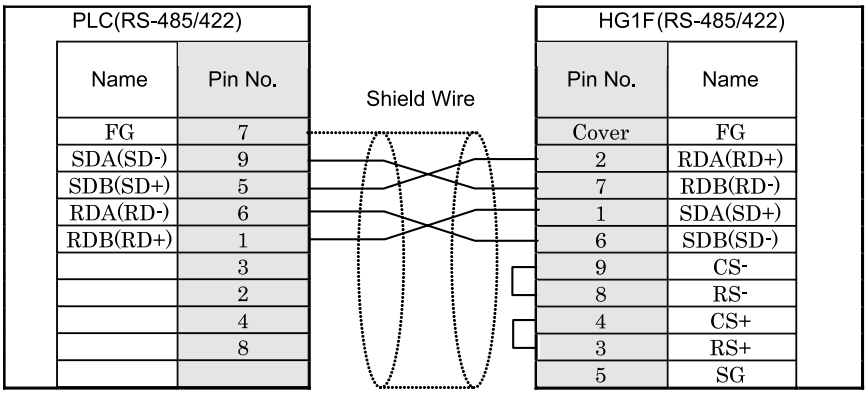
HG2G/3G (Terminal)



D-sub, 9P connector socket type — Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

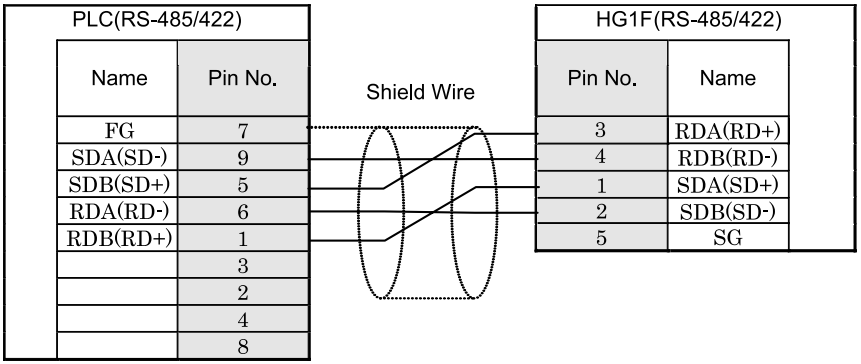
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 9P connector socket type

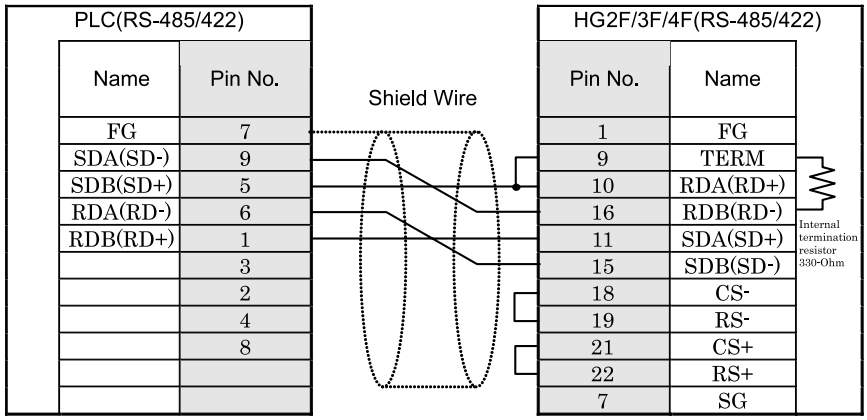
Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F

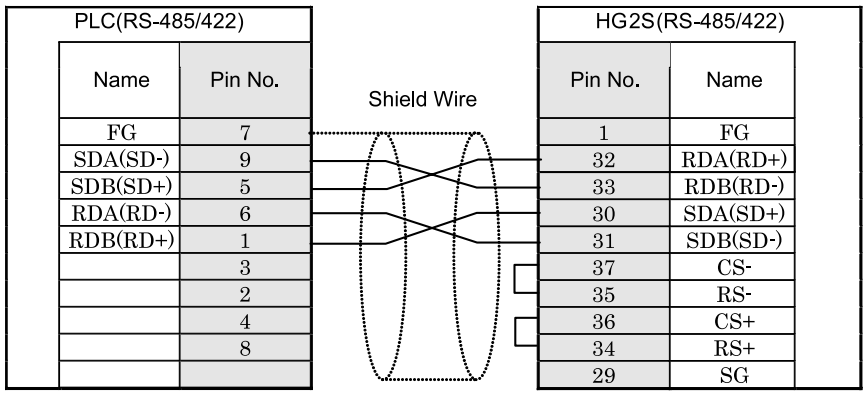


D-sub, 9P connector socket type

D-sub, 25P connector socket type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2S



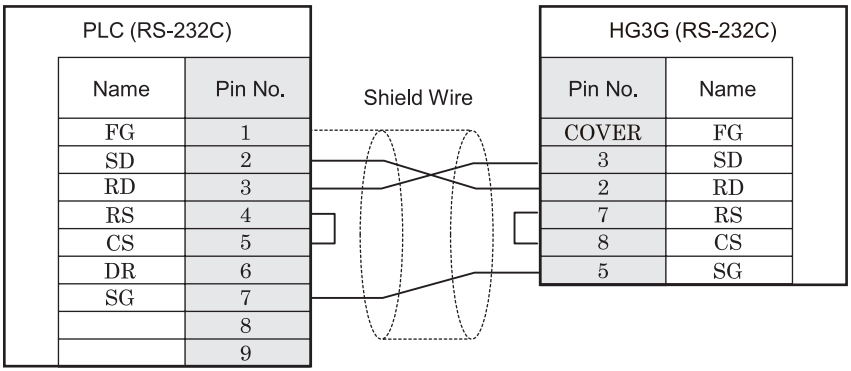
D-sub, 9P connector socket type

D-sub, 37P connector socket type

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

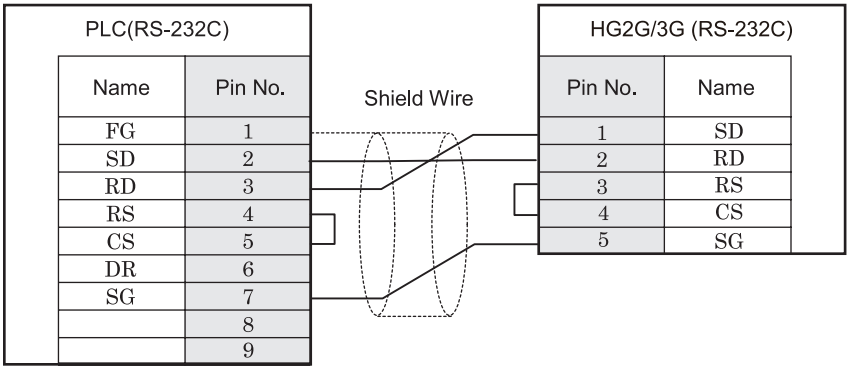
3.3.4 Connection Diagram 4: CPU Unit Link I/F to MICRO/I

HG3G (Connector)



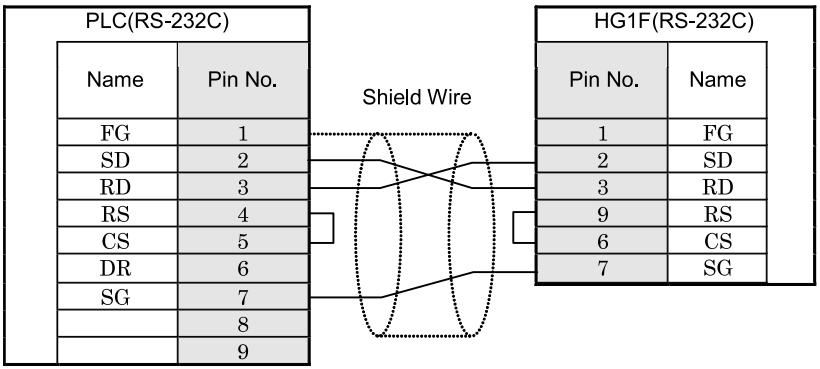
D-sub, 9P connector socket type (unit side) D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 9P connector socket type (unit side) Terminal

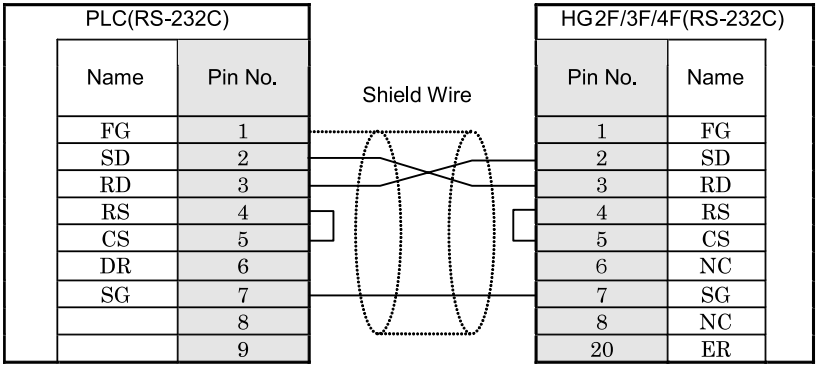
HG1F (Connector)



D-sub, 9P connector socket type (unit side)

D-sub, 9P connector socket type

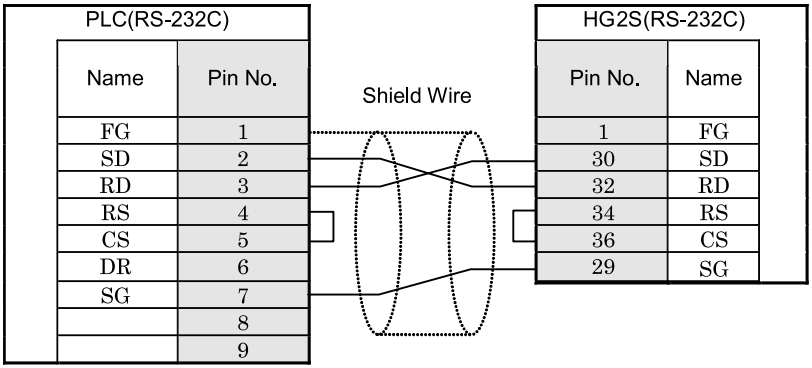
HG2F/3F/4F



D-sub, 9P connector socket type (unit side)

D-sub, 25P connector socket type

HG2S

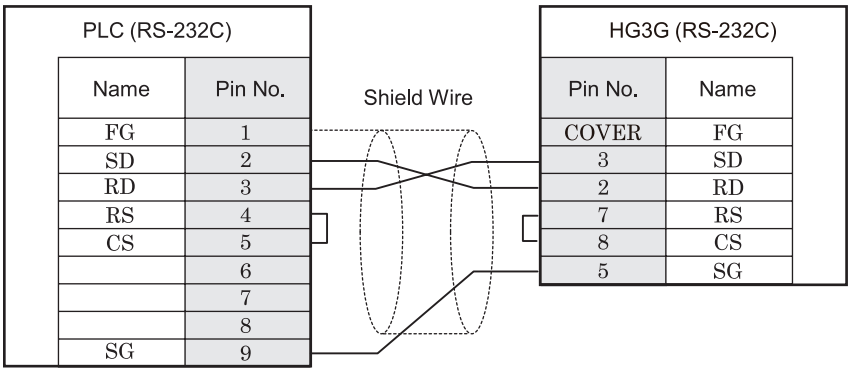


D-sub, 9P connector socket type (unit side)

D-sub, 37P connector socket type

3.3.5 Connection Diagram 5: CPU Unit Link I/F to MICRO/I

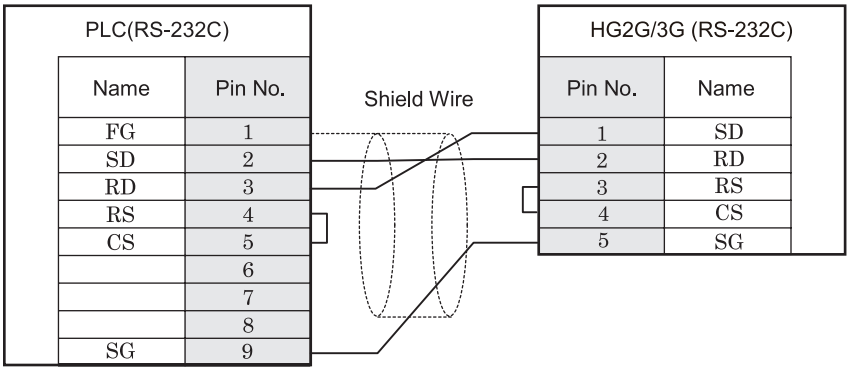
HG3G (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector plug type

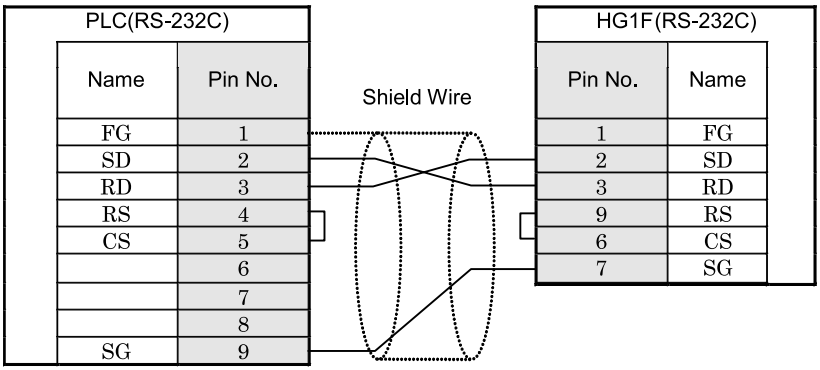
HG2G/3G (Terminal)



D-sub, 9P connector socket type

Terminal

HG1F (Connector)

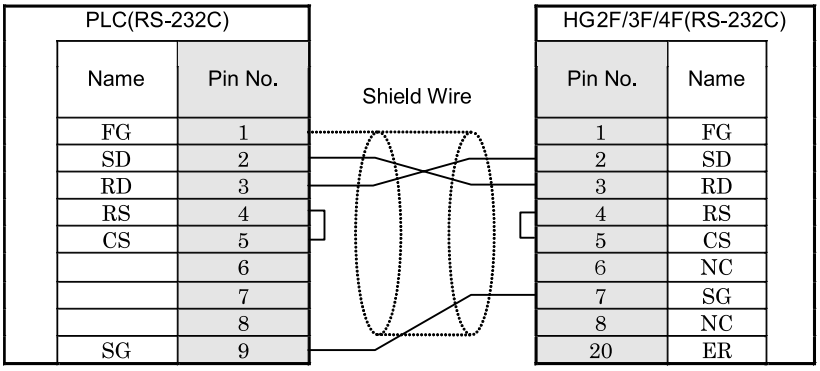


D-sub, 9P connector socket type

D-sub, 9P connector socket type

- In case of HG1F a connection cable is available (part number: HG9Z-XC213).
- The connection diagram 5 is not same as HG9Z-XC213. But both diagrams are available. Refer to Chapter 7 “1.17 PLC connection cable: HG9Z-XC213” on page 601 about the connection diagram of HG9Z-XC213.

HG2F/3F/4F

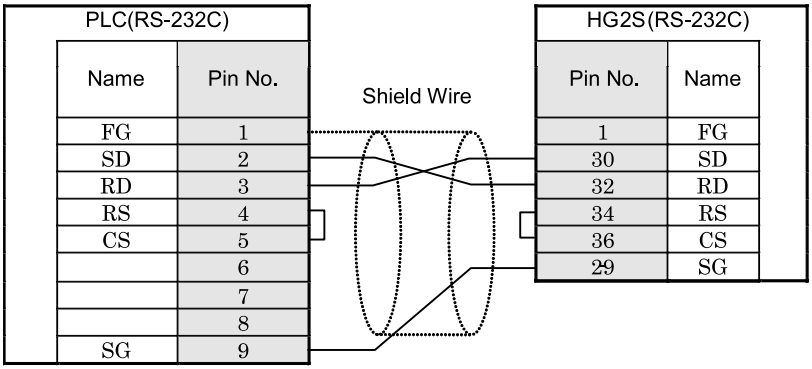


D-sub, 9P connector socket type

D-sub, 25P connector socket type

- In case of HG2F/3F/4Fa connection cable is available (part number: HG9Z-3C155).
- The connection diagram 5 is not same as HG9Z-3C155. But both diagrams are available. Refer to Chapter 7 “1.8 PLC connection cable: HG9Z-3C155” on page 595 about the connection diagram of HG9Z-3C155.

HG2S

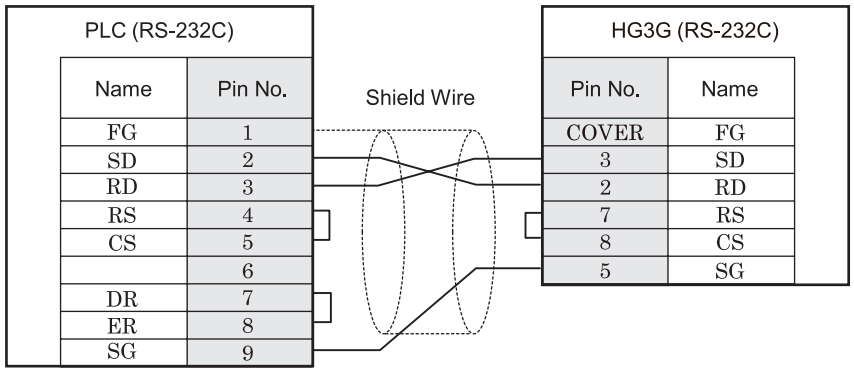


D-sub, 9P connector socket type

D-sub, 37P connector socket type

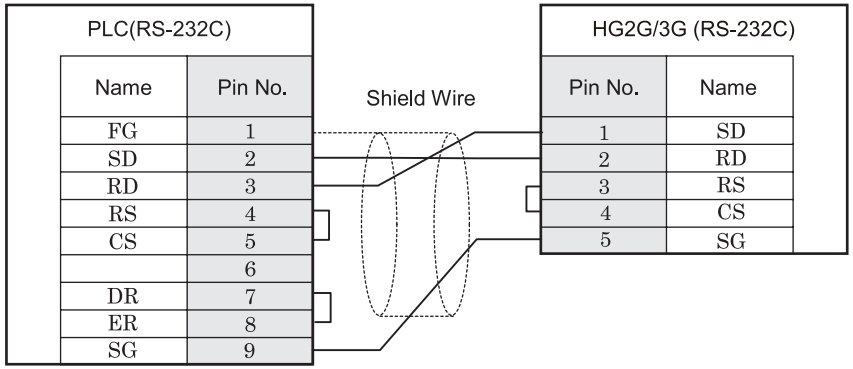
3.3.6 Connection Diagram 6: PLC (RS-232C) I/F to MICRO/I

HG3G (Connector)



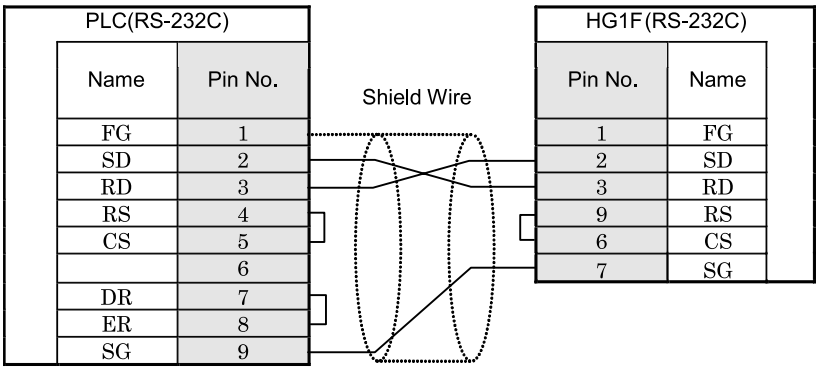
D-sub, 9P connector socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 9P connector socket type — Terminal

HG1F (Connector)

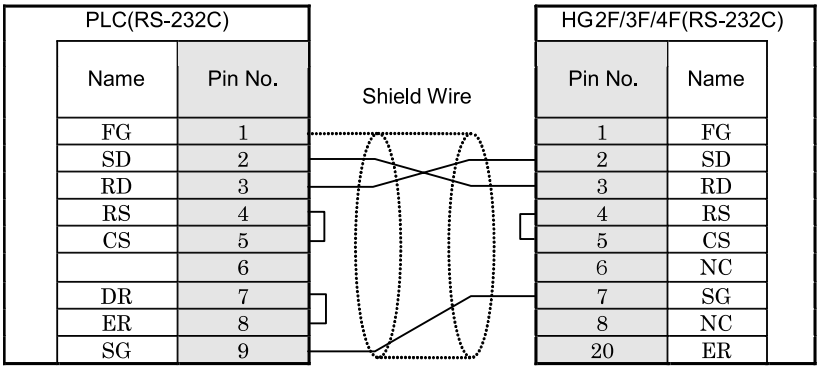


D-sub, 9P connector socket type

D-sub, 9P connector socket type

- In case of HG1F a connection cable is available (part number: HG9Z-XC213).
- The connection diagram 6 is not same as HG9Z-XC213. But both diagrams are available. Refer to Chapter 7 “1.17 PLC connection cable: HG9Z-XC213” on page 601 about the connection diagram of HG9Z-XC213.

HG2F/3F/4F

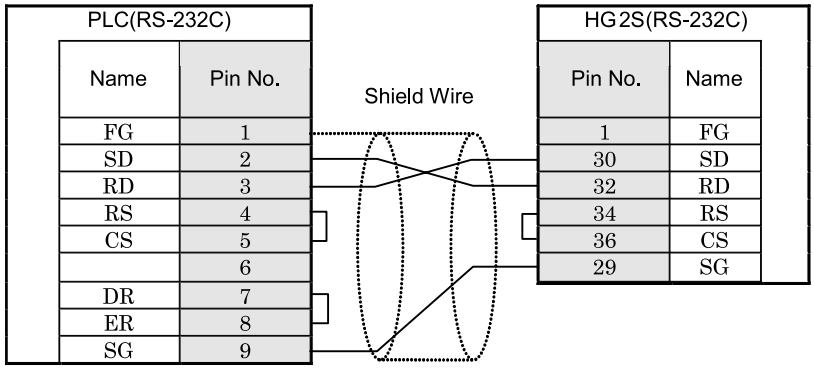


D-sub, 9P connector socket type

D-sub, 25P connector socket type

- In case of HG2F/3F/4Fa connection cable is available (part number: HG9Z-3C155).
- The connection diagram 6 is not same as HG9Z-3C155. But both diagrams are available. Refer to Chapter 7 “1.8 PLC connection cable: HG9Z-3C155” on page 595 about the connection diagram of HG9Z-3C155.

HG2S

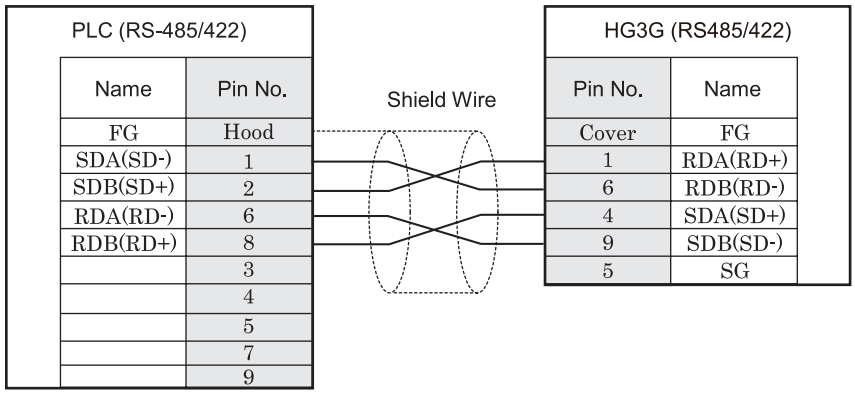


D-sub, 9P connector socket type

D-sub, 37P connector socket type

3.3.7 Connection Diagram 7: RS-422 Communication Board to MICRO/I

HG3G (Connector)

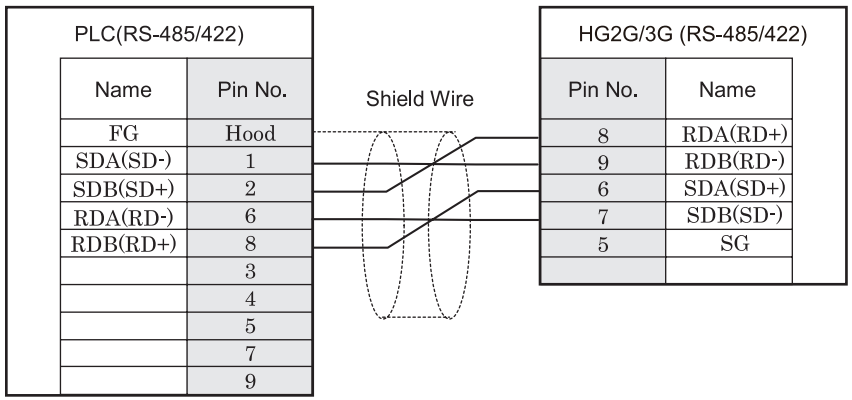


D-sub, 9P connector socket type

D-sub, 9P connector plug type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2G/3G (Terminal)

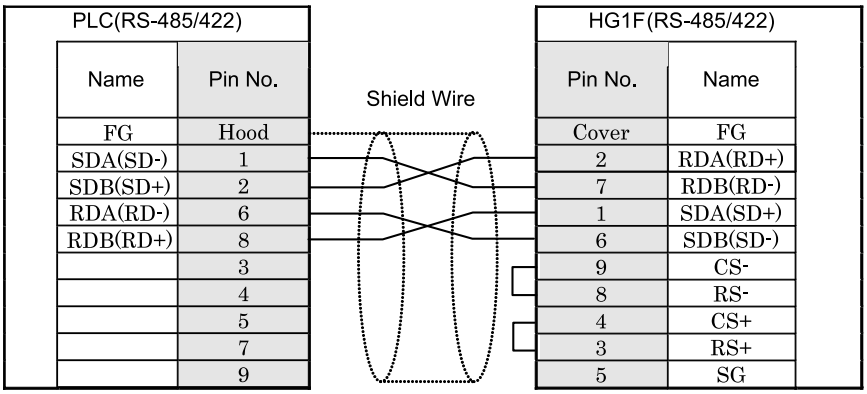


D-sub, 9P connector socket type

Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

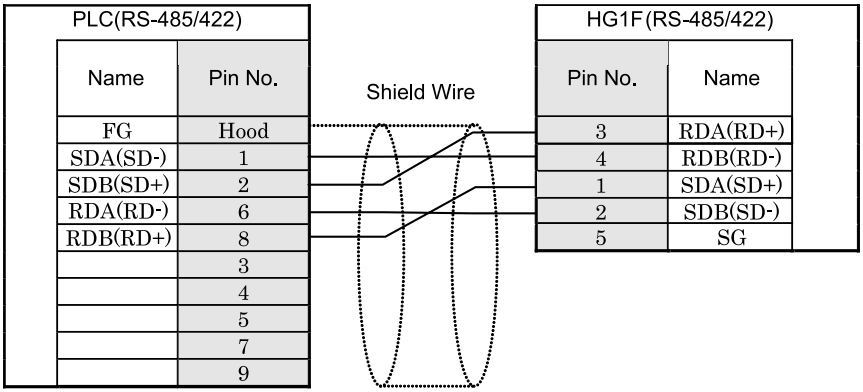
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 9P connector socket type

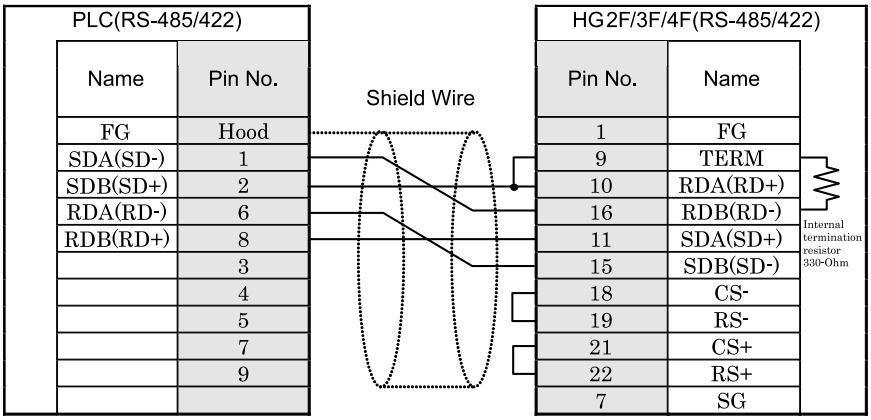
Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F

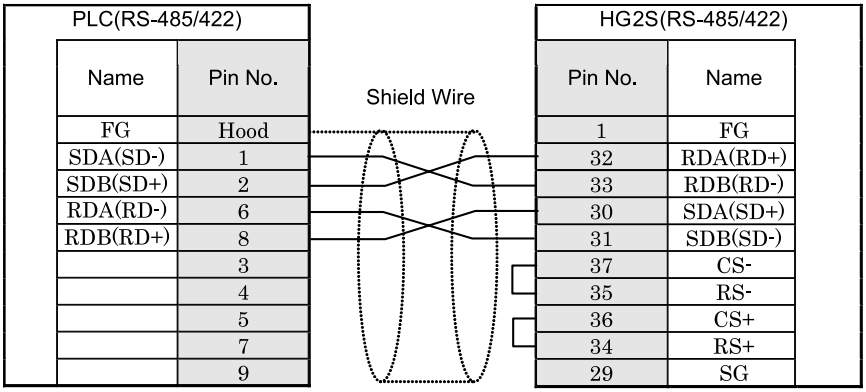


D-sub, 9P connector socket type

D-sub, 25P connector socket type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2S



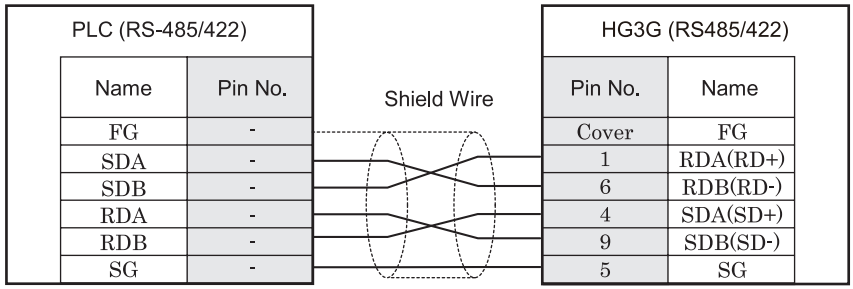
D-sub, 9P connector socket type

D-sub, 37P connector socket type

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

3.3.8 Connection Diagram 8: RS-422 Adaptor to MICRO/I

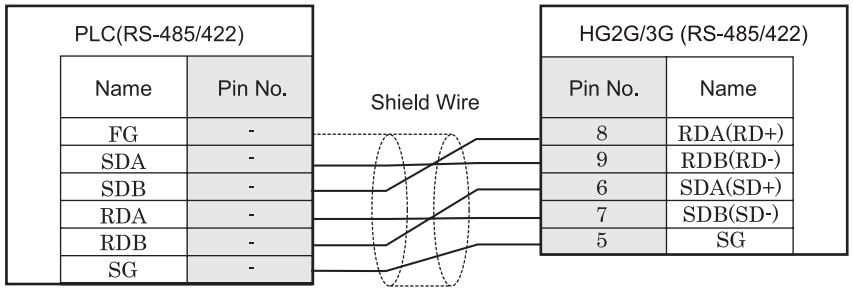
HG3G (Connector)



Screw terminal block — D-sub, 9P connector plug type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

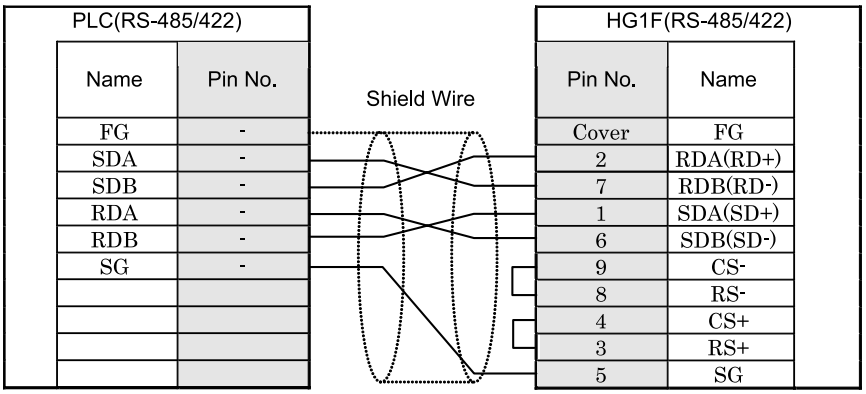
HG2G/3G (Terminal)



Screw terminal block — Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

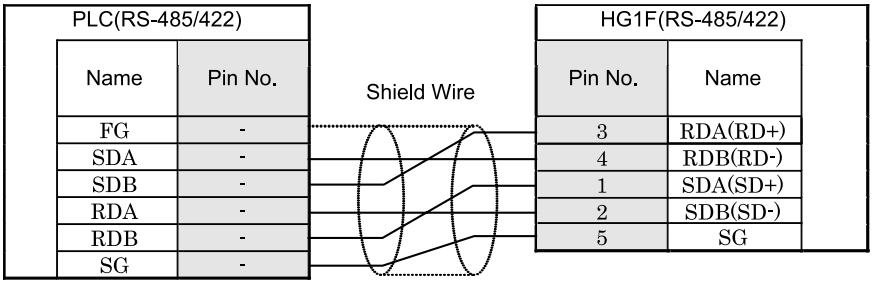
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)



Screw terminal block

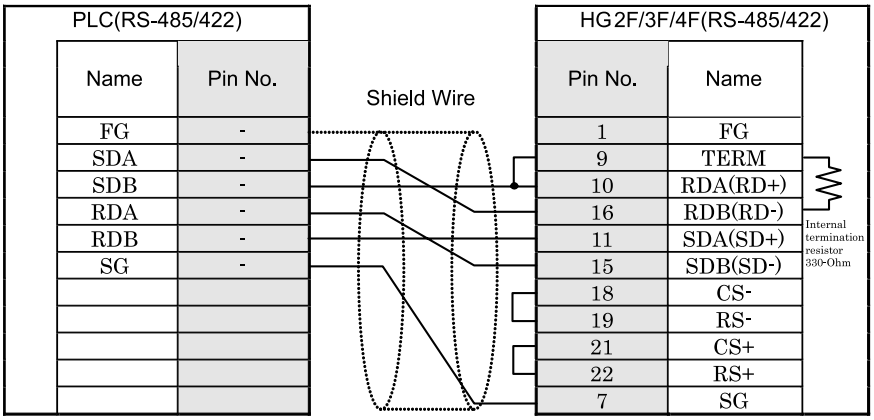
Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F

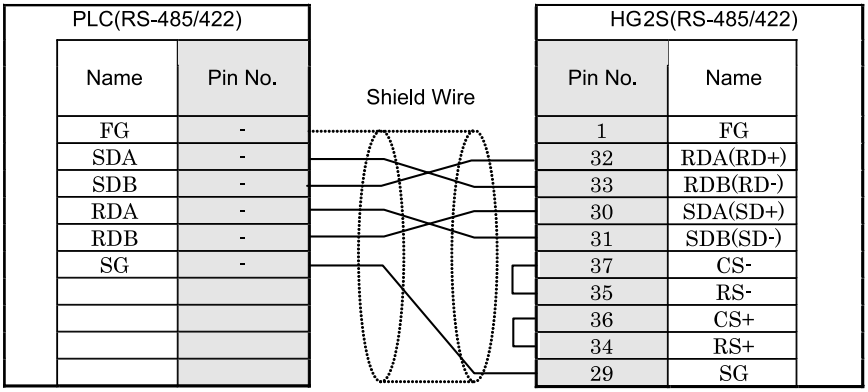


Screw terminal block

D-sub, 25P connector socket type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.

HG2S



Screw terminal block

D-sub, 37P connector socket type

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission.
- There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

3.4 Environment Settings

3.4.1 PLC Link Unit Settings

Perform the settings using the rotary switches and DIP switches on the Link Unit.

Item		Setting	
		RS-232C	RS-422
Transmission Control Protocol		1:N	
Command Level		Levels 1, 2 and 3 are valid	
Baud Rate	Use the same settings as for the MICRO/I.	1200, 2400, 4800, 9600 or 19200	
Transmission Code		7 or 8 bit ASCII	
Stop Bits		1 or 2	
Unit No.		0 to 31(DEC)	
Parity		Even/Odd	
CTS Switch		0V (always on)	
Synchronization Switch		Internal	
Termination Resistor		---------	Yes

- Refer to the Link Unit manual for details.
- Select using Register Command or not in [Project Settings] - [Host I/F Driver].

3.4.2 CPU Unit RS-232C Link I/F Settings

Write the RS-232C I/F setting item for the System Settings Area using a peripheral tool (such as Proconn).

System Settings Area		Item	Setting
C20H/ 28H/40H/60H	CQM1H C200HS/ C200HE/ C200HG/ C200HX		
DM0920	DM6645	Standard/Individual Setting *1	Same setting as the MICRO/I
		Mode	PLC Link Mode
DM0921	DM6646	Communication parameters for when the previous item is set to Individual.	Use the same settings as for the MICRO/ I.
DM0922	DM6647	Transmission Delay	0 msec
		RS/CS presence	None
DM0923	DM6648	Unit No.	Same setting as the MICRO/I

*1. Standard settings
Baud rate: 9600 bps
Data Bits: 7 bits
Stop Bits: 2 bits
Parity: Even

Refer to the PLC manual for details.

For CQM 1 and C200HS, set the switch number 5 on the CPU Unit setting switch to OFF.

3.4.3 CPU Unit RS-232C Link I/F Settings (SYSMAC-CS1 Series)

Write the RS-232C I/F setting items for the System Settings Area using a peripheral tool (such as Proconn).

Channel	Item	Setting
160	Optional/Initial Setting *1	Set to 1 for Optional Setting
	Serial Communication mode	Set to PLC Link
	Data Bits	Use the same settings as for the MICRO/I.
	Stop Bits	
	Parity	
161	Port Communication Speed	Use the same settings as for the MICRO/I.
162	In the case of No Protocol Mode	Do not set
163	Unit No.	Set to the same as the MICRO/I PLC Link Station Number.
164	In the case of No Protocol Mode	Do not set

*1. Initial settings
Baud rate: 9600 bps
Data Bits: 7 bits
Stop Bits: 2 bits
Parity: Even

Refer to the PLC manual for details.

For the SYSMAC-CS1 Series, set switch number 5 on the CPU Unit setting switch to OFF to enable you to make your own communication settings.

3.4.4 C200Hα(Communication Board) Settings

Write the Communication Board setting items for the System Settings Area using a peripheral tool (such as Proconn).

System Settings Area		Item	Setting
Port A	Port B		
DM6555	DM6550	Standard Setting/Individual Setting *1	Same setting as the MICRO/I
		Mode	PLC Link Mode
DM6556	DM6551	Communication parameters for when the previous item is set to Individual.	Same setting as the MICRO/I
DM6557	DM6552	Transmission Delay	0 msec
DM6558	DM6553	Unit No.	Same setting as the MICRO/I

*1. Standard settings
Baud rate: 9600bps
Data Bits: 7 bits
Stop Bits: 2 bits
Parity: Even

Set DIP switch SW1 to the 4 side (4 lines).

Set DIP switch SW2 to ON to turn the termination resistor setting ON. Refer to the Communication Board manual for details.

3.4.5 SYSMAC-CS1 Series (Communication Board) Settings

Write the Communication Board setting items for the System Settings Area using a peripheral tool (such as Proconn).

System Settings Area		Item	Setting
Port 1	Port 2		
DM32000	DM32010	Optional/Initial Setting *1(*1)	Set to 1 for Optional Setting
		Serial Communication mode	Set to PLC Link
		Data Bits	Use the same settings as for the MICRO/I.
		Stop Bits	
		Parity	
DM32001	DM32011	Port Communication Speed	Use the same settings as for the MICRO/I.
DM32002	DM32012	Transmission Delay setting	0 for default (0mses)
		Delay time setting	
DM32003	DM32013	CTS control	Set to 0 for no
		Unit No.	Use the same settings as for the MICRO/I.

*1. Initial settings
Baud rate: 9600bps
Data Bits:7bits
Stop Bits:2bits
Parity: Even

Set the DIP switch 4 line.

Set the DIP switch to ON to turn the termination resistor setting ON.

3.4.6 CPU Direct Settings (CPM1/CPM1A/CPM2A)

Connect via CPM-CIF01 (RS232C)/CPM 1-CIF11 (RS422).

Item	Setting
	RS-232C
Baud Rate	9600 bps
Data Bits	7 bits
Stop Bits	2 bits
Parity	Even

The communication settings are fixed. Refer to the PLC manual for details.

3.4.7 SYSMAC-CS1/CJ Series (Ethernet Communication Unit) Settings

Write the Communication Board setting items for the System Settings Area using a peripheral tool (such as Proconn).

IP Address (for MICRO/I)	Set the IP Address for MICRO/I. (Set the Item in [Communication Interface] tab.)
Subnet Mask	Set the Subnet Mask for MICRO/I. (Set the Item in [Communication Interface] tab.)
Default Gateway	Set the Default Gateway for MICRO/I. (Set the Item in [Communication Interface] tab.)
IP Address (Etherent Communication Unit)	Set the IP Address for Ethernet Communication Unit. (Set the Item in [Host I/F network] tab.)
Port Number (Etherent Communication Unit)	Set the Port Number for Ethernet Communication Unit. (Set the Item in [Host I/F network] tab.)
FINS Network Address (Ethernet Communication Unit)	Set the network address which is set in the Etherent Communication Unit. (Set the Item in[Host I/F network] tab.)
FINS Node Address (Ethernet Communication Unit)	Set the node address which is set in the Ethernet Communication Unit. (Set the Item in [Host I/F network] tab.)
HMI FINS Network Address	Set the network address of the MICRO/I. (Set the Item in [Host I/F Driver] tab.)
HMI FINS Node Address	Set the node address of the MICRO/I. (Set the Item in [Host I/F Driver] tab.

The communication settings are fixed. Refer to the Ethernet Communication Unit manual for details.

3.5 Usable Devices

3.5.1 SYSMAC-C (when the PLC type setting is SYSMAC-C Series)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input/Output Internal Relay	R	CIO	0 - 99915, 120000 - 614315	R/W	
Link Relay	LR	LR	0 - 19915	R/W	
Holding Relay	HR	HR	0 - 51115	R/W	
Auxiliary Memory Relay	AR	AR	0 - 95915	R	
Timer (contact)	TIMC	TC	0 - 2047	R	
Counter (contact)	CNTC	TC	0 - 4095	R	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input/Output Internal Relay	WR	CIO	0 - 999, 1200 - 6143	R/W	
Link Relay	WLR	LR	0 - 199	R/W	
Holding Relay	WHR	HR	0 - 511	R/W	
Auxiliary Memory Relay	WAR	AR	0 - 959	R	
Timer (current value)	TIMN	TC	0 - 2047	R	
Counter (current value)	CNTN	TC	0 - 4095	R	
Data Memory	DM	DM	0 - 9999	R/W	

WARNING

Important points to note regarding setting performing Bit Write operations.

With a Bit Write operation, the word data is first read from the PLC, and a logic operation (AND or OR) is performed on the relevant bit before writing it to the PLC to ensure that the values of other bits in the same channel are preserved. However, be certain that the PLC does not modify the data in the channel during the time that the MICRO/I is writing the data.

3.5.2 SYSMAC-CS1 Series (when the PLC type setting is SYSMAC-CS1 Series)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Core I/O	CIO	CIO	0 - 614315	R/W	
Work Area	WR	WR	0 - 51115	R/W	
Holding Bit	HR	HR	0 - 51115	R/W	
Auxiliary Bit	AR	AR	0 - 95915	R	

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Timer (Contact)	TIMC	TIMC	0 - 4095	R	
Counter (Contact)	CNTC	CNTC	0 - 4095	R	
Task Area	TK	TK	0 - 31	R	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Core I/O	WCIO	CIO	0 - 6143	R/W	
Work Area	WWR	WR	0 - 511	R/W	
Holding Bit	WHR	HR	0 - 511	R/W	
Auxiliary Bit	WAR	AR	0 - 959	R	
Timer (Present value)	TIMN	TIM	0 - 4095	R	
Counter (Present value)	CNTN	CNT	0 - 4095	R	
Data Memory	DM	DM	0 - 32767	R/W	
Expansion Data Memory (Bank 0)	EM0	EM0	0 - 32767	R/W	
Expansion Data Memory (Bank 1)	EM1	EM1	0 - 32767	R/W	
Expansion Data Memory (Bank 2)	EM2	EM2	0 - 32767	R/W	
Expansion Data Memory (Bank 3)	EM3	EM3	0 - 32767	R/W	
Expansion Data Memory (Bank 4)	EM4	EM4	0 - 32767	R/W	
Expansion Data Memory (Bank 5)	EM5	EM5	0 - 32767	R/W	
Expansion Data Memory (Bank 6)	EM6	EM6	0 - 32767	R/W	
Expansion Data Memory (Bank 7)	EM7	EM7	0 - 32767	R/W	
Expansion Data Memory (Bank 8)	EM8	EM8	0 – 32767	R/W	
Expansion Data Memory (Bank 9)	EM9	EM9	0 - 32767	R/W	
Expansion Data Memory (Bank A)	EMA	EMA	0 - 32767	R/W	
Expansion Data Memory (Bank B)	EMB	EMB	0 - 32767	R/W	
Expansion Data Memory (Bank C)	EMC	EMC	0 - 32767	R/W	
Task Area (Status)	TKS	TKS	0 - 31	R	
Contents Register	IR	IR	0 - 15	R	
Data Register	DR	DR	0 - 15	R	

- The Task Flag (bit) is 1 (ON) when the cycle execution task is in the executable state, and 0 (OFF when it is in the unexcited or standby states.

- The Task Flag (Status) indicates the following states.
  0: Never started
  1: In the stopped state after starting once
  2: Starting

3.5.3 SYSMAC-CS1/CJ1 Ethernet (When the PLC type setting is SYSMAC-CS1/CJ1 Ethernet)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Core I/O	CIO	CIO	0 - 614315	R/W	
Work Area	WR	WR	0 - 51115	R/W	
Holding Bit	HR	HR	0 - 51115	R/W	
Auxiliary Bit	AR	AR	0 - 95915	R	
Timer (Contact)	TIMC	TIMC	0 - 4095	R	
Counter (Contact)	CNTC	CNTC	0 - 4095	R	
Task Area	TK	TK	0 - 31	R	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Core I/O	WCIO	CIO	0 - 6143	R/W	
Work Area	WWR	WR	0 - 511	R/W	
Holding Bit	WHR	HR	0 - 511	R/W	
Auxiliary Bit	WAR	AR	0 - 959	R	
Timer (Present value)	TIMN	TIM	0 - 4095	R/W	
Counter (Present value)	CNTN	CNT	0 - 4095	R/W	
Data Memory	DM	DM	0 - 32767	R/W	
Expansion Data Memory (Bank 0)	EM0	EM0	0 - 32767	R/W	
Expansion Data Memory (Bank 1)	EM1	EM1	0 - 32767	R/W	
Expansion Data Memory (Bank 2)	EM2	EM2	0 - 32767	R/W	
Expansion Data Memory (Bank 3)	EM3	EM3	0 - 32767	R/W	
Expansion Data Memory (Bank 4)	EM4	EM4	0 - 32767	R/W	
Expansion Data Memory (Bank 5)	EM5	EM5	0 - 32767	R/W	
Expansion Data Memory (Bank 6)	EM6	EM6	0 - 32767	R/W	
Expansion Data Memory (Bank 7)	EM7	EM7	0 - 32767	R/W	
Expansion Data Memory (Bank 8)	EM8	EM8	0 – 32767	R/W	
Expansion Data Memory (Bank 9)	EM9	EM9	0 - 32767	R/W	
Expansion Data Memory (Bank A)	EMA	EMA	0 - 32767	R/W	
Expansion Data Memory (Bank B)	EMB	EMB	0 - 32767	R/W	
Expansion Data Memory (Bank C)	EMC	EMC	0 - 32767	R/W	
Expansion Data Memory (Bank D)	EMD	EMD	0 - 32767	R/W	
Expansion Data Memory (Bank E)	EME	EME	0 - 32767	R/W	
Expansion Data Memory (Bank F)	EMF	EMF	0 - 32767	R/W	
Expansion Data Memory (Bank 10)	EM10	EM10	0 - 32767	R/W	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Expansion Data Memory (Bank 11)	EM11	EM11	0 - 32767	R/W	
Expansion Data Memory (Bank 12)	EM12	EM12	0 - 32767	R/W	
Expansion Data Memory (Bank 13)	EM13	EM13	0 - 32767	R/W	
Expansion Data Memory (Bank 14)	EM14	EM14	0 - 32767	R/W	
Expansion Data Memory (Bank 15)	EM15	EM15	0 – 32767	R/W	
Expansion Data Memory (Bank 16)	EM16	EM16	0 - 32767	R/W	
Expansion Data Memory (Bank 17)	EM17	EM17	0 - 32767	R/W	
Expansion Data Memory (Bank 18)	EM18	EM18	0 - 32767	R/W	
Task Area (Status)	TKS	TKS	0 - 31	R	
Contents Register	IR	IR	0 - 151	R/W	
Data Register	DR	DR	0 - 15	R/W	

- The Task Flag (bit) is 1 (ON) when the cycle execution task is in the executable state, and 0 (OFF when it is in the unexcited or standby states.

- The Task Flag (Status) indicates the following states.
  0: Never started
  1: In the stopped state after starting once
  2: Starting

- In SYSMAC-CS1/CJ Ethernet Host I/F driver, Index Register is defined as a 32bit device and all 32bits are available. This register is originally 32bit device in Omron PLC, but only lower 16bits are available in SYSMAC-CS1 Series Host I/F driver. This is different from SYSMAC-CS1 Series Host I/F driver.

4 Allen-Bradley PLCs

4.1 Connection Table

4.1.1 Compatible PLCs

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
PLC-5	All PLC-5*1 models that can be connected to 1770-KF2	1770-KF2*1	RS-232C Connection Diagram 2 (refer to P168)	ER control	PLC-5 (Half Duplex)
			RS-485 (422)-4 Connection Diagram 3 (refer to P170)		
	All PLC-5*1 models	Not required (connects to CPU unit)	RS-232C Connection Diagram2 (refer to P168)		
			RS-485 (422)-4 Connection Diagram 4 (refer to P173)		
SLC 500	SLC5/03*1 SLC5/04 SLC5/05	Not required (connects to CPU unit)	RS-232C Connection Diagram 1 (refer to P166)		MicroLogix/ SLC500 Full Duplex) / SLC500 (Half Duplex)
Micro -Logix	MicroLogix1000 MicroLogix1200*1	Not required (connects to CPU unit)	RS-232C Connection Diagram 5 (refer to P176)		
	MicroLogix1100*1	Not required (connects to CPU unit)	RS-232C Connection Diagram 8 (refer to P182)		
	MicroLogix1500*1	Not required (connects to Mini Din connector on CPU unit)	RS-232C Connection Diagram 5 (refer to P176)		
		Not required (connects to D-sub connector on CPU unit)	RS-232C Connection Diagram 6 (refer to P178)		

*1. We tested with the PLC of these parts.

If your existing project is using “SLC500” with Ver.2.30 or earlier, “SLC500 (Half Duplex)” will appear to the Protocol setting with Ver.2.40 or later.

Selecting DirectLogic Logix DF1 (Full Duplex) or DirectLogic (Ethernet) for the Host I/F Driver allows the user to use the 1: N Communication function.

1: N Communication function (Refer to Chapter 6 “6 1: N Communication (Multi-drop)” on page 579)

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name			MICRO\I Type	
			Interface	Flow Control	Host I/F Driver	HG2G/ 3G	HG1F/ 2F/ 2S/ 3F/ 4F
Control-Logix[*1]	ControlLogix 5550 ControlLogix 5555[*1]	Not required (connects to CPU unit)[*1]	RS-232C Connection Diagram 7[*1] (refer to P180)	None	Logix DF1 (Full Duplex)	X	X
CompactLogix	1768 CompactLogix 1769 Compact-Logix[*1]	Not required (connects to CPU unit)	RS-232C Connection Diagram 7 (refer to P180)				
FlexLogix	1794-L33 1794-L34	Not required (connects to CPU unit)	RS-232C Connection Diagram 7 (refer to P180)				

*1. We tested with the PLC of these parts.

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name		MICRO\I Type	
			Interface	Host I/F Driver	HG2G/ 3G	HG1F/ 2F/ 2S/ 3F/ 4F
ControlLogix	ControlLogix5550 ControlLogix5555[*1]	1756-ENBT	Ethernet	Ethernet/IP	X	X
CompactLogix	1769 Compact-Logix[*1]	Not required (connects to CPU unit)				
PLC-5	PLC-5[*1]	1785-ENET[*1]				
	PLC-5E	Not required (connects to CPU unit)				
SLC 500	SLC5/05[*1]	Not required (connects to CPU unit)[*1]				
	SLC5/03, SLC5/04 SLC5/05[*1]	1761-NET-ENI[*1]				
MicroLogix	MicroLogix1000 MicroLogix1100[*1] [*2] MicroLogix1200 MicroLogix1500[*1]	1761-NET-ENI[*1]				
	MicroLogix1100	Not required (connects to Built-in Ethernet port on CPU unit)[*2]				

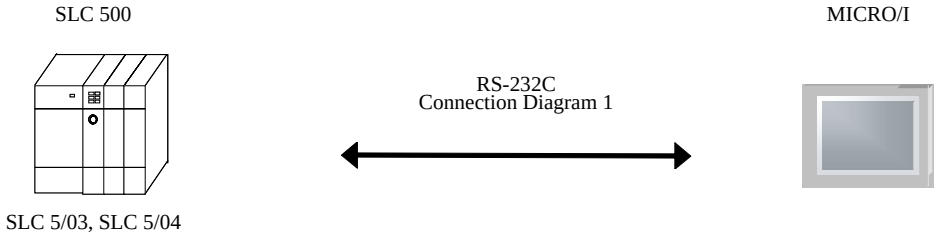
*1. We tested with the PLC of these parts.

*2. To connect the Ethernet port on MicroLogix1100, check the firmware version. MICRO/I supports version 4 or later. (The latest firmware is on the Allen-Bradley web site.)

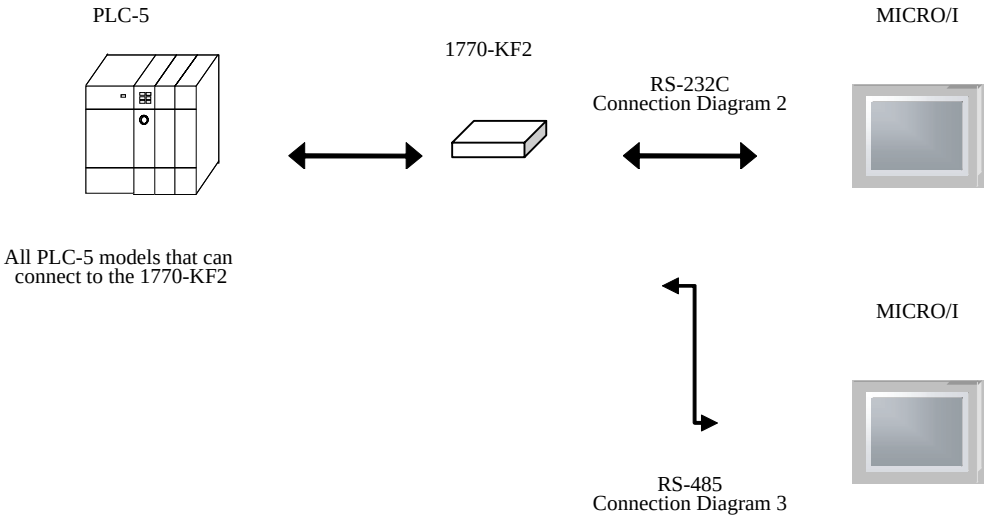
4.2 System Configuration

This is the system configuration to connect Allen-Bradley PLCs to MICRO/I.

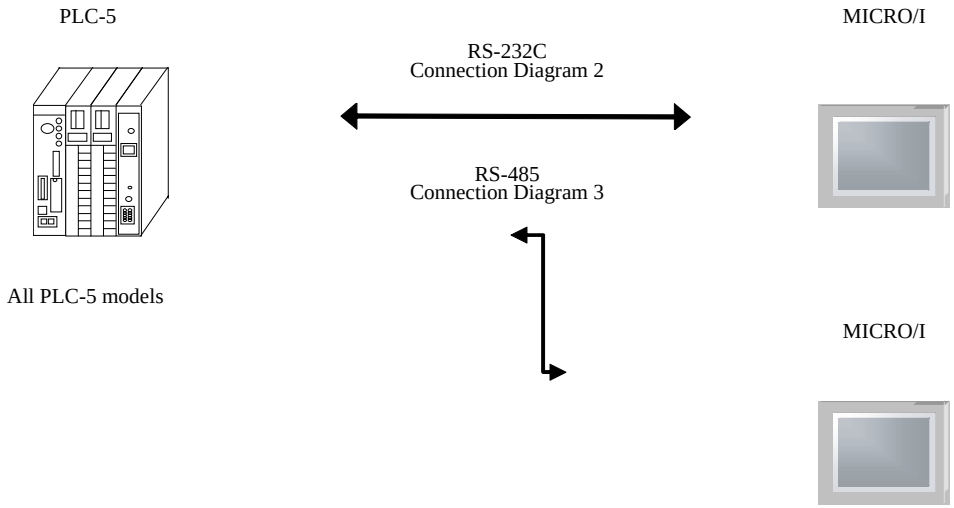
4.2.1 SLC 500 (connected to the CPU Channel 0 serial port)



4.2.2 PLC-5 (Interface Module)

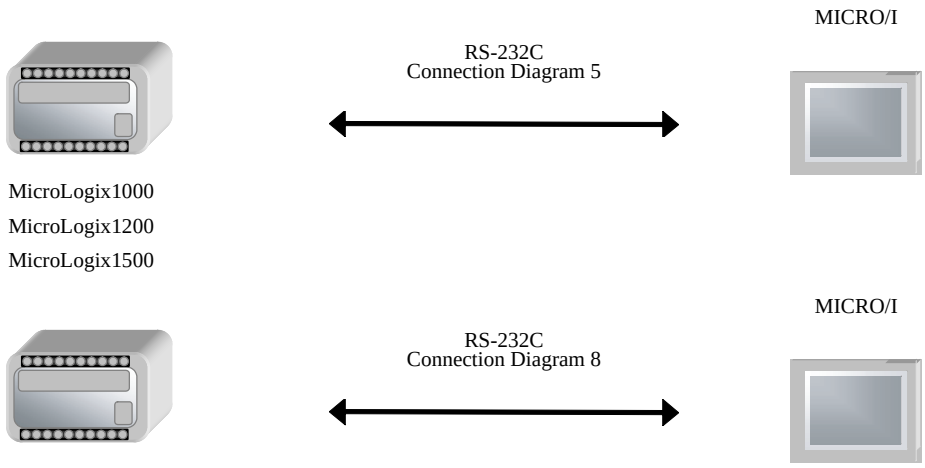


4.2.3 PLC-5 (CPU Direct)

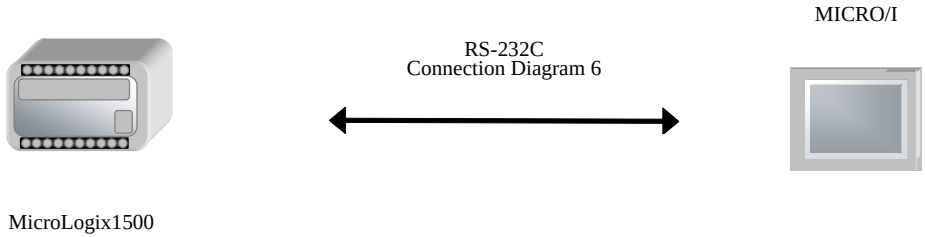


Connect to the CPU Channel 0 serial port.

4.2.4 MicroLogix 1000/1100/1200/1500 (Mini Din connector on CPU Unit)

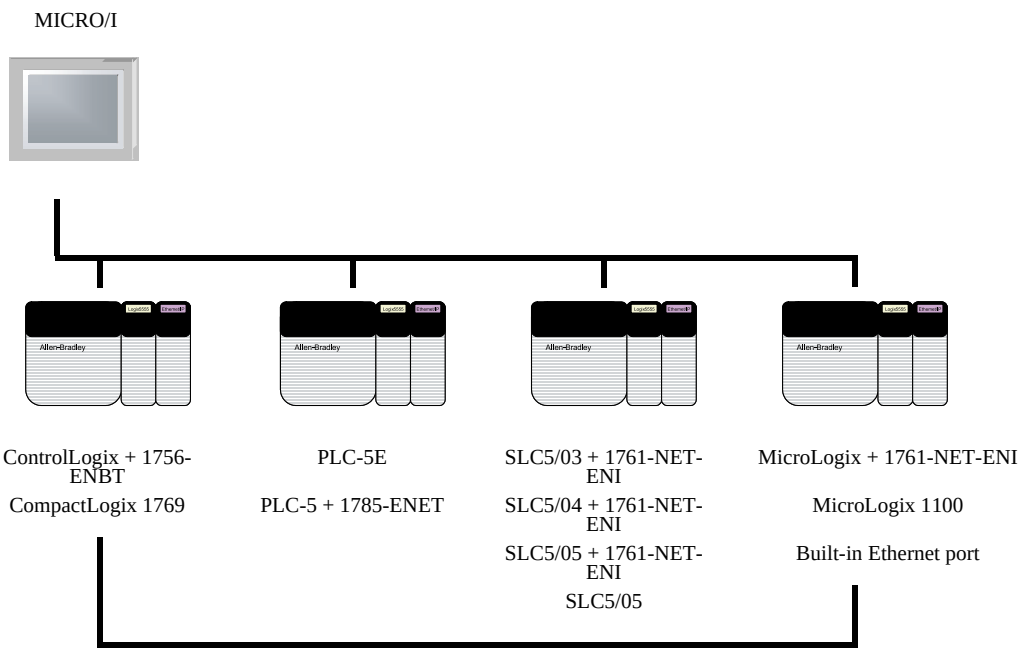


4.2.5 MicroLogix 1500 (D-sub 9 Pin connector on CPU Unit)



MicroLogix1500

4.2.6 Ethernet/IP (MicroLogix, PLC-5, SLC 500, ControlLogix, CompactLogix)



ControlLogix + 1756-ENBT
CompactLogix 1769

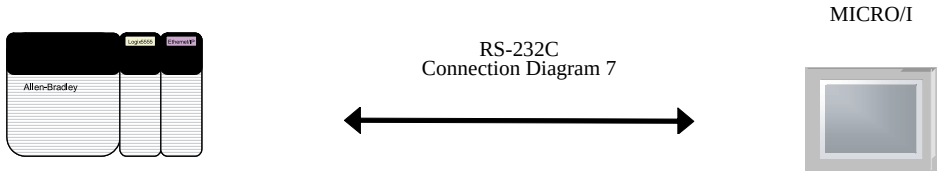
PLC-5E
PLC-5 + 1785-ENET

SLC5/03 + 1761-NET-ENI
SLC5/04 + 1761-NET-ENI
SLC5/05 + 1761-NET-ENI
SLC5/05

MicroLogix + 1761-NET-ENI
MicroLogix 1100
Built-in Ethernet port

Connect to maximum of 16 different PLCs

4.2.7 Control Logix/CompactLogix/FlexLogix (CPU Unit)



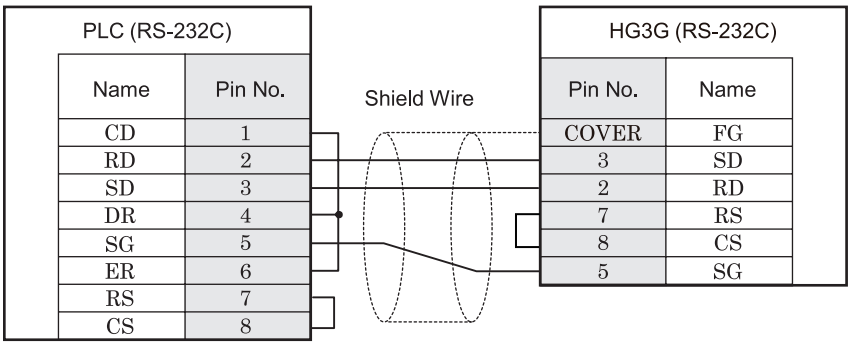
ControlLogix
CompactLogix
FlexLogix

4.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring and termination resistors, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

4.3.1 Connection Diagram 1: SLC 500 (RS-232C) to MICRO/I

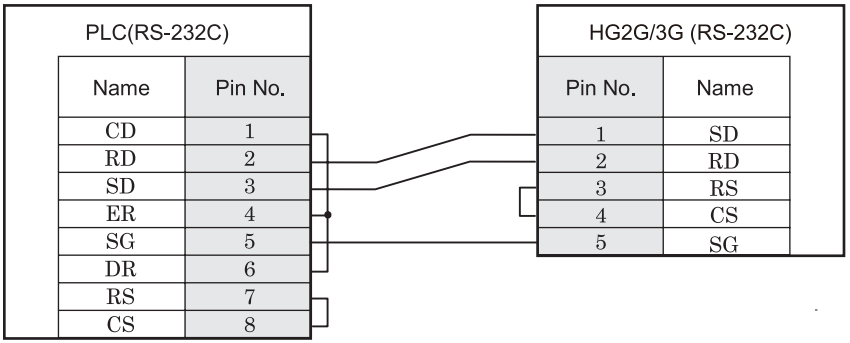
HG3G (Connector)



D-sub, 9P connector plug type (unit side)

D-sub, 9P connector plug type

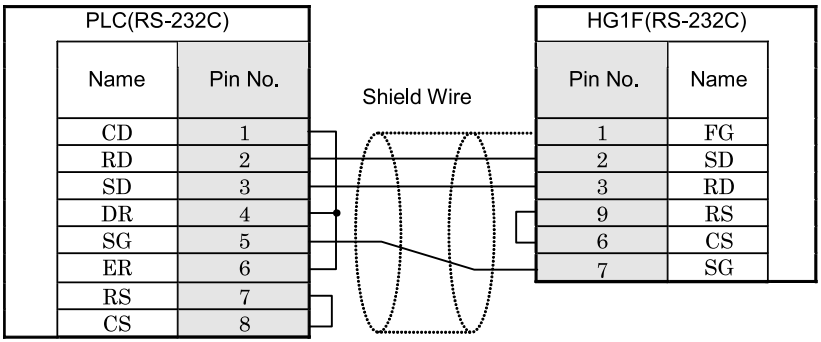
HG2G/3G (Terminal)



D-sub, 9P connector plug type (unit side)

Terminal

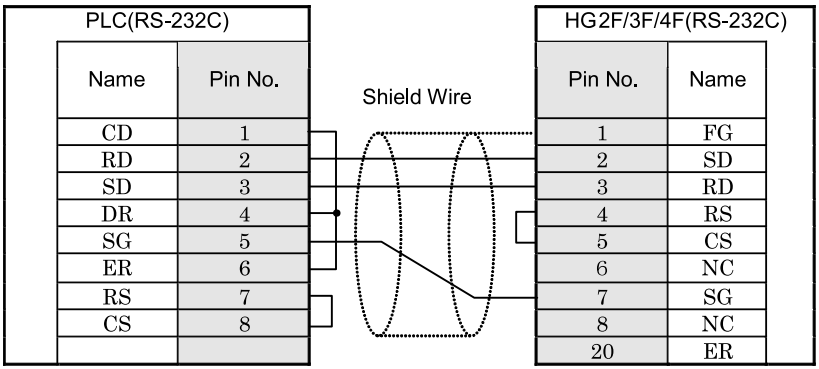
HG1F (Connector)



D-sub, 9P connector plug type (unit side)

D-sub, 9P connector socket type

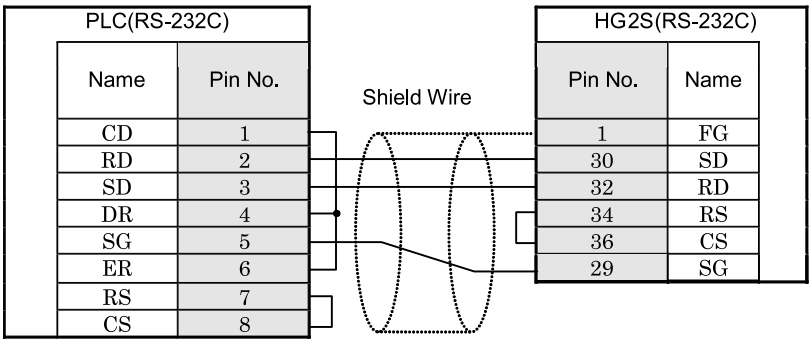
HG2F/3F/4F



D-sub, 9P connector plug type (unit side)

D-sub, 25P connector socket type

HG2S

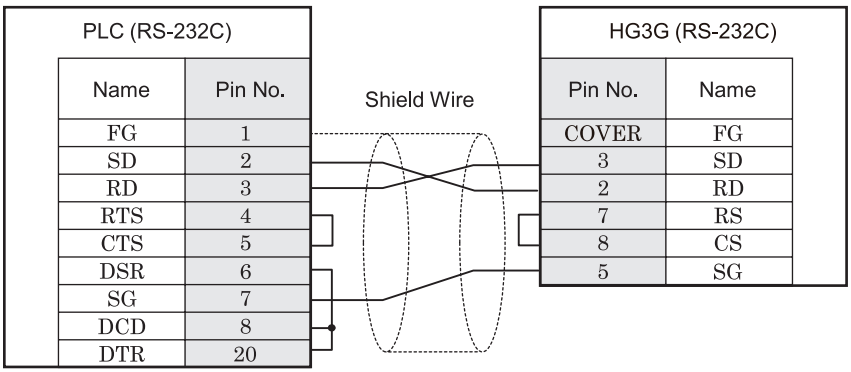


D-sub, 9P connector plug type (unit side)

D-sub, 37P connector socket type

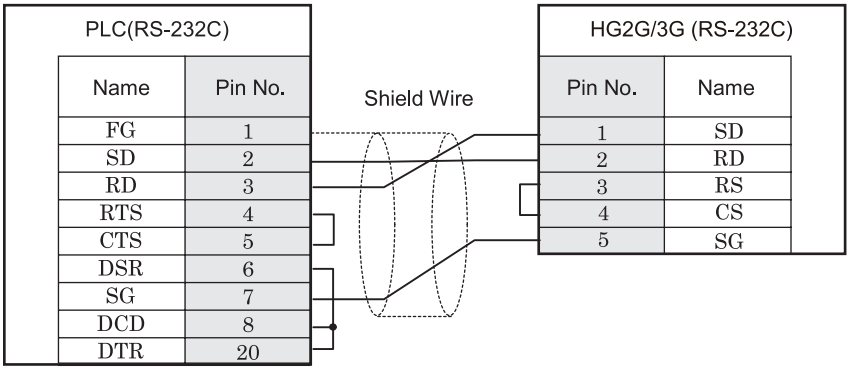
4.3.2 Connection Diagram 2: Interface Module (RS-232C) to MICRO/I and PLC-5 (RS-232-C) to MICRO/I

HG3G (Connector)



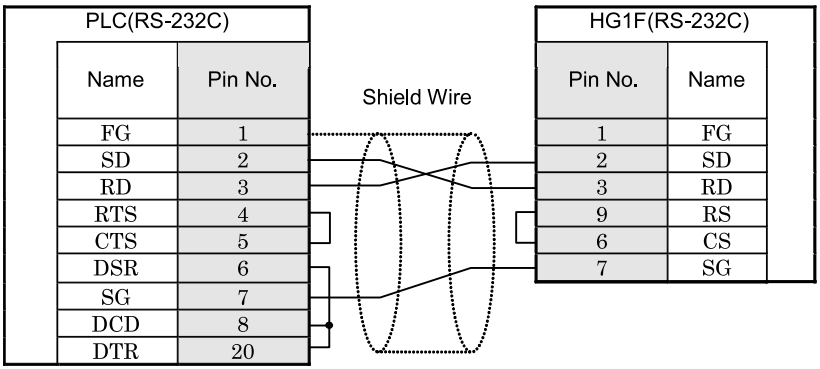
D-sub, 25P connector socket type (unit side) D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 25P connector socket type (unit side) Terminal

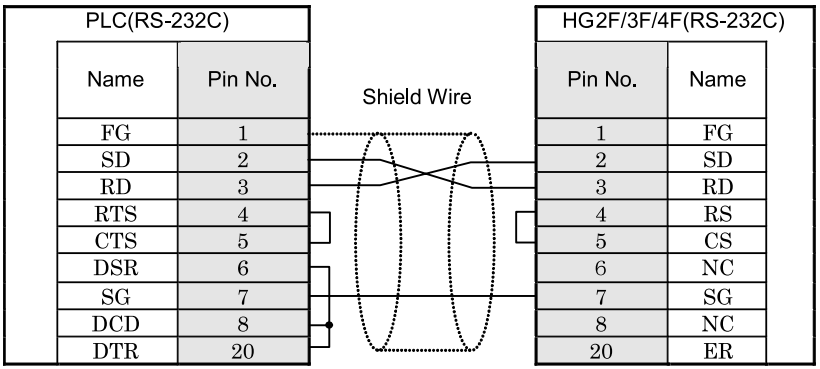
HG1F (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

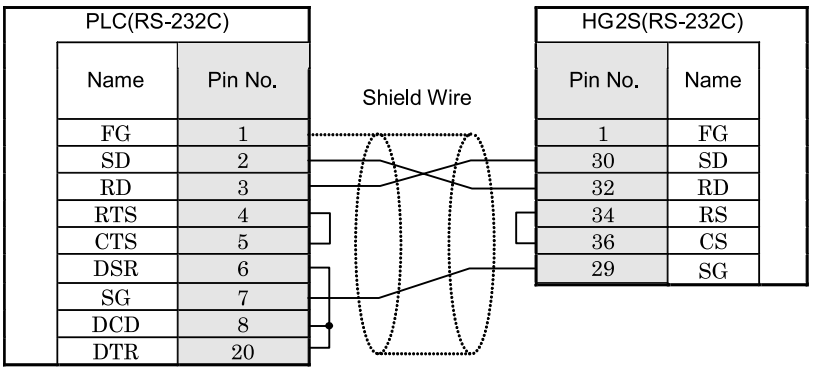
HG2F/3F/4F



D-sub, 25P connector socket type (unit side)

D-sub, 25P connector socket type

HG2S

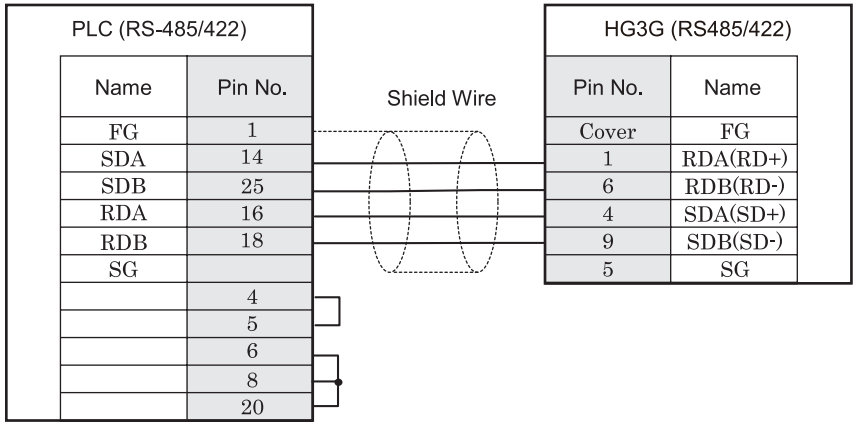


D-sub, 25P connector socket type (unit side)

D-sub, 37P connector socket type

4.3.3 Connection Diagram 3: Interface Module (RS-422) to MICRO/I

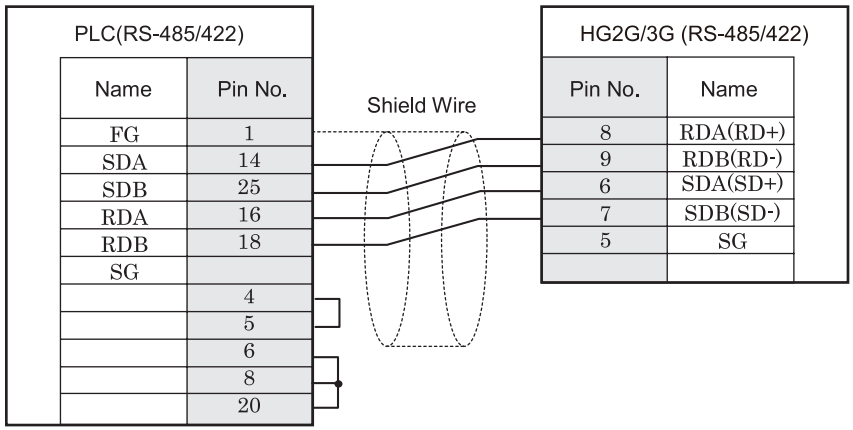
HG3G (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector plug type

HG2G/3G (Terminal)

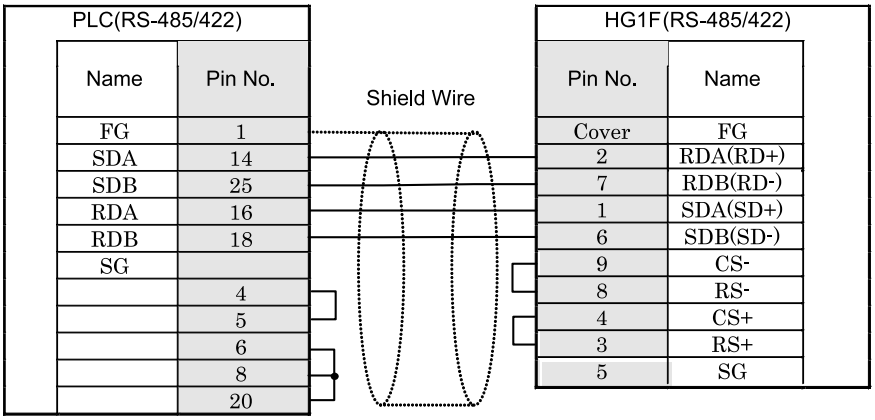


D-sub, 25P connector socket type (unit side)

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

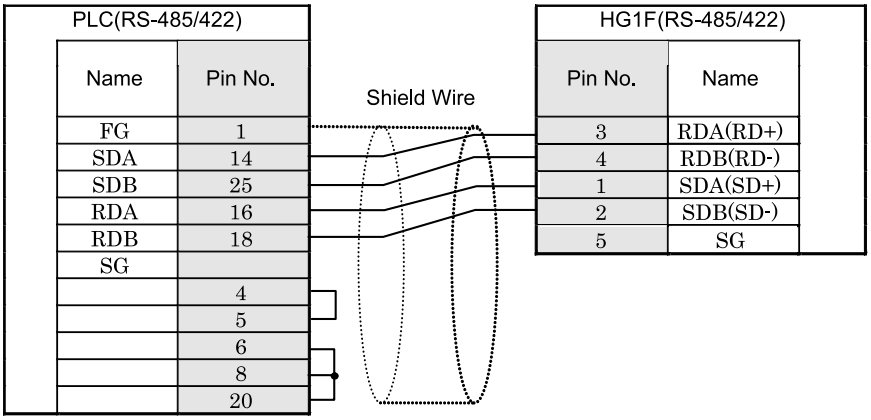
HG1F (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

HG1F (Terminal)

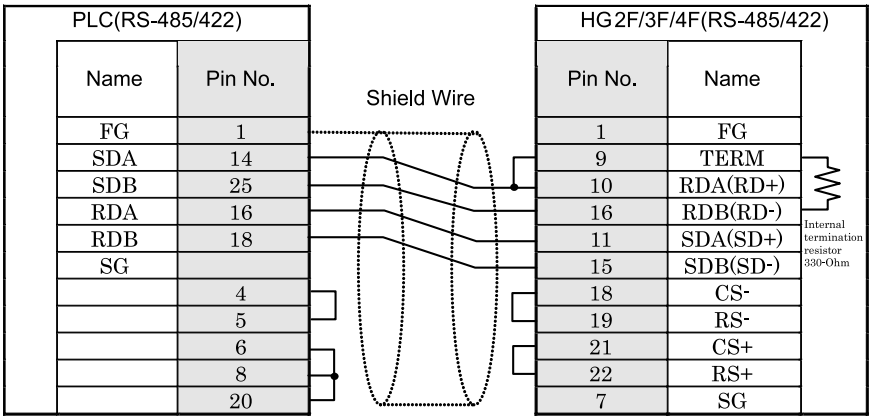


D-sub, 25P connector socket type (unit side)

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

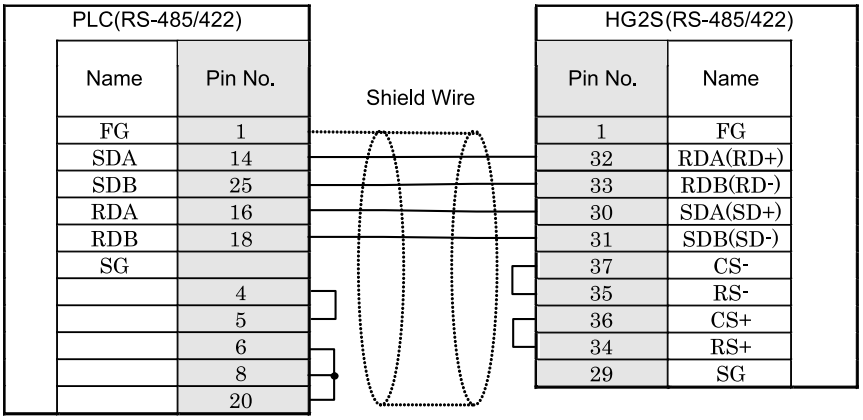
HG2F/3F/4F



D-sub, 25P connector socket type (unit side)

D-sub, 25P connector socket type

HG2S



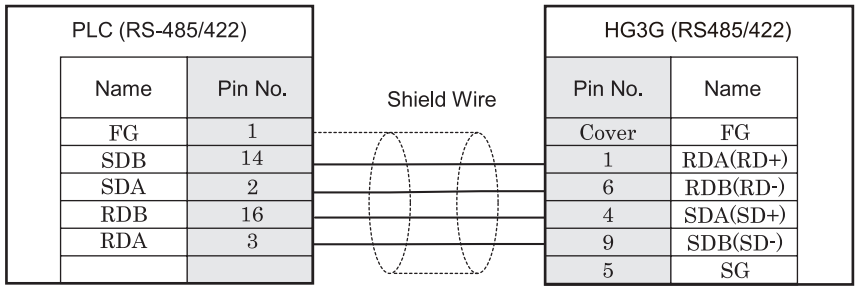
D-sub, 25P connector socket type (unit side)

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

4.3.4 Connection Diagram 4: PLC-5 (RS-422) to MICRO/I

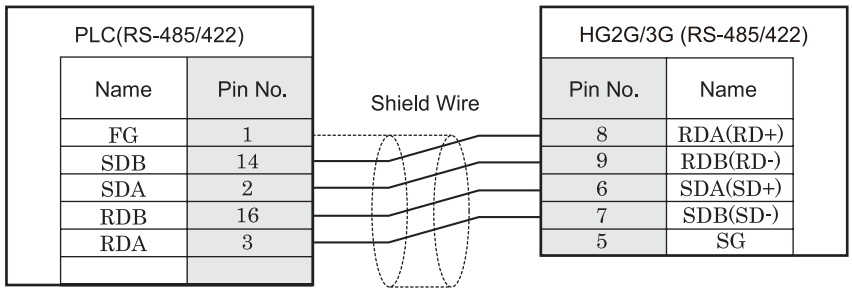
HG3G (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector plug type

HG2G/3G (Terminal)

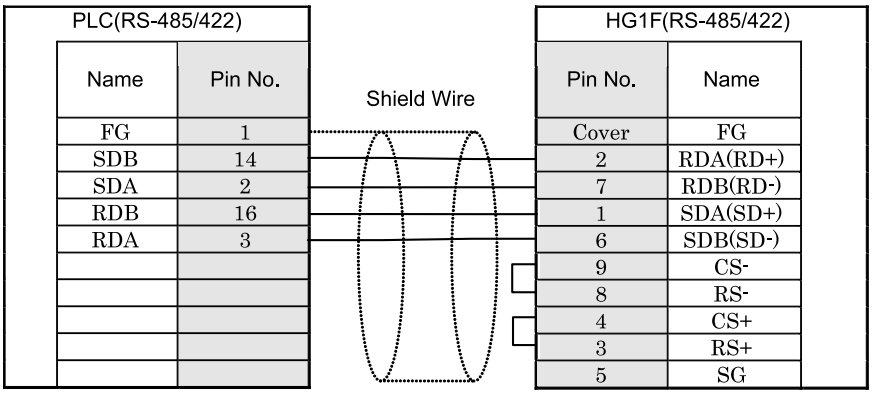


D-sub, 25P connector socket type (unit side)

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

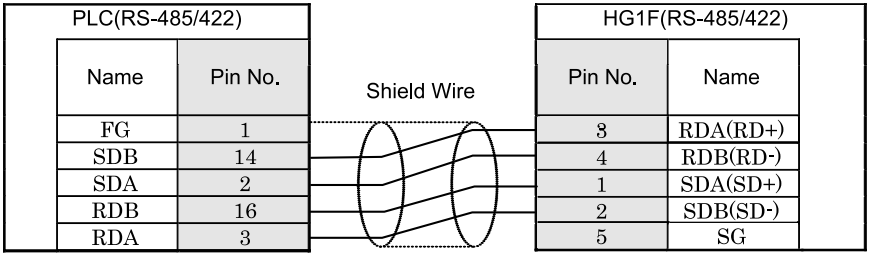
HG1F (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

HG1F (Terminal)

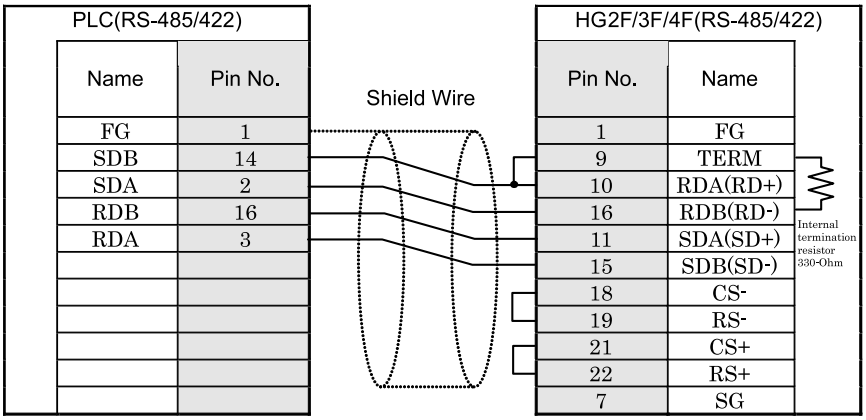


D-sub, 25P connector socket type (unit side)

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

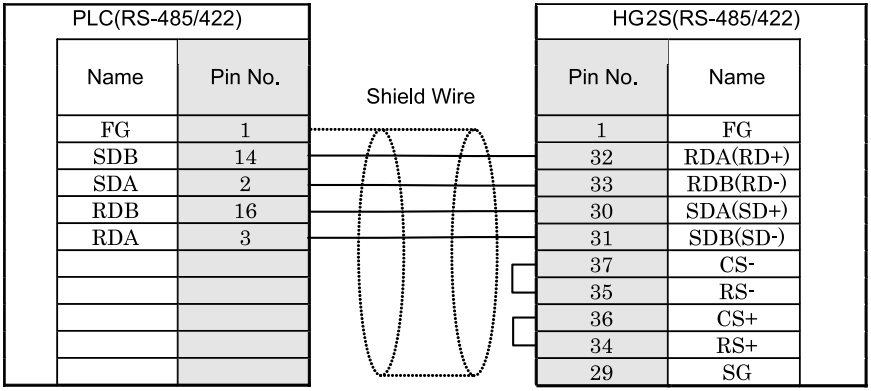
HG2F/3F/4F



D-sub, 25P connector socket type (unit side)

D-sub, 25P connector socket type

HG2S



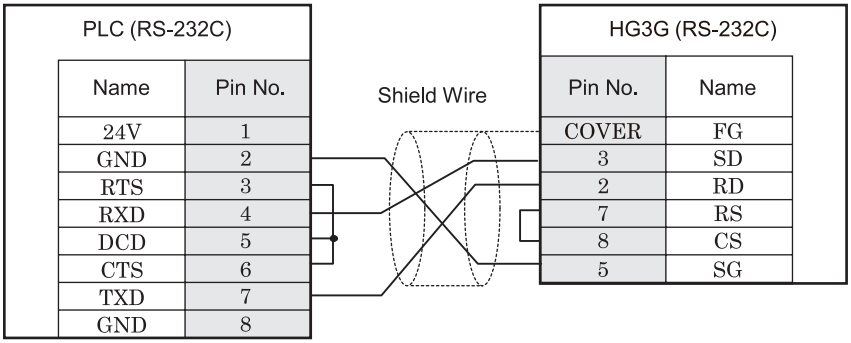
D-sub, 25P connector socket type (unit side)

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

4.3.5 Connection Diagram 5: MicroLogix 1000/1200/1500(Mini Din connector) to MICRO/I

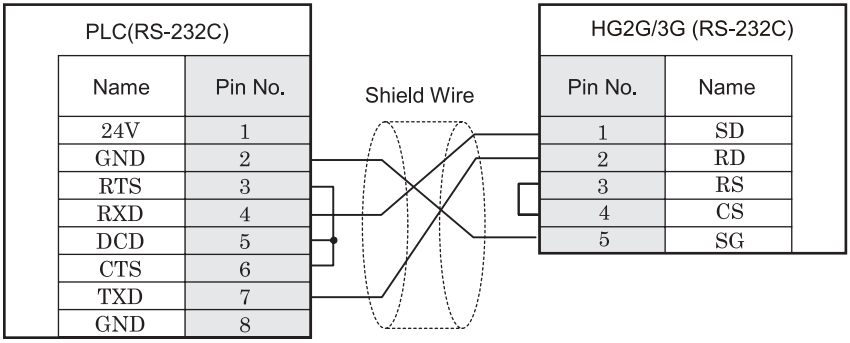
HG3G (Connector)



Mini Din 8P socket type

D-sub, 9P connector plug type

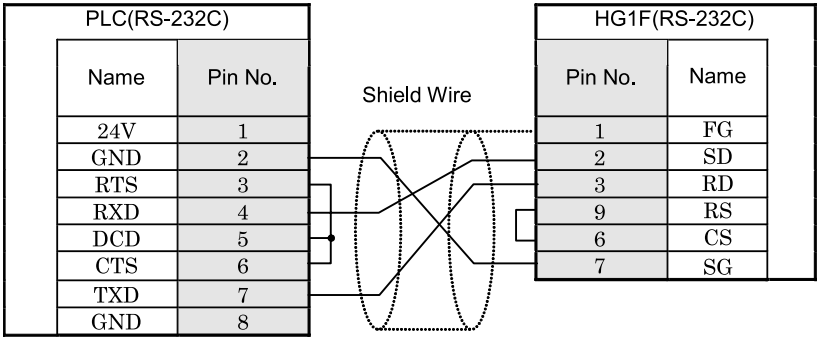
HG2G/3G (Terminal)



Mini Din 8P socket type

Terminal

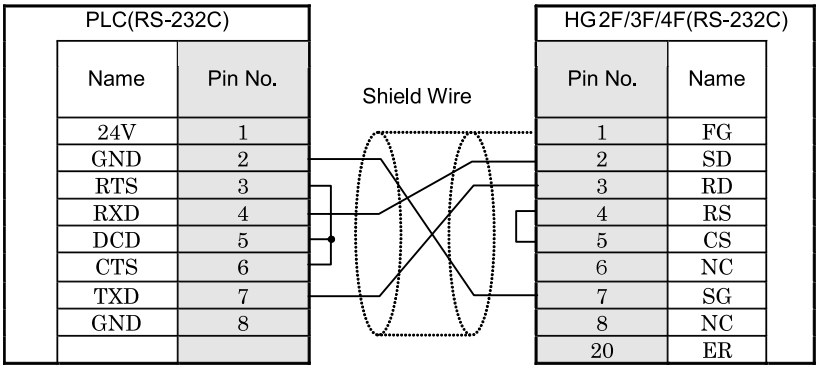
HG1F (Connector)



Mini Din 8P socket type

D-sub, 9P connector socket type

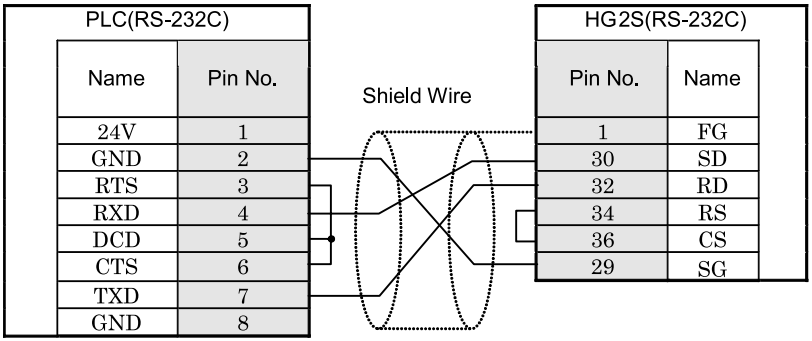
HG2F/3F/4F



Mini Din 8P socket type

D-sub, 25P connector socket type

HG2S

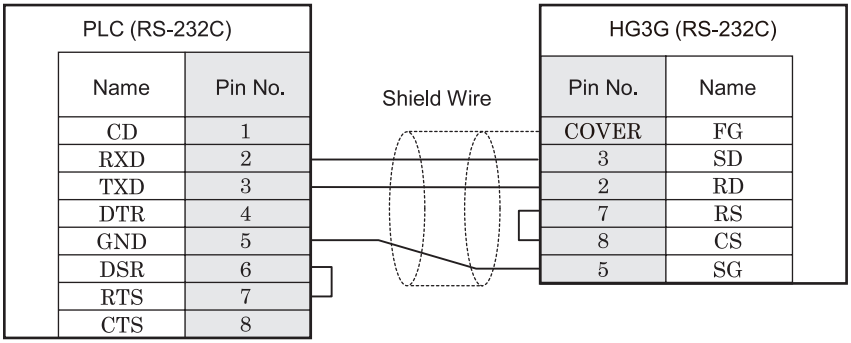


Mini Din 8P socket type

D-sub, 37P connector socket type

4.3.6 Connection Diagram 6: MicroLogix 1500(D-sub 9 Pin connector) to MICRO/I

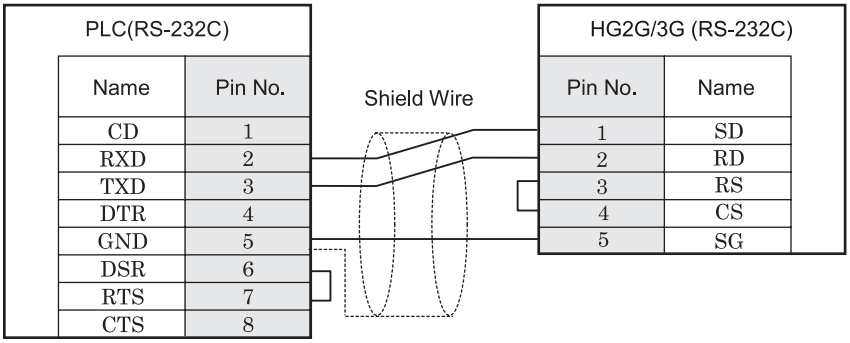
HG3G (Connector)



D-sub 9 Pin connector plug type

D-sub, 9P connector plug type

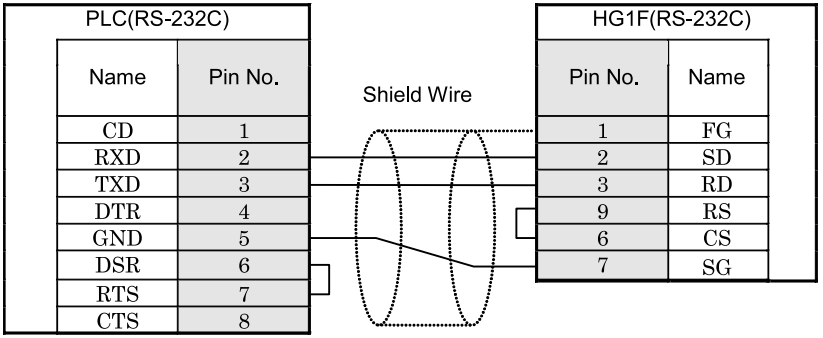
HG2G/3G (Terminal)



D-sub 9 Pin connector plug type

Terminal

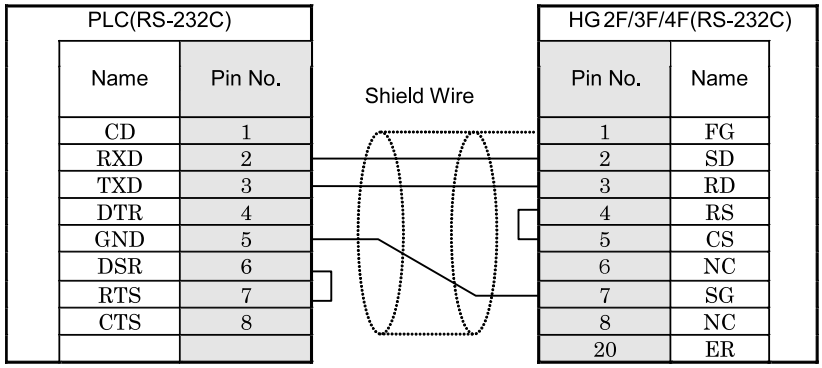
HG1F (Connector)



D-sub 9 Pin connector plug type

D-sub, 9P connector socket type

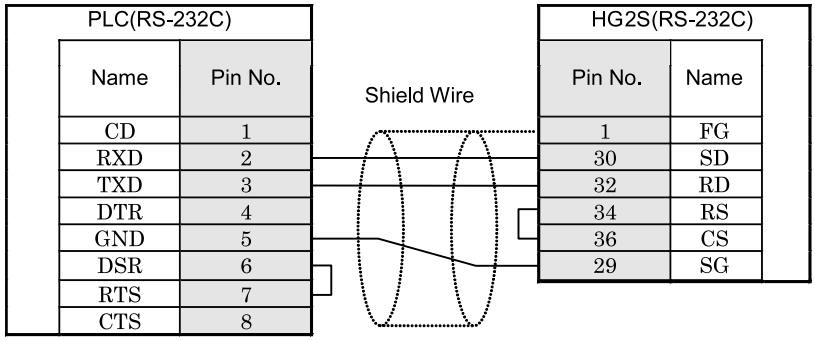
HG2F/3F/4F



D-sub 9 Pin connector plug type

D-sub, 25P connector socket type

HG2S

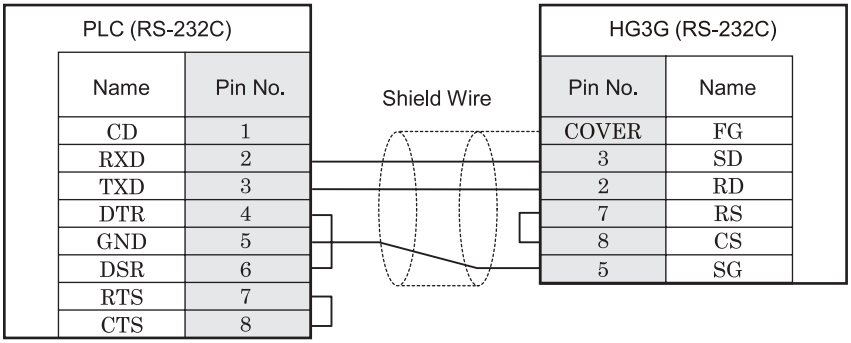


D-sub 9 Pin connector plug type

D-sub, 37P connector socket type

4.3.7 Connection Diagram 7: ControlLogix/CompactLogix/FlexLogix - MICRO/I

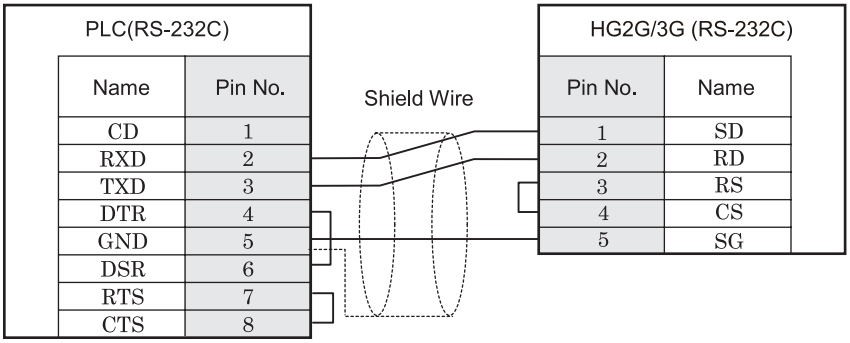
HG3G (Connector)



D-sub 9 Pin connector plug type

D-sub, 9P connector plug type

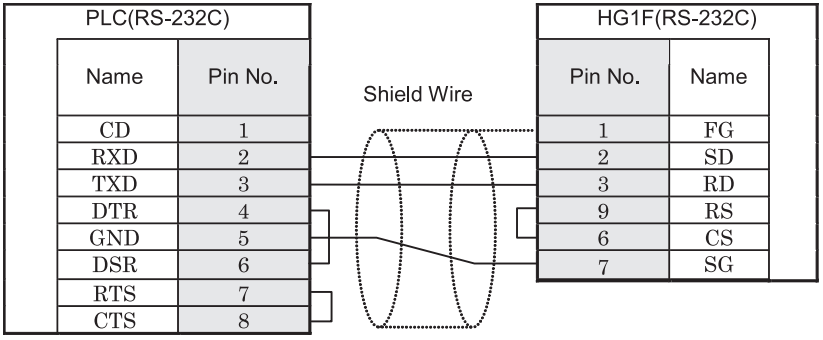
HG2G/3G (Terminal)



D-sub 9 Pin connector plug type

Terminal

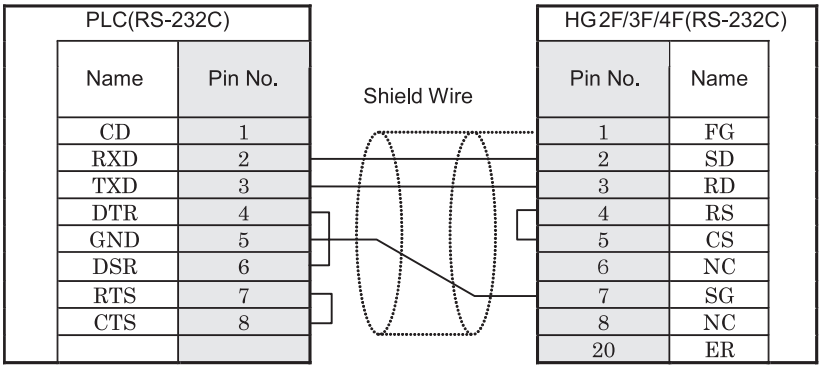
HG1F (Connector)



D-sub 9 Pin connector plug type

D-sub, 9P connector socket type

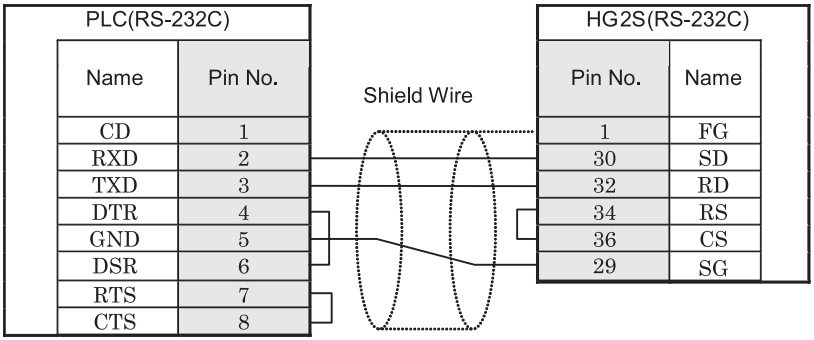
HG2F/3F/4F



D-sub 9 Pin connector plug type

D-sub, 25P connector socket type

HG2S

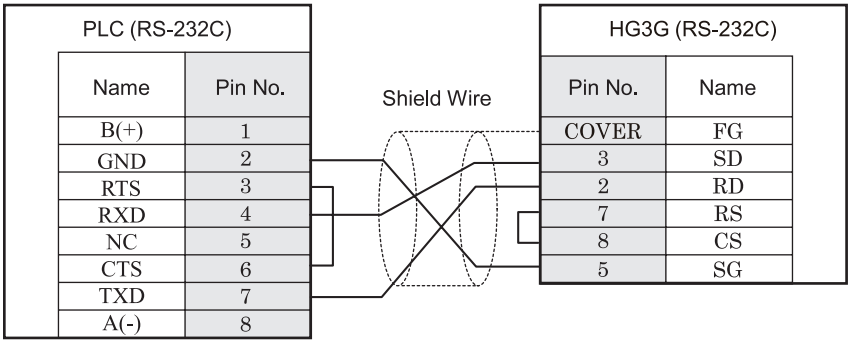


D-sub 9 Pin connector plug type

D-sub, 37P connector socket type

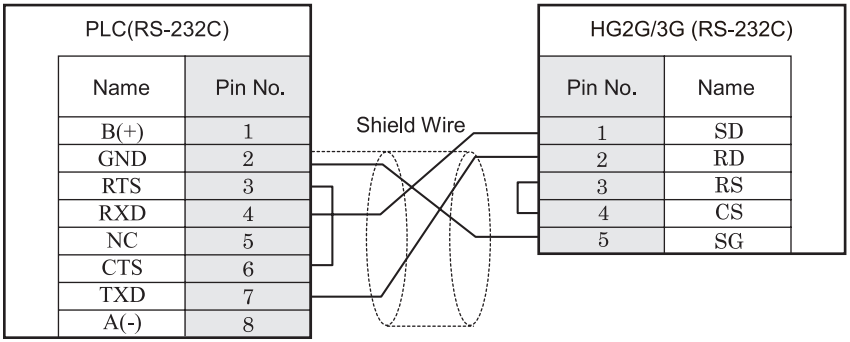
4.3.8 Connection Diagram 8: MicroLogix 1100(Mini Din connector) to MICRO/I

HG3G (Connector)



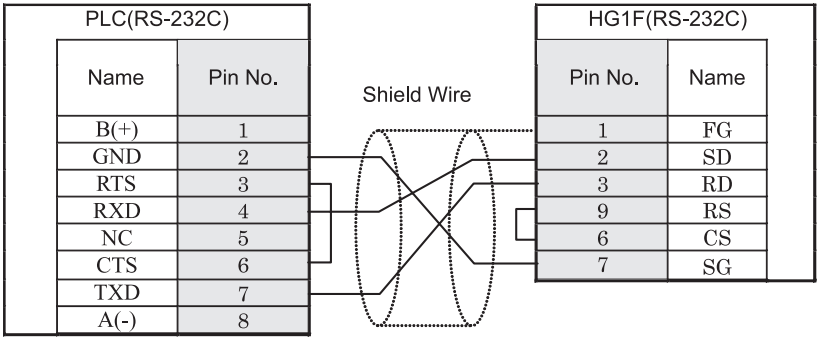
Mini Din 8P socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



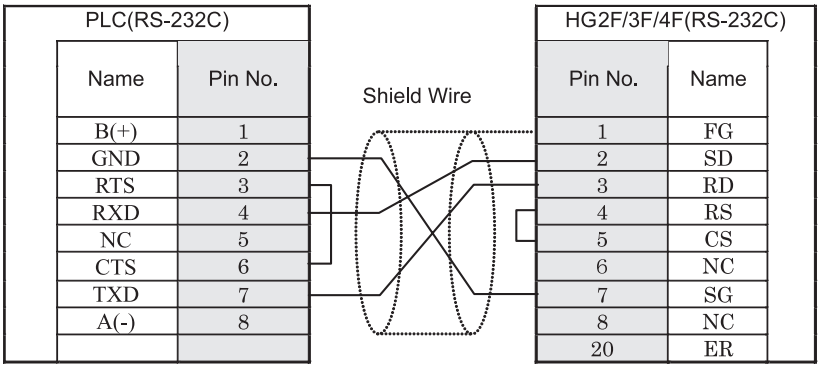
Mini Din 8P socket type — Terminal

HG1F (Connector)



Mini Din 8P socket type — D-sub, 9P connector socket type

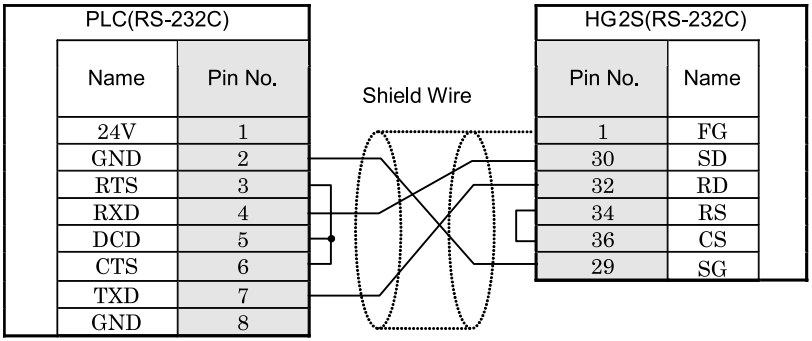
HG2F/3F/4F



Mini Din 8P socket type

D-sub, 25P connector socket type

HG2S



Mini Din 8P socket type

D-sub, 37P connector socket type

4.4 Environment Settings

Allowed communication settings for MicroLogix, SLC 500 and PLC-5 are as follows.

4.4.1 MicroLogix, SLC 500 (Full Duplex)

Item	Setting
Baud Rate (bps)*1 *2	1200, 2400, 4800, 9600, 19200
Data Bits *2	8 (fixed)
Parity*1 *2	None or Even
Stop Bits *1 *2	1
Flow Control	ER or None
Serial Interface	RS-232C
Driver*1	DF1 Full-Duplex *3
Control Line *1	No Handshaking *3
Error Detection *1	CRC *3
Embedded Response *1	Auto Detect
Duplicate Packet Detect *1	Enable
Node Address *1 *2 *4	0 to 254 (decimal)

*1. Select using RSLogix software (set Chan0 to System of Controller-Channel Configuration).
*2. The setting for this item must match the setting on the HG Series unit.
*3. Be certain to select as indicated.
*4. Be certain to select as indicated.Select the MICRO/I Node Address using the Node Address (HG) under [Project Settings] in WindO/I-NV2 software.

4.4.2 SLC 500 (Half Duplex)

Item	Setting
Communication Interface	RS-232C
Baud Rate (bps)*1*2	1200, 2400, 4800, 9600, 19200
Data Bits *2	8 (fixed)
Parity *1 *2	None or Even
Stop Bits*1 *2	1
Driver *1	DF1 Half-Duplex Slave *3
Duplicate Detect *1	Disabled*3
Error Detect *1	BCC *3
Control Line *1	No handshaking*3
Node Address *1 *2*4	0 to 254 (decimal)

*1. Set using RSLogix500 (set Chan0 to System of Controller-Channel Configuration).
*2. The setting for this item must match the setting on the HG Series unit.
*3. Be certain to set as indicated.

*4. Set the MICRO/I Node Address using the Node Address (HG) setting in [Configuration]-[System Setup]-[Project]-[Host I/F Driver] of WindO/I-NV2.

4.4.3 PLC-5

Item	Setting
Communication Interface*1 *2	RS-232-C/RS-485-A (4 line)
Baud Rate (bps)*3*4	1200, 2400, 4800, 9600 or 19200
Data Bits *3 *4	8 (fixed)
Parity *3 *4	None or Even
Stop Bits*3 *4	1 (fixed)
Communication Protocol *3	Half duplex *5
Channel 0 Protocol *3	DF1 Slave *5
Duplicate Detect *3	OFF *5
Error Detect *3	BCC *5
Control Line *3	No handshaking*5
Network Link *1	Data highway plus
PLC-5 Processor Station Address*4 *6	00 to 77(Octal)
1770-KF2 Node Number*1 *4 *7	00 to 77(Octal)

*1. When using the 1770-KF2 Module, select this setting using the 1770-KF2 Module DIP switch.
*2. In the case of a direct connection to the PLC-5 Processor Module, select this setting using the PLC-5 Processor Module DIP switch.
*3. When using the 1770-KF2 Module, select this setting using the DIP switch on 1770-KF2 Module. In case of a direct connection to the PLC-5 Processor Module, select using the 6200 Programming Software (Channel 0 configuration).
*4. The setting for this item must match the setting on the HG Series unit.
*5. Be certain to select as indicated.
*6. This setting is required regardless of whether 1770-KF2 Module is used or not. When using the 1770-KF2 Module, select this setting using the DIP switch on PLC-5 Processor, and in the case of a direct connection to the PLC-5 Processor Module, select using the 6200 Programming Software (Channel 0 configuration).
*7. This selection is only necessary if you are using the Interface Module.

Setting the Station Address using WindO/I-NV2.

- When using the 1770-KF2 Module, select “Use 1770-KF2” checkbox in the WindO/I-NV2 [Configuration]-[System Setup]-[Project]-[Host I/F Driver], and set “Station Address (1770-KF2)” and “Station Address (PLC5)”.

- In case of direct connection to PLC5 Processor Module, do not select the “Use 1770-KF2” checkbox. Instead select “Station Address (1770-KF2)”.
  These numbers are to be set using octal for the PLC-5 and 1770-KF2, but hexadecimal for the WindO/I-NV2.

4.4.4 Ethernet/IP (ControlLogix, CompactLogix, PLC-5, SLC 500, MicroLogix)

Communication Interface Setting (Ethernet)

Item	Setting
IP Address	Set IP Address of MICRO/I
Subnet Mask	Set Subnet Mask of MICRO/I
Default Gateway	Set Default Gateway of MICRO/I

Host I/F Network Setting

Set some network information of PLCs. It can be set to maximum of 16.

Item	Setting
Station No.	The number to select PLC when set device address.
IP Address	Set IP Address of communicated PLC
Port Number	Set Port Number of communicated PLC
Product	Set Product of communicated PLC (For ControlLogix or CompactLogix, select «Logix».)

4.4.5 ControlLogix, CompactLogix, FlexLogix

Item	Setting
Baud Rate (bps) *1	1200, 2400, 4800, 9600, 19200
Data Bits*1	8 (fixed)
Parity *1	None or Even
Stop Bits*1	1
Flow Control	None
Serial Interface	RS-232C
Protocol	DF1 Point to Point *2
Control Line	No Handshaking *2
Error Detection	BCC / CRC
Embedded Response	Auto Detect
Duplicate Packet Detect	Enable
Station Address*1 *3	0 to 254 (decimal)

*1. The setting for this item must match the setting on the HG Series unit.

*2. Be certain to select as indicated.

*3. Select the MICRO/I Node Address using the Station Address (HG) under [Configuration]-[System Setup]-[Project]-[Host I/F Driver] in WindO/I-NV2.

4.5 Usable Devices

The types of compatible devices and their ranges are shown below. Device address selection for the MicroLogix1200, SLC 500 and PLC-5 CPU's are is done using File No., Element No., Bit No. etc., with an appropriate delimiter. But the WindO/I-NV2 address selection is done without the delimiter. The MICRO/I address specification syntax (address specification rules) is explained below. Follow the syntax below when performing address selections using WindO/I-NV2 software.

MICRO/I support the following device types and range.

WindO/I-NV2 supports the device address format as same as MicroLogix, SLC 500, PLC-5 programming software along with the standard device address format of WindO/I-NV2.

- Standard device address format of WindO/I-NV2
  File Number, Element and Bit Number are separated by some delimiters in device address format of Allen-Bradley's software.
  However, standard device address format of WindO/I-NV2 does not contain delimiters.
  It is remove some delimiters from Allen-Bradley's device address format.
- Allen-Bradley device address format
  This device address format is same as the device address format of Allen-Bradley's software.
  (Some part of the format is deferent. Refer to the following.)

4.5.1 MicroLogix, SLC 500 (Full Duplex)

Bit Device

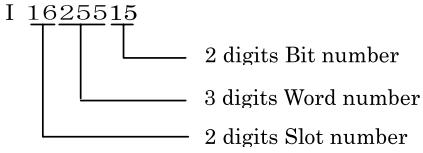
Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Output	O	O	0 - 1625515	R	10*1
Input	I	I	0 - 1625515	R	10*1
Binary	B	B	300000 - 325515, 900000 - 25525515	R/W	10*2
Timer Enable Bit	TEN	T(EN)	4000 - 4255, 9000 - 255255	R	10*3
Timer Timing Bit	TTT	T(TT)	4000 - 4255, 9000 - 255255	R	10*3
Timer Done Bit	TDN	T(DN)	4000 - 4255, 9000 - 255255	R	10*3
Counter Up Enable Bit	CCU	C(CU)	5000 - 5255, 9000 - 255255	R	10*3
Counter Down Enable Bit	CCD	C(CD)	5000 - 5255, 9000 - 255255	R	10*3
Counter Done Bit	CDN	C(DN)	5000 - 5255, 9000 - 255255	R	10*3
Counter Overflow Bit	COV	C(OV)	5000 - 5255, 9000 - 255255	R	10*3
Counter Underflow Bit	CUN	C(UN)	5000 - 5255, 9000 - 255255	R	10*3
Counter Update Accumulator	CUA	C(UA)	5000 - 5255, 9000 - 255255	R	10*3
Control Enable Bit	REN	R(EN)	6000 - 6255, 9000 - 255255	R	10*3
Control Queue Bit	REU	R(EU)	6000 - 6255, 9000 - 255255	R	10*3
Control Asynchronous Bit Done Bit	RDN	R(DN)	6000 - 6255, 9000 - 255255	R	10*3
Control Synchronous Done Bit	REM	R(EM)	6000 - 6255, 9000 - 255255	R	10*3
Control Error Bit	RER	E(ER)	6000 - 6255, 9000 - 255255	R	10*3

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Control Unload Bit	RUL	R(UL)	6000 - 6255, 9000 - 255255	R	10*3
Control Running Bit	RIN	R(IN)	6000 - 6255, 9000 - 255255	R	10*3
Control Found Bit	RFD	R(FD)	6000 - 6255, 9000 - 255255	R	10*3

*1. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

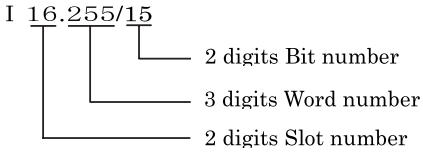


Example

MicroLogix1200 Address --- I:2.12/6

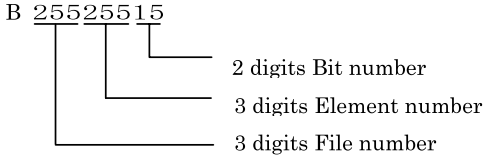
WindO/I-NV2 Address --- I 201206

Allen-Bradley device address format



*2. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

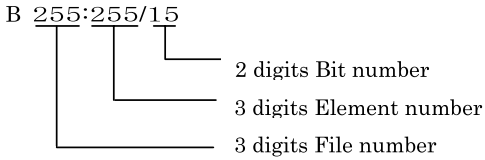


Example

MicroLogix1200 Address --- B10:123/5

WindO/I-NV2 Address --- B 1012305

Allen-Bradley device address format



*3. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

TEN 255255
- 3 digits Element number (last 255)
- 3 digits File number (first 255)

Example

MicroLogix1200 Address --- T12:123/EN

WindO/I-NV2 Address --- TEN 12123

Allen-Bradley device address format

TEN 255:255
- 3 digits Element number (after ":")
- 3 digits File number (before ":")

WARNING A communication error will occur if you specify a file or element that is not allocated to the MicroLogix1200, SLC 500 data table map.

Word Device

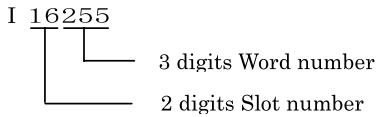
Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Output	WO	O	0 - 16255	R	10*1
Input	WI	I	0 - 16255	R	10*1
Status	S	S	2000 - 2065	R	10*2
Bit	WB	B	3000 - 3255, 9000 - 255255	R/W	10*2
Timer (Preset Value)	TP	T(P)	4000 - 4255, 9000 - 255255	R/W	10*2
Timer (Accumulated Value)	TA	T(A)	4000 - 4255, 9000 - 255255	R/W	10*2
Counter (Preset Value)	CP	C(P)	5000 - 5255, 9000 - 255255	R/W	10*2
Counter (Accumulated Value)	CA	C(A)	5000 - 5255, 9000 - 255255	R/W	10*2
Control (Number of characters specified to be sent or received)	RLEN	R(LEN)	6000 - 6255, 9000 - 255255	R/W	10*2
Control (Number of characters actually sent or received)	RPOS	R(POS)	6000 - 6255, 9000 - 255255	R/W	10*2

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Integer	N	N	7000 - 7255, 9000 - 255255	R/W	10*2
Float Point	F	F	80000 - 82551, 90000 - 2552551	R/W	10*3
Long Word	L	L	90000 - 2552551	R/W	10*3
ASCII	A	A	9000 - 255255	R/W	10*2

*1. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

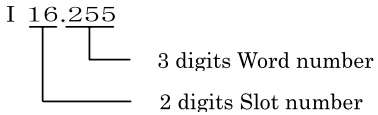


Example

MicroLogix1200 Address --- I:12.10

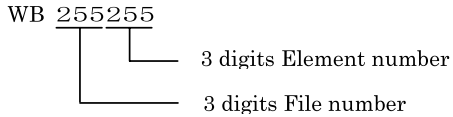
WindO/I-NV2 Address --- I 12010

Allen-Bradley device address format



*2. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

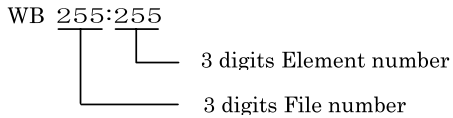


Example

MicroLogix1200 Address --- B123:255

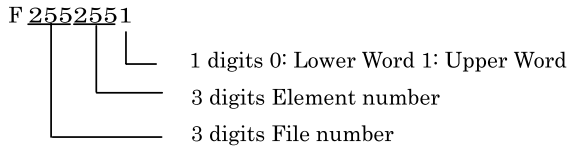
WindO/I-NV2 Address --- WB 123255

Allen-Bradley device address format



*3. Address selection rule is as follows.
WindO/I-NV2 uses 32 bit device as the divided 2 word device.
Therefore, the last one digit shows that the device is upper word or lower word.

Standard device address format of WindO/I-NV2

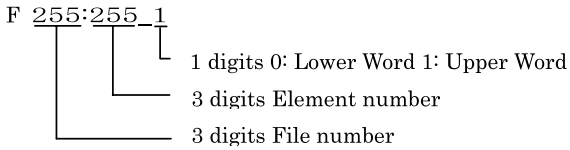


Example

MicroLogix1200 Address --- F123:255

WindO/I-NV2 Address --- F 1232550 and F1232551

Allen-Bradley device address format



- WO, WI, WB is same devices as O, I, B. They are used as word devices.

WARNING

- Floating Point (F) and Long Word (L) are 32-bit devices. When you write to these devices, please be sure to write a high word and low word simultaneously. If you write only high word or only low word, 0 will be written into the other word.
- A communication error will occur if you specify a file or element that is not allocated to the MicroLogis1200, SLC 500 data table map.

4.5.2 SLC 500 (Half Duplex)

Bit Device

Device Name	Device Symbol		Address Range*1	Read /Write	Address Gradual
	HG	PLC			
Timer (done)	TDN	T	4000 - 4255, 10000 - 255255	R	10
Timer (timing)	TT	T	4000 - 4255, 10000 - 255255	R	10
Timer (enable)	EN	T	4000 - 4255, 10000 - 255255	R	10
Counter (done)	CDN	C	5000 - 5255, 10000 - 255255	R	10
Counter (up enable)	CU	C	5000 - 5255, 10000 - 255255	R	10
Counter (down enable)	CD	C	5000 - 5255, 10000 - 255255	R	10
Counter (overflow)	OV	C	5000 - 5255, 10000 - 255255	R	10
Counter (underflow)	UN	C	5000 - 5255, 10000 - 255255	R	10
Counter (high-speed counter update)	UA	C	5000 - 5255, 10000 - 255255	R	10

*1. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

WB 255255

3 digits Element number

3 digits File number

Example

SLC 500 Address --- T 4:12 / TD

WindO/I-NV2 Address --- TDN 4 012

Allen-Bradley device address format

TDN 255:255

3 digits Element number

3 digits File number

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input	WI	I	0 - 301	R	10 *1
Output	WO	O	0 - 301	R	10 *1
Bit	WB	B	3000 - 3255, 10000 - 255255	R/W	10 *2
Timer (accumulated value)	TA	T	4000 - 4255, 10000 - 255255	R	10 *2
Counter (accumulated value)	CA	C	5000 - 5255, 10000 - 255255	R	10 *2
Timer (preset value)	TP	T	4000 - 4255, 10000 - 255255	R/W	10 *2
Counter (preset value)	CP	C	5000 - 5255, 10000 - 255255	R/W	10*2
Integer*3	N	N	7000 - 7255, 10000 - 255255	R/W	10 *2
ASCII	A	A	10000 - 255255	R/W	10 *2

*1. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

WI 301

1 digits Word Number

2 digits Slot Number

SLC 500 Address --- I 30.1

WindO/I-NV2 Address ---WI 301

Allen-Bradley device address format

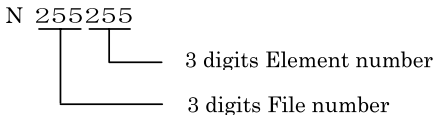
WI 30.1

1 digits Word Number

2 digits Slot Number

*2. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

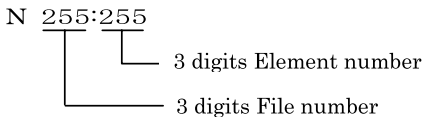


Example

SLC 500 Address --- N 255:255

WindO/I-NV2 Address --- N 255255

Allen-Bradley device address format



*3. Allocate the System Area above the file number 7 integer file. It will not operate with file number 10 and above. You must construct an area above the SLC 500 data table file that corresponds to the System Area Address set by WindO/I-NV2.

The input and output addresses are made up of the slot number and the word number.

- The address makeup is as follows:
  Bottom digit: Word number
  2nd and 3rd digits from the bottom: Slot number

- If the module in the slot has 16 or fewer points, the word number is 0, and if it is a 32-point module, the word number is 0 for the lower word
  (bit 0 to bit 15) and 1 for the upper word (bit 16 to bit 31).

- In the case of a rack-type controller, the slot number is attributed as is, and in the case of a package-type controller, it is as follows.
  Package-type controller: 0
  Left slot of the expansion rack: 1
  Right slot of the expansion rack: 2
  Example:
  Address specification with SLC 500: I: 1.0
  Address specification with WindO/I-NV2: 1 0

WARNING

- You cannot directly write to inputs and outputs.

- A communication error will occur if you specify a file or element that is not allocated to the SLC 500 data table map.

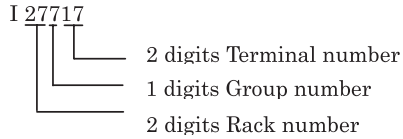
4.5.3 PLC-5 (Half Duplex)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input	I	I	0 - 27717*1	R/W	8
Output	O	O	0 - 27717*1	R/W	8
Bit	B	B	300000 - 9999915*2	R	10
Timer (complete)	TDN	T	3000 - 99999*3	R	10
Timer (timing)	TT	T	3000 - 99999*3	R	10
Timer (enable)	EN	T	3000 - 99999*3	R	10
Counter (complete)	CDN	C	3000 - 99999*3	R	10
Counter (up enable)	CU	C	3000 - 99999*3	R	10
Counter (down enable)	CD	C	3000 - 99999*3	R	10
Counter (overflow)	OV	C	3000 - 99999*3	R	10
Counter (underflow)	UN	C	3000 - 99999*3	R	10

*1. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

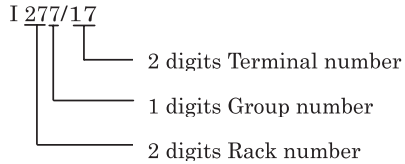


Example

PLC-5 Address --- I:277/17

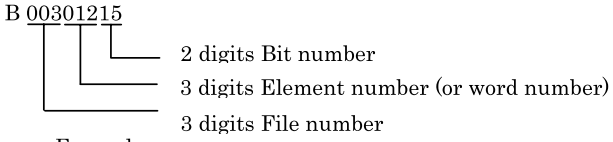
WindO/I-NV2 Address --- I 27717

Allen-Bradley device address format



*2. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

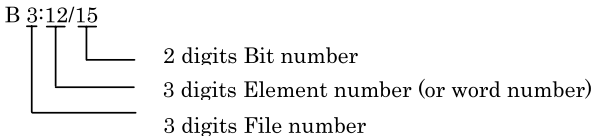


Example

PLC-5 Address --- B 3:12 / 15

WindO/I-NV2 Address --- 3 012 15

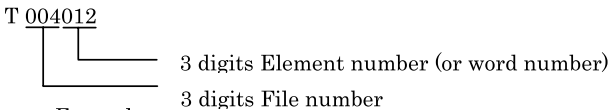
Allen-Bradley device address format



With the PLC-5, addresses can be specified with word and bit units, or with bit units only (i.e. there are two ways), while with WindO/I-NV2 you must specify addresses using word and bit units.

*3. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

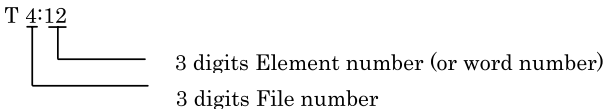


Example

PLC-5 Address --- T 4:12 / TD

WindO/I-NV2 Address --- 4 012

Allen-Bradley device address format



Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input	WI	I	0 - 277*1	R	8
Output	WO	O	0 - 277*1	R/W	8
Bit	WB	B	3000 - 99999 *2	R/W	10
Timer (current value)	TA	T	3000 - 99999 *2	R	10
Counter (current value)	CA	C	3000 - 99999 *2	R	10
Timer (preset value)	TP	T	3000 - 99999 *2	R/W	10
Counter (preset value)	CP	C	3000 - 99999 *2	R/W	10
Integer	N	N	3000 - 99999*2 *3	R/W	10
BCD	D	D	3000 - 99999 *2	R/W	10

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
ASCII	A	A	3000 - 99999 *2	R/W	10

*1. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

I 277

1 digits Group number

2 digits Rack number

Example

PLC-5 Address --- I:277

WindO/I-NV2 Address --- I 277

Allen-Bradley device address format

I 277

1 digits Group number

2 digits Rack number

*2. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

N 040045

3 digits Element number (or word number)

3 digits File number

Example

PLC-5 Address --- N 40:45

WindO/I-NV2 Address --- 40 045

Allen-Bradley device address format

N 40:45

3 digits Element number (or word number)

3 digits File number

*3. System Area should assigned using a file number between 1 and 9 only. It will not work with file number 10 or above. You must construct an area in the PLC-5 data table file that corresponds to the System Area Address selected by WindO/I-NV2.

WARNING A communication error will occur if you specify a file or element that is not allocated to the PLC-5 data table map.

4.5.4 Ethernet/IP

If you select Ethernet/IP as Host I/F driver, the driver contains some PLCs devices.

Therefore, the following devices name may be not same as devices name for each PLC.

Refer to the following cross reference table about detail.

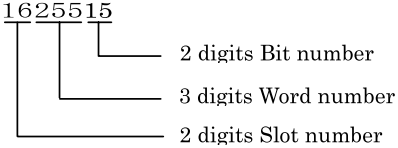
Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
SLC/MicroLogix Input	SI	I	0 - 1625515	R	10*1
SLC/MicroLogix Output	SO	O	0 - 1625515	R	10 *1
PLC-5 Input	PI	I	0 - 27717	R	10 *2
PLC-5 Output	PO	O	0 - 27717	R/W	10 *2
Binary	B	B	0 - 99999915	R/W	10 *3
Timer Enable bit	TEN	TEN	0 - 999999	R	10*4
Timer Timing Bit	TTT	TTT	0 - 999999	R	10 *4
Timer Done Bit	TDN	TDN	0 - 999999	R	10 *4
Counter Up Enable Bit	CCU	CCU	0 - 999999	R	10 *4
Counter Down Enable Bit	CCD	CCD	0 - 999999	R	10*4
Counter Done Bit	CDN	CDN	0 - 999999	R	10 *4
Counter Overflow Bit	COV	COV	0 - 999999	R	10 *4
Counter Underflow Bit	CUN	CUN	0 - 999999	R	10 *4
Counter Update Accumulator	CUA	CUA	0 - 999999	R	10 *4
Control Enable Bit	REN	REN	0 - 999999	R	10 *4
Control Queue Bit	REU	REU	0 - 999999	R	10 *4
Control Aynchronous Done Bit	RDN	RDN	0 - 999999	R	10 *4
Control Synchronous Done BIt	REM	REM	0 - 999999	R	10 *4
Control Error Bit	RER	RER	0 - 999999	R	10 *4
Control Unload Bit	RUL	RUL	0 - 999999	R	10*4
Control Running Bit	RIN	RIN	0 - 999999	R	10 *4
Control Found Bit	RFD	RFD	0 - 999999	R	10 *4

*1. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

I 1625515



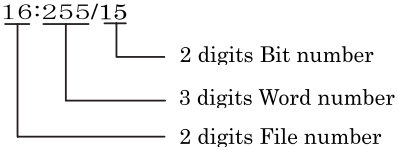
Example

MicroLogix/SLC 500 Address --- I:2/12.6

WindO/I-NV2 Address --- I 201206

Allen-Bradley device address format

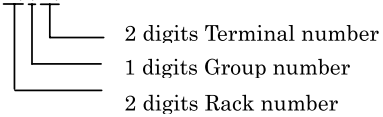
I 16:255/15



*2. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

I 27717



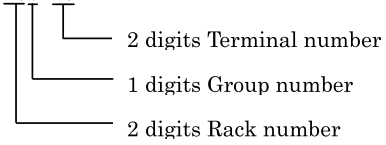
Example

PLC-5 Address --- I:277/17

WindO/I-NV2 Address --- I 27717

Allen-Bradley device address format

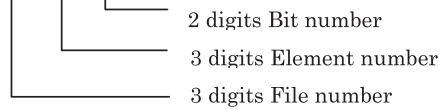
I 277/17



*3. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

B 25525515



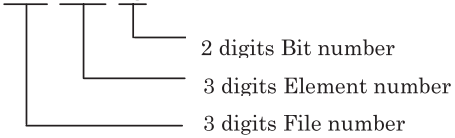
Example

MicroLogix1200 Address --- B10:123/5

WindO/I-NV2 Address --- B 1012305

Allen-Bradley device address format

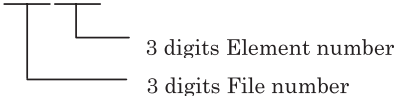
B 255:255/15



*4. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

TEN 255255



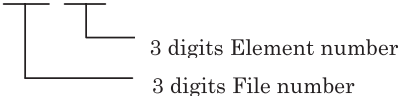
Example

MicroLogix1200 Address --- T12:123/EN

WindO/I-NV2 Address --- TEN 12123

Allen-Bradley device address format

TEN 255:255



Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
SLC/MicroLogix Input (Word)	SWI	I	0 - 16255	R	10*1
SLC/MicroLogix Output (Word)	SWO	O	0 - 16255	R	10 *1
PLC-5 Input (Word)	PWI	I	0 - 277	R	10 *2
PLC-5 Output (Word)	PWO	O	0 - 277	R/W	10 *2
Status	S	S	2000 - 2026	R	10*3
Timer (Preset Value)	TP	TP	0 - 999999	R/W	10 *3
Timer (Accumulated Value)	TA	TA	0 - 999999	R/W	10 *3
Counter (Preset Value)	CP	CP	0 - 999999	R/W	10 *3
Counter (Accumulated Value)	CA	CA	0 - 999999	R/W	10 *3
Control LEN	RLEN	RLEN	0 - 999999	R/W	10*3
Control POS	RPOS	RPOS	0 - 999999	R/W	10*3
Bit (Word)	WB	WB	0 - 999999	R/W	10 *3
Integer	N	N	0 - 999999	R/W	10 *3
Float/REAL	F	F	0 - 9999991	R/W	10*4
Long/DINT	L	L	0 - 9999991	R/W	10 *4
Ascii	A	A	0 - 999999	R/W	10 *3
BCD	BCD	BCD	0 - 999999	R/W	10*3
SINT	SINT	SINT	0 - 999999	R/W	10 *3

*1. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

I 16255

3 digits Word number

2 digits Slot number

Example

MicroLogix1200 Address --- I:12/10

WindO/I-NV2 Address --- I 12010

Allen-Bradley device address format

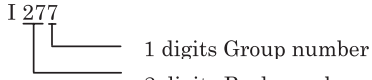
I 16:255

3 digits Word number

2 digits Slot number

*2. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

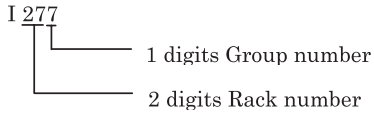


Example

PLC-5 Address --- I:277

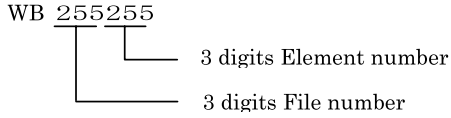
WindO/I-NV2 Address --- I 277

Allen-Bradley device address format



*3. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

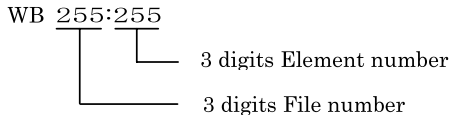


Example

MicroLogix1200 Address --- B123:255

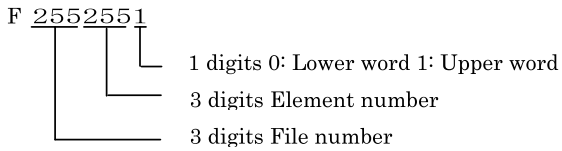
WindO/I-NV2 Address --- WB 123255

Allen-Bradley device address format



*4. Address selection rule is as follows.
WindO/I-NV2 uses 32 bit device as the divided 2 word device.
Therefore, the last one digit shows that the device is upper word or lower word

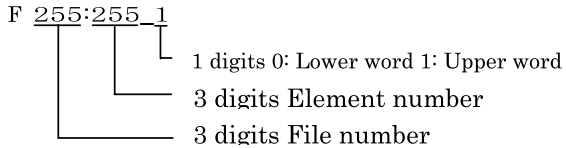
Standard device address format of WindO/I-NV2



MicroLogix1200 Address --- F123:255

WindO/I-NV2 Address --- F 1232550 or F1232551

Allen-Bradley device address format



- WO, WI, WB is same devices as O, I, B. They are used as word devices.
- Floating Point (F) and Long Word (L) are 32-bit devices. When you write to these devices, please be sure to write a high word and low word simultaneously. If you write only high word or only low word, 0 will be written into the other word.

- Cross reference table of devices name

Bit Device

Device Name	Device Symbol	MicroLogix/SLC500	PLC-5	ControlLogix CompcatLogix
SLC/MicroLogix Input	SI	Input (Bit)	-	-
SLC/MicroLogix Output	SO	Output (Bit)	-	-
PLC-5 Input	PI	-	Input (Bit)	-
PLC-5 Output	PO	-	Output (Bit)	-
Binary	B	Binary	Binary	-
Timer Enable bit	TEN	Timer Enable bit	Timer Enable bit	-
Timer Timing Bit	TTT	Timer Timing Bit	Timer Timing Bit	-
Timer Done Bit	TDN	Timer Done Bit	Timer Done Bit	-
Counter Up Enable Bit	CCU	Counter Up Enable Bit	Counter Up Enable Bit	-
Counter Down Enable Bit	CCD	Counter Down Enable Bit	Counter Down Enable Bit	-
Counter Done Bit	CDN	Counter Done Bit	Counter Done Bit	
Counter Overflow Bit	COV	Counter Overflow Bit	Counter Overflow Bit	-
Counter Underflow Bit	CUN	Counter Underflow Bit	Counter Underflow Bit	-
Counter Update Accumulator	CUA	Counter Update Accumulator	-	-
Control Enable Bit	REN	Control Enable Bit	-	-
Control Queue Bit	REU	Control Queue Bit	-	-
Control Aynchronous Done Bit	RDN	Control Aynchronous Done Bit	-	-
Control Synchronous Done BIt	REM	Control Synchronous Done BIt	-	-
Control Error Bit	RER	Control Error Bit	-	-
Control Unload Bit	RUL	Control Unload Bit	-	-
Control Running Bit	RIN	Control Running Bit	-	-
Control Found Bit	RFD	Control Found Bit	-	-

Word Device

Device Name	Device Symbol	MicroLogix/SLC500	PLC-5	ControlLogix CompactLogix
SLC/MicroLogix Input (Word)	SWI	Input (Word)	-	-
SLC/MicroLogix Output (Word)	SWO	Output (Word)	-	-
PLC-5 Input (Word)	PWI	-	Input (Word)	-
PLC-5 Output (Word)	PWO	-	Output (Word)	-
Status	S	Status	Status	-
Timer (Preset Value)	TP	Timer (Preset Value)	Timer (Preset Value)	-
Timer (Accumulated Value)	TA	Timer (Accumulated Value)	Timer (Accumulated Value)	-
Counter (Preset Value)	CP	Counter (Preset Value)	Counter (Preset Value)	-
Counter (Accumulated Value)	CA	Counter (Accumulated Value)	Counter (Accumulated Value)	-
Control LEN	RLEN	Control LEN	-	-
Control POS	RPOS	Control POS	-	-
Bit (Word)	WB	Bit (Word)	Bit (Word)	-
Integer	N	Integer	Integer	INT
Float/REAL	F	Float	-	REAL
Long/DINT	L	Long	-	DINT
Ascii	A	Ascii	Ascii	-
BCD	BCD	-	BCD	-
SINT	SINT	-	-	SINT

4.5.5 Logix DF1 (Full Duplex)

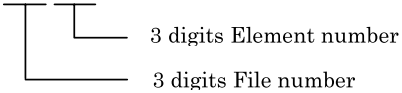
Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
INT	INT	INT	0 - 999999	R/W	10 *1
REAL	REAL	REAL	0 - 9999991	R/W	10*2
DINT	DINT	DINT	0 - 9999991	R/W	10*2
SINT	SINT	SINT	0 - 999999	R/W	10 *1

*1. Address selection rule is as follows.

Standard device address format of WindO/I-NV2

INT 255255



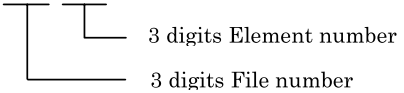
Example

ControlLogix Address --- INT 123:255

WindO/I-NV2 Address --- INT 123255

Allen-Bradley device address format

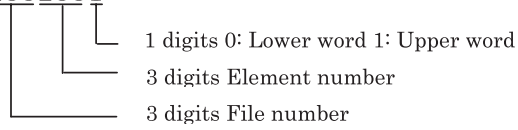
INT 255:255



*2. Address selection rule is as follows.
WindO/I-NV2 uses 32 bit device as the divided 2 word device.
Therefore, the last one digit shows that the device is upper word or lower word.

Standard device address format of WindO/I-NV2

REAL 2552551

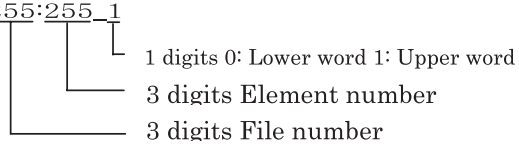


ControlLogix Address --- REAL 123:255

WindO/I-NV2 Address --- REAL 1232550 or F1232551

Allen-Bradley device address format

REAL 255:255_1



4.6 The way to set device address when use ControlLogix, CompactLogix series

In ControlLogix and CompactLogix series, device is set with tag name. However you have to set with Symbol and Address format which is same as MicroLogix, SLC 500 and PLC-5 because WindO/I-NV2 can not operate tag name directly.

You have to attach each tag names to device symbol and device address at that time.

The work is called to mapping.

4.6.1 The way of mapping

The following work is done in RS Logix 5000 software.

1. **Define some tags to communicate with MICRO/I in "Controller Tags"**
2. **Select "Logic" and "Map PLC/SLC Messages…" on main menu in RS Logix 5000 software.**
3. **Attach File Number to each tag name in "PLC3,5/SLC Mapping" dialog box.**

4.6.2 The way to select device address in WindO/I-NV2

When select device address in WindO/I-NV2, set tag type to device symbol and set array number to File Number.

4.6.3 The process to select device address

Define some tags in RSLogix 5000 software.

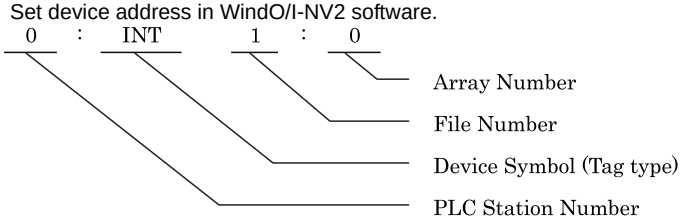
Tag name	Type	Array
Tag_A	INT	[10]
Tag_B	SINT*1	[10]
Tag_C	DINT	[10]
Tag_D	REAL	[10]

*1. Must define SINT type's tag with couple of byte.

Do mapping tag to File Number.

Tag name	Type	Array		File Number
Tag_A	INT		-	1
Tag_B	SINT	[10]	-	2
Tag_C	DINT	[10]	-	3
Tag_D	REAL	[10]	-	4

Set device address in WindO/I-NV2 software.



4.6.4 Setting Example for WindO/I-NV2

Refer to the following about setting example for WindO/I-NV2 software.

(PLC station number is 0 in the example.)

*The setting example use Allen-Bradley device address format.

Tag name	Type	Array		File Number
Tag_A	INT		-	1
Tag_B	SINT	[10]	-	2
Tag_C	DINT	[10]	-	3
Tag_D	REAL	[10]	-	4

Example1: Set an array number 0 in Tag_A.
0: INT 1:0

Example2: Set an array number 5 in Tag_B.
0: SINT 2:5

Example3: Set a lower word on array number 3 in Tag_C.
0: DINT 3:3_0

Example4: Set an upper word on array number 9 in Tag_D.
0: REAL 4:10_1

Note:
Need to set upper word or lower word in WindO/I-NV2 software when use 32 bit device.
Add “_0” after array number when use lower word.
Add “_1” after array number when use upper word.

5 SIEMENS

5.1 Connection Table

5.1.1 Compatible PLCs

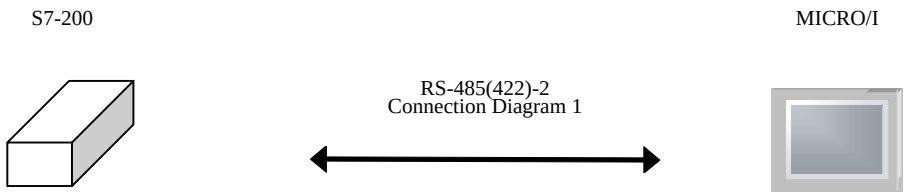
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
S7-200	CPU212, CPU214 CPU215, CPU216*1 CPU221, CPU222 CPU224, CPU224XP CPU226, CPU226XM*1	Not required (connects to CPU unit directly)	RS-485 (422)-2 Connection Diagram 1 (refer to P210)	None	S7-200 (PPI)
S7-300	CPU 313*1, CPU 314 CPU 315, CPU 315-2DP*1 CPU 316, CPU 318	CP-340*1 CP-341*1	RS-232C Connection Diagram 2 (refer to P214)	Hardware	S7-300 3964(R) /RK512
			RS-485 (422)-4 Connection Diagram 3 (refer to P216)	None	
	CPU 313-2PtP	Not required (connects to CPU unit directly)	RS-485 (422)-2 Connection Diagram 4 (refer to P218)	None	S7-MPI
S7-400	CPU 412, CPU 414 CPU 416, CPU 416F-2*1, CPU 417	CP-440 CP-441*1	RS-232C Connection Diagram 2 (refer to P214)	Hardware	S7-300 3964(R) /RK512
			RS-485 (422)-4 Connection Diagram 3 (refer to P216)	None	

*1. We tested with the PLC of these parts.

5.2 System Configuration

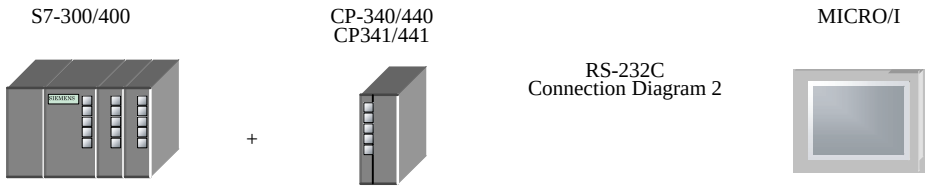
The following document explains the connection of SIEMENS PLCs to MICRO/I screens.

5.2.1 S7-200

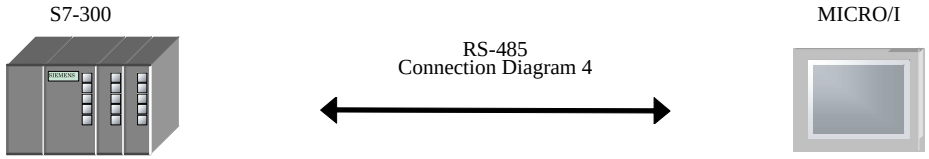


Connects to Serial port of CPU unit.

5.2.2 S7-300/400(CP-340, CP-341)



5.2.3 S7-300(MPI Interface)

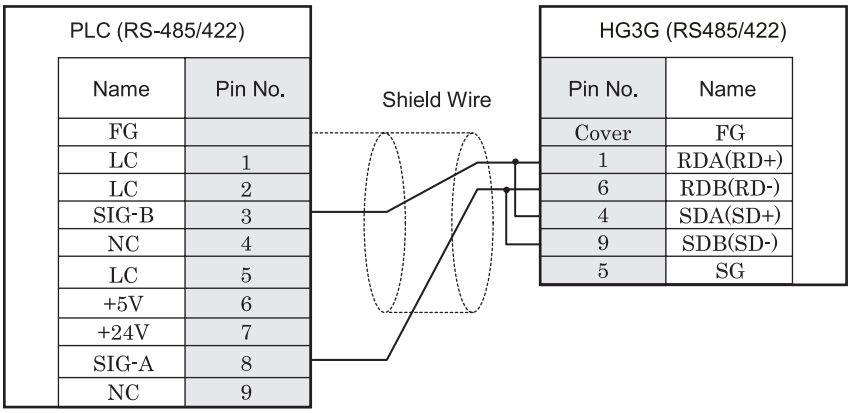


5.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

5.3.1 Connection Diagram 1: S7-200 (RS-485) to MICRO/I

HG3G (Connector)

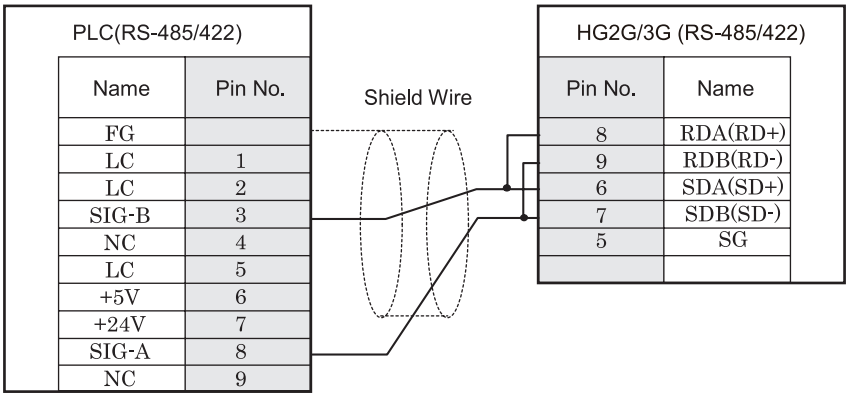


D-sub, 9P socket connector (plug type)

D-sub, 9P connector plug type

- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.

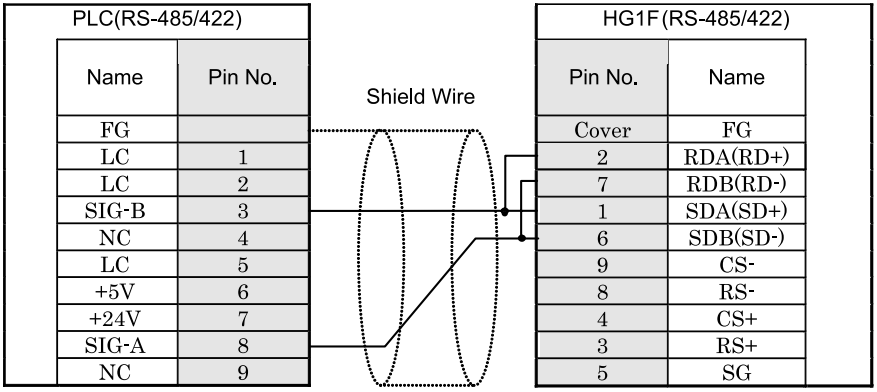
HG2G/3G (Terminal)



D-sub, 9P socket connector (plug type) Terminal

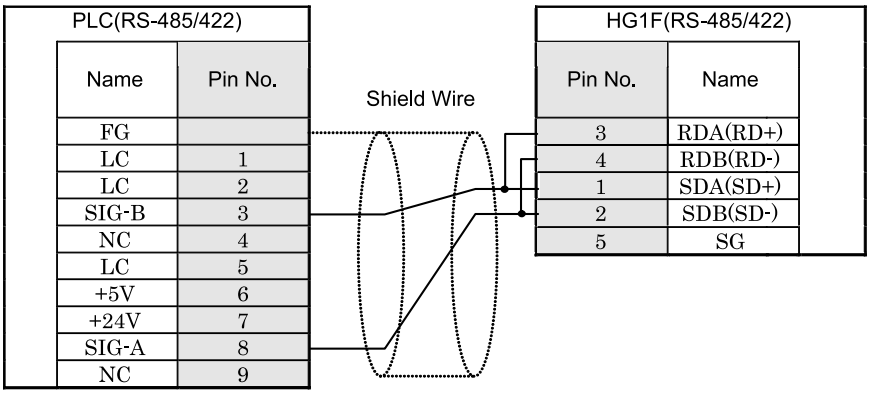
- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG1F (Connector)



D-sub, 9P socket connector (plug type) D-sub, 9P connector socket type

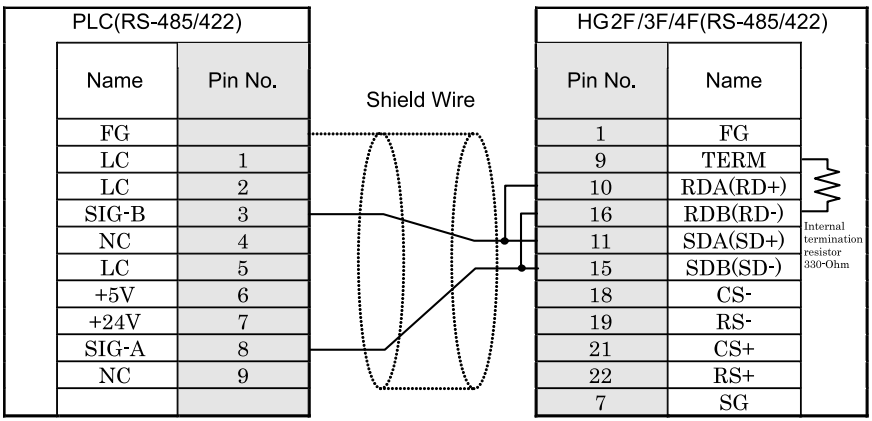
HG1F (Terminal)



D-sub, 9P socket connector (plug type) Terminal

- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

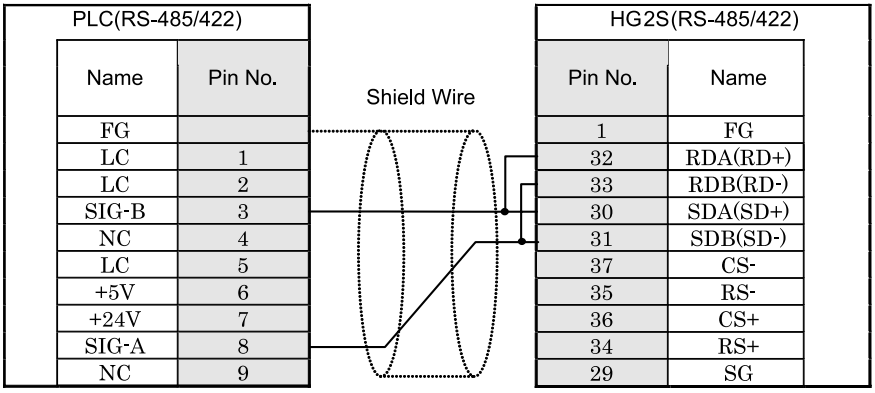
HG2F/3F/4F



D-sub, 9P socket connector (plug type) D-sub, 25P connector socket type

- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.

HG2S



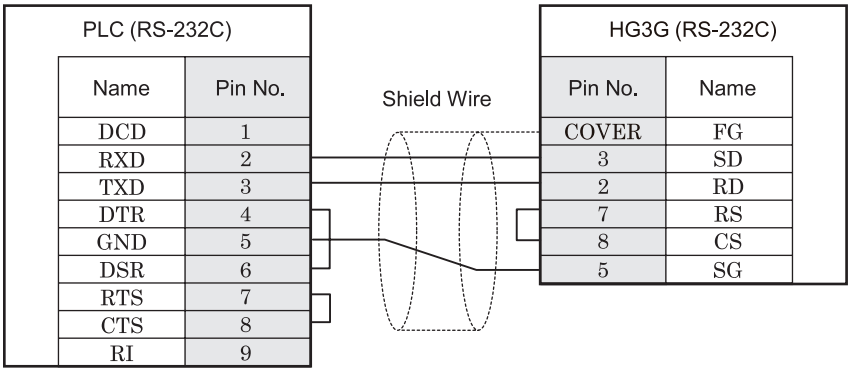
D-sub, 9P socket connector (plug type)

D-sub, 37P connector socket type

- It is also possible to connect multiple PLCs and multiple MICRO/Is on the same network.
- Please short-circuit the RDA and SDA of MICRO/I and connect to SIG-B of PLC.
- Please short-circuit the RDB and SDB of MICRO/I and connect to SIG-A of PLC.
- Refer to S7-200 manual for restrictions when using multi-drops.
- When using multiple PLCs to communicate to multiple MICRO/Is, it will take extra time to establish communication between PLCs and OIs.
- There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

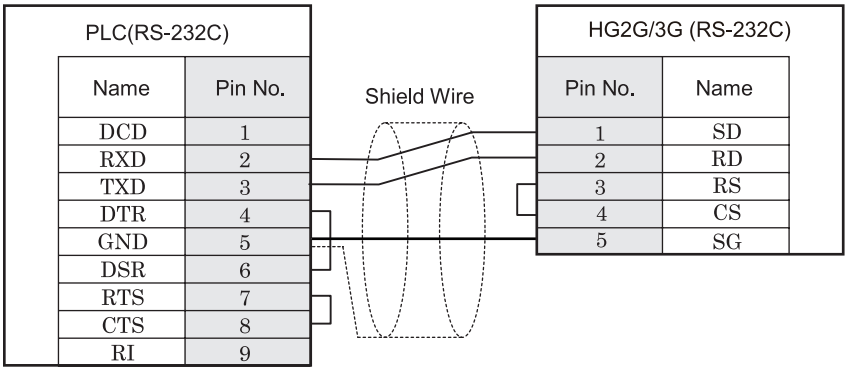
5.3.2 Connection Diagram 2: S7-300/S7-400 + Communication Interface (RS-232C) to MICRO/I

HG3G (Connector)



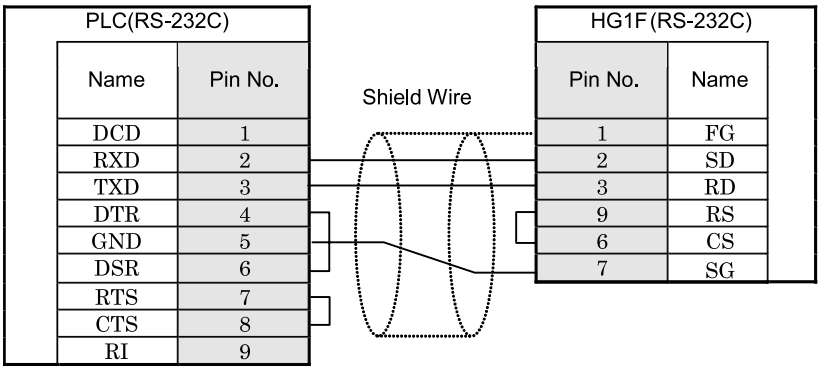
D-sub, 9P connector socket type D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 9P connector socket type Terminal

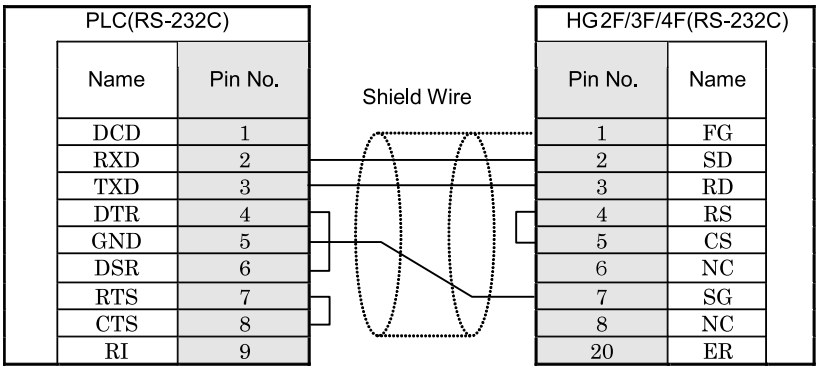
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

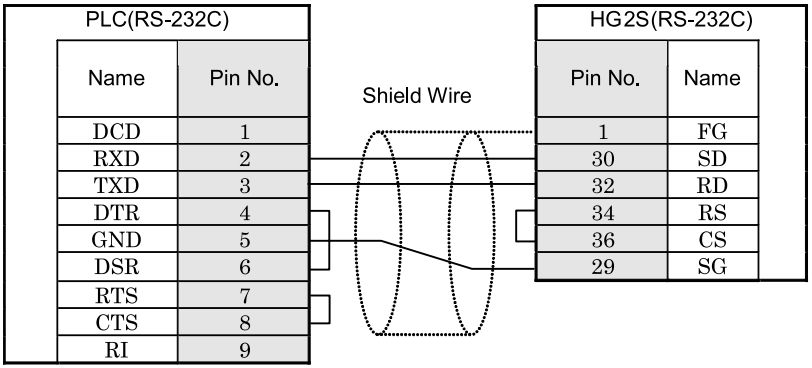
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S

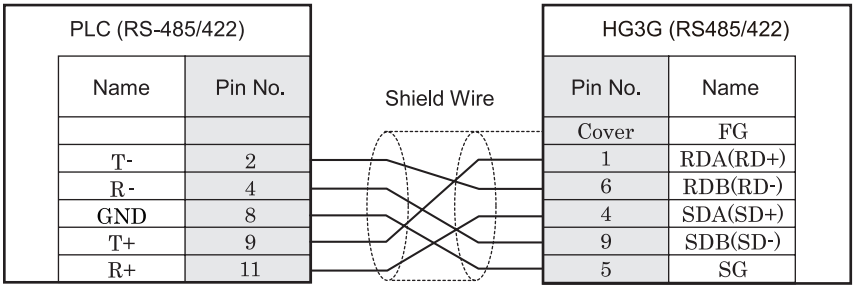


D-sub, 9P connector socket type

D-sub, 37P connector socket type

5.3.3 Connection Diagram 3: S7-300/S7-400 + Communication Interface (RS-485/422) to MICRO/I

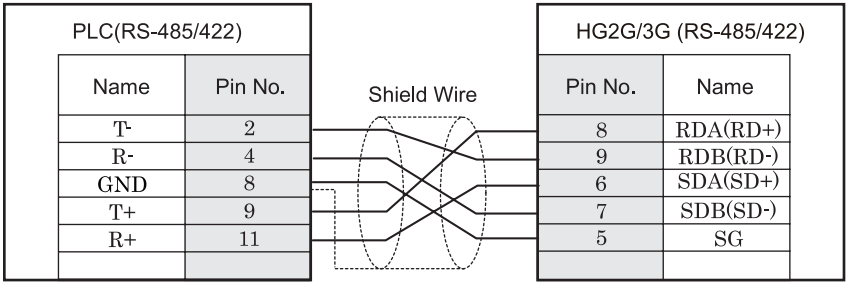
HG3G (Connector)



Mini Din 8P socket type

D-sub, 9P connector plug type

HG2G/3G (Terminal)

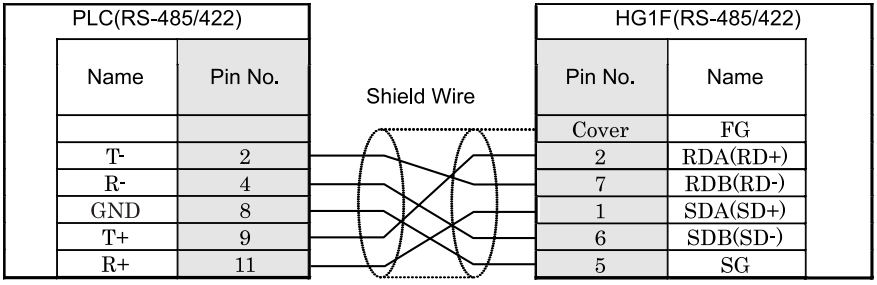


Mini Din 8P socket type

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

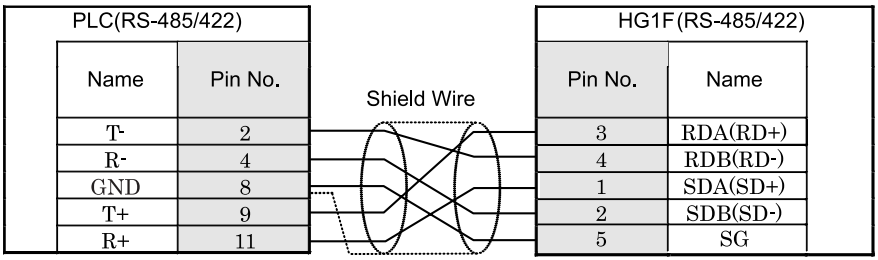
HG1F (Connector)



Mini Din 8P socket type

D-sub, 9P connector socket type

HG1F (Terminal)

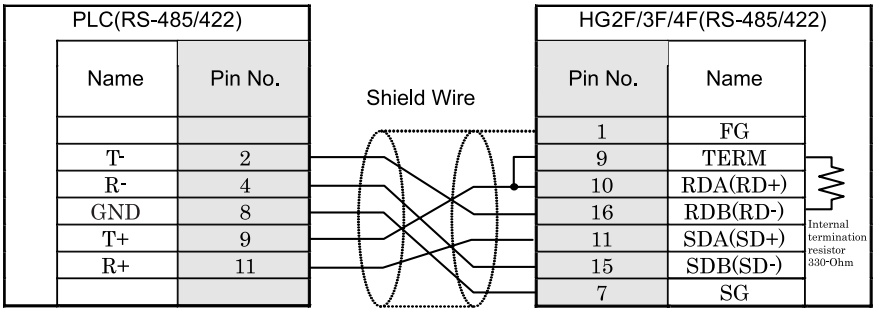


Mini Din 8P socket type

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

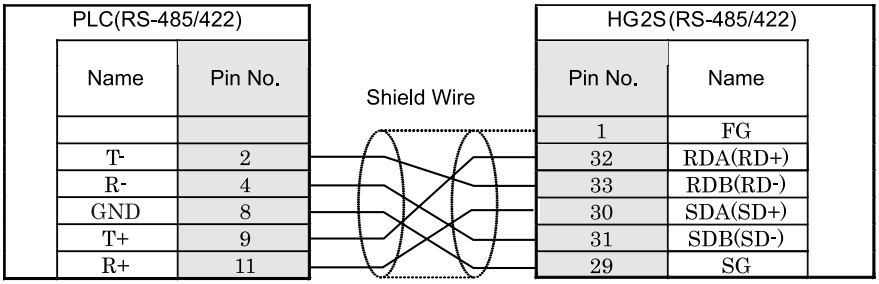
HG2F/3F/4F



Mini Din 8P socket type

D-sub, 25P connector socket type

HG2S



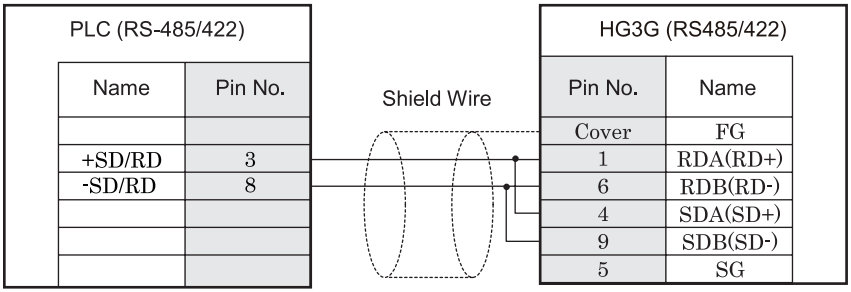
Mini Din 8P socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

5.3.4 Connection Diagram 4: S7-300 MPI Interface (RS-485) to MICRO/I

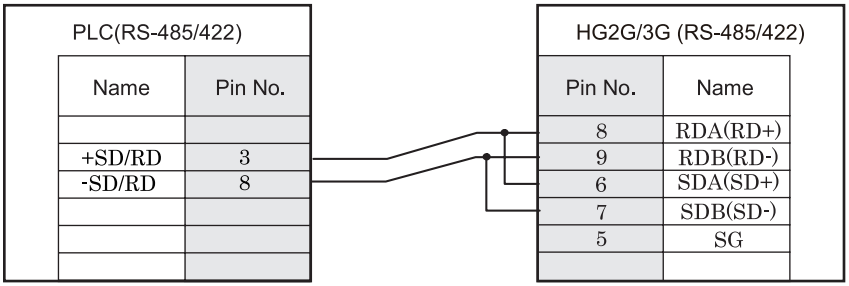
HG3G (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector plug type

HG2G/3G (Terminal)

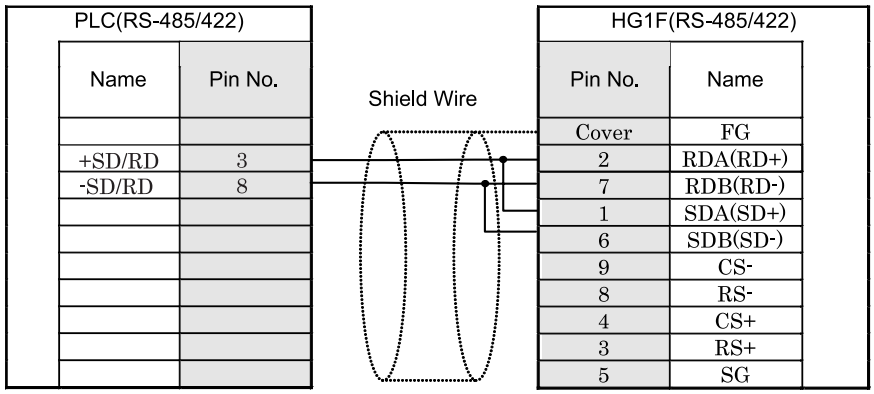


D-sub, 9P connector socket type

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

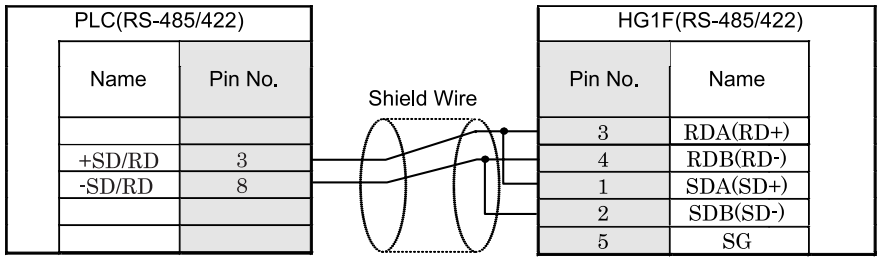
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)

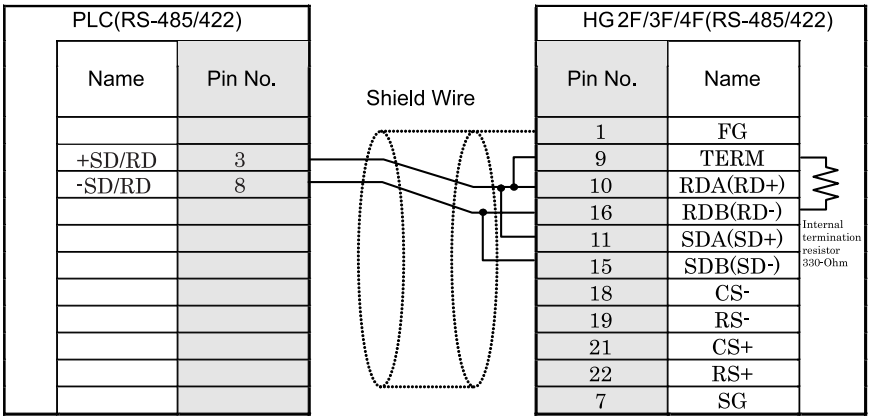


D-sub, 9P connector socket type

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

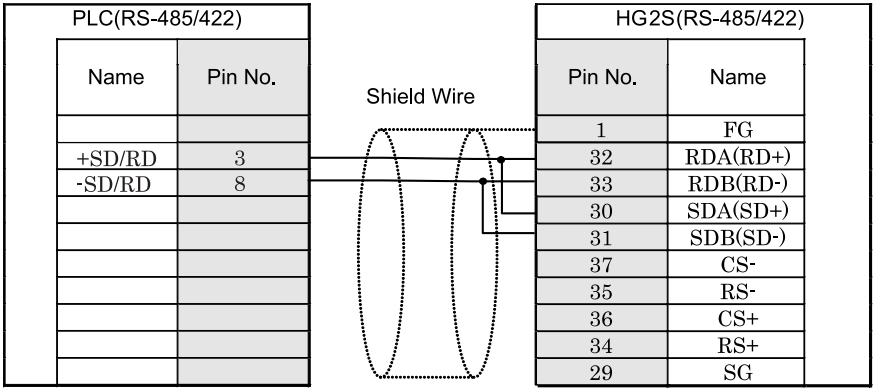
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S



D-sub, 9P connector socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

5.4 Environment Settings

5.4.1 S7-200

The communication port settings for S7-200 and MICRO/I host port are as follows.

Items	Details
PLC Address	1 to 126(Dec) (0 to 7e (Hex)) Set the value to same value as ADDRESS (PLC) in WindO/I-NV2.
Highest Address (Highest Station Address)	1 to 126(Dec) (0 to 7e(Hex)) Set the value to same value as HSA in WindO/I-NV2.
Baud Rate (bps)	9600 / 19200 Set the value to same value as Baud Rate in WindO/I-NV2.
HG Address	0 to 7e (Hex) (0 to 126(Dec)) Set the value as ADDRESS (HG) in WindO/I-NV2.
Data Bits (bit)	8 (fixed) Set the value in WindO/I-NV2.
Parity	EVEN (fixed) Set the value in WindO/I-NV2.
Stop bit (bit)	1 (fixed) Set the value in WindO/I-NV2.

- Set the communication port that communicates with MICRO/I to PPI/Slave mode. Please make sure to set SMB30 or SMB130 values to 0 in order to select proper communication port settings. Refer to the manual of S7-200 for details.

- We checked the following problems in some versions of S7-200.
  When S7-200 is set as the master and the address of S7-200 is the same as HSA, token path does not work correctly.
  This problem can be solved by setting HSA as a larger value than Address actually used.
  This problem does not occur when one MICRO/I is connected to one S7-200 PLC.

5.4.2 S7-300/400 with Communication Module

The communication port settings for S7-300 and MICRO/I host port are as follows.

Items		Details
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C
Baud Rate (bps)		1200/2400/4800/9600/19200/38400
Data Bits (bit)		8 (Fixed)
Parity		Even/Odd/None
Stop Bits (bit)		1/2
BCC		Enable/Disable
Priority		Low

- MICRO/I type performs communication based on 3964 (R) and RK512 protocol.
  CP340 is supporting only the 3964 and 3964R protocol. Therefore when using CP340, it is necessary to construct the program to realize RK512 protocol in PLC. This is programmed using the function blocks FB2 and FB3, in SIEMENS PLC.
- CP341 is supporting 3964 (R) and RK512 protocol, please choose RK512 by setup PLC.
- The program of CP340 refers to a sample program.
  The sample program is recorded on CD-ROM after Wind O/I NV2 Ver2.50.
  Please refer to the following folder.
  (Wind O/I NV2 CD-ROM) /Sample/Host_if/SIEMENS/ Downloading from our Web site is possible.

5.4.3 S7- 300 with MPI Interface

The communication port settings for S7-300 and MICRO/I host port are as follows.

Items		Details
Serial Interface	Use the same settings as for the MICRO/I.	RS-485 (422)-2 wire
Baud Rate (bps)		19200(Fixed)
Data Bits (bit)		8 (Fixed)
Parity		Even (Fixed)
Stop Bits (bit)		1 (Fixed)
HG Node Address	It should not be duplicated to other node addresses	1 - 126 (The default value is 1)
PLC Node Address	Use the same settings as for the MICRO/I.	1 - 126 (The default value is 2)
Maximum MPI Address		1 - 126 (The default value is 31)

5.5 Usable Devices

5.5.1 S7-200

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Variable memory	V	V	0 - 102397	R/W	*1
Process-image-input-register	I	I	0 - 157	R	*1
Process-image-output-register	Q	Q	0 - 157	R/W	*1
Bit memory	M	M	0 - 317	R/W	*1
Special Memory	SM	SM	0 - 5497	R	*1
Timer (Bit)	T	T	0 - 255	R	Dec
Counter (Bit)	C	C	0 - 255	R	Dec
Sequential control relay	S	S	0 - 317	R/W	*1

*1. The 1st figure is written with the number of octal number, and the 2nd [or more] figure is written with the number of decimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Variable memory	VW	VW	0 - 10238	R/W	*1
Timer (Current Value)	TW	T	0 - 255	R/W	Dec
Counter (Current Value)	CW	C	0 - 255	R/W	Dec
Process-image-input-register	IW	IW	0 - 14	R	*1
Process-image-output-register	QW	QW	0 - 14	R/W	*1
Bit memory	MW	MW	0 - 30	R/W	*1
Special Memory	SMW	SMW	0 - 548	R	*1
Analog input	AIW	AIW	0 - 62	R	*1
Analog output	AQW	AQW	0 - 62	R/W	*1
Sequential control relay	SW	SW	0 - 30	R/W	*1
High speed counter	HC	HC	0 - 51	R	*2

*1. Only even number can be specified.
*2. The 1st figure is written with the number of binary number, and the 2nd [or more] figure is written with the number of decimal.

- The devices (V, I, Q, M, SM, S) which include a period in the address in S7-200 are written without a period in MICRO/I. For example, V10.1 is written as V101 in MICRO/I.
  AC (Accumulator registers), L (Local memory) of PLC Devices can not use in MICRO/I.

- The value of High speed counter which is a double word value is divided into two, and is treated as WORD device in MICRO/I.
  The higher word is written by adding 0 to the lowest digit of the address, the lower word is written by adding 1 to the lowest digit of the address.
  For example, the lower word of HC1 is written as HC11 in MICRO/I.
  If you read in a double word value, The lowest digit of the address write 0. For example, HC2 is written as HC20 in MICRO/I.

5.5.2 S7- 300/400 with Communication Module

When using CP-341/441, following devices can be read and written.

When using CP-340440, only a data block (DB) can be read and written.

Bit Device

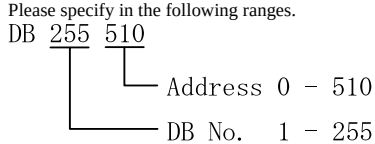
Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input (Bit)	I	I	0 - 1277	R	*1
Output (Bit)	Q	Q	0 - 1277	R	*1
Memory (Bit)	M	M	0 - 2557	R	*1

*1. The 1st figure is written in octal number format,
and the 2nd [or more] figure is written in decimal number format.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input (Word)	IW	IW	0 - 126	R	*1
Output (Word)	QW	QW	0 - 126	R	*1
Bit Memory (Word)	MW	MW	0 - 254	R	*1
Timer cell	T	T	0 - 127	R	Dec
Counter cell	C	C	0 - 63	R	Dec
Data Block	DB	DB	1000 - 255510	R/W	*1*2

*1. Only an even number can be specified.
*2. Please specify in the following ranges.



- When a non activated data block is accessed in the PLC, a communication error will occur. Please be sure to activate relevant data blocks in the PLC.
- Endians differ in S7-300, and MICRO/I type. Please use neither bit specification of a WORD device, nor 32-bit WORD (double WORD).

5.5.3 S7- 300 with MPI Interface

Bit Device

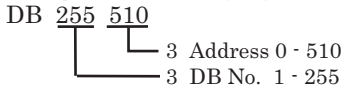
Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input (Bit)	I	I	0 - 10237	R	*1
Output (Bit)	Q	Q	0 - 10237	R/W	*1
Memory (Bit)	M	M	0 - 163837	R/W	*1

*1. The 1st figure is written in octal number format,
and the 2nd [or more] figure is written in decimal number format.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input (Word)	IW	IW	0 - 1022	R	*1
Output (Word)	QW	QW	0 - 1022	R/W	*1
Bit Memory (Word)	MW	MW	0 - 16382	R/W	*1
Timer cell	T	T	0 - 2047	R	Dec
Counter cell	C	C	0 - 2047	R	Dec
Data Block	DB	DB	1000 - 255510	R/W	*1*2

*1. Only an even number can be specified.
*2. Please specify in the following ranges.



- When a non activated data block is accessed in the PLC, a communication error will occur. Please be sure to activate relevant data blocks in the PLC.
- Endians differ in S7-300, and MICRO/I type. Please use neither bit specification of a WORD device, nor 32-bit WORD (double WORD).

6 Keyence

6.1 Connection Table

6.1.1 Compatible PLCs

Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
KV-700/1000	KV-700[*1] KV-1000[*1]	Not required (connects to CPU unit)	RS-232C Connection Diagram 1 (refer to P228)	ER control	KV-700/1000
		KV-L-20R[*1]	RS-232C(PORT1) Connection Diagram 2 (refer to P230)		
			RS-232C(PORT2) Connection Diagram 3 (refer to P232)		
			Cable for RS-422/485-4 Connection Diagram 4 (refer to P234)		
			Cable for RS-422/485-2 Connection Diagram 5 (refer to P237)		
Visual KV[*2]	KV-10[*1], 16, 24, 40	Not required (connects to CPU unit)	RS-232C Connection Diagram 1 (refer to P228)	None	KV/KZ
Conventional KV	KV-10, 16, 24, 40 / 80[*1]				

*1. We tested with the PLC of these parts.
*2. MICRO/I does not correspond to all the Visual KV series.

6.2 System Configuration

This is the system configuration for connection of Keyence PLCs to the MICRO/I.

6.2.1 Connection to the CPU unit modular connector for KV-700/1000

KV-700/1000

RS-232C
Connection Diagram 1

MICRO/I

6.2.2 Connection to the D-sub, 9P connector plug type for KV-20R

KV-700/1000 + KV-L20R
(PORT1)

RS-232C
Connection Diagram 2

MICRO/I

6.2.3 Connection to the terminal block for KV-20R

KV-700/1000 + KV-20R
(PORT2)

RS-232C
Connection Diagram 3

RS-422/485-4wire
Connection Diagram 4

RS-422/485-4wire
Connection Diagram 5

MICRO/I

6.2.4 Connection to the CPU unit modular connector for KV/KZ series

KZ-10, 16, 20, 40, 80

RS-232C
Connection Diagram 1

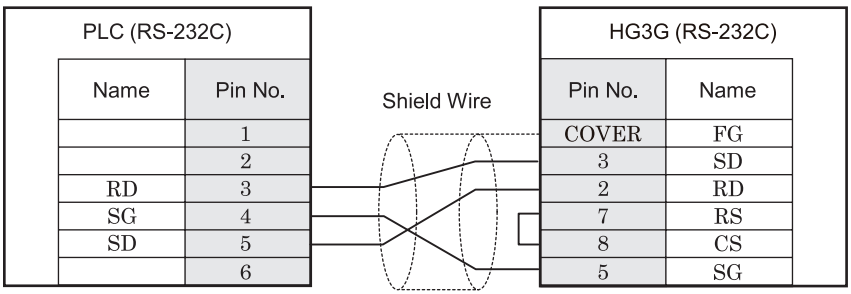
MICRO/I

6.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

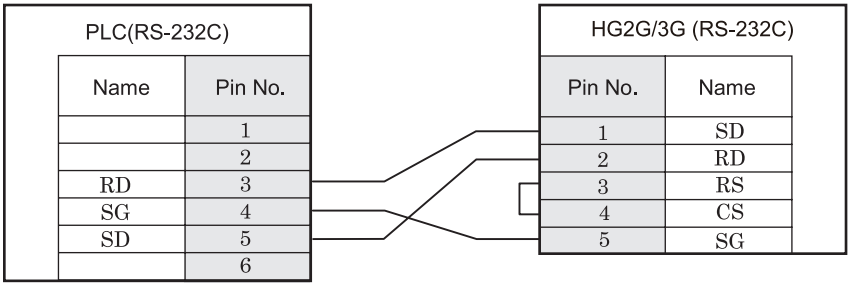
6.3.1 Connection Diagram 1: KV-700/1000, Conventional KV to MICRO/I

HG3G (Connector)



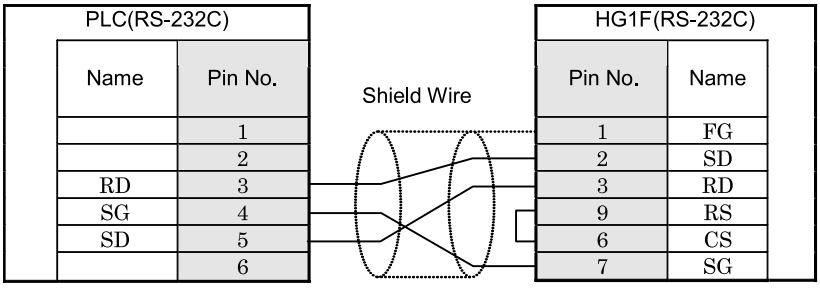
Modular connector — D-sub, 9P connector plug type

HG2G/3G (Terminal)



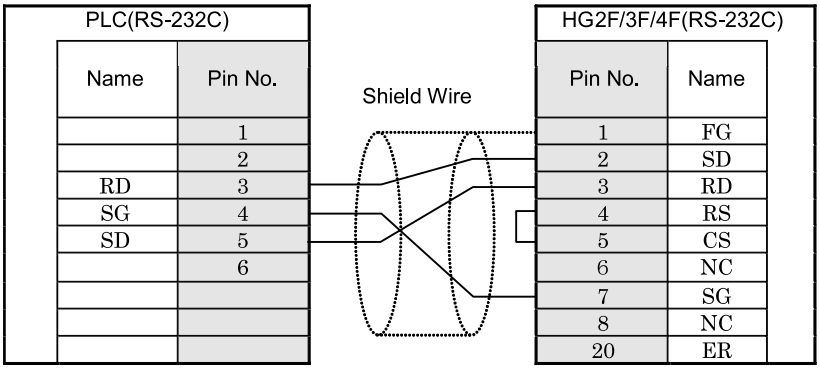
Modular connector — Terminal

HG1F (Connector)



Modular connector — D-sub, 9P connector socket type

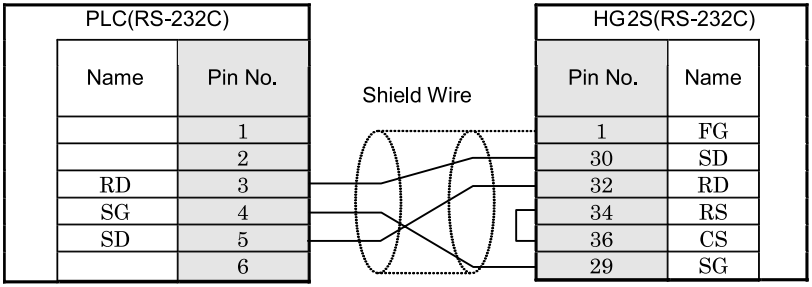
HG2F/3F/4F



Modular connector

D-sub, 25P connector socket type

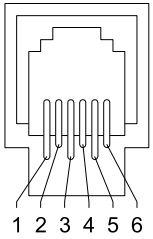
HG2S



Modular connector

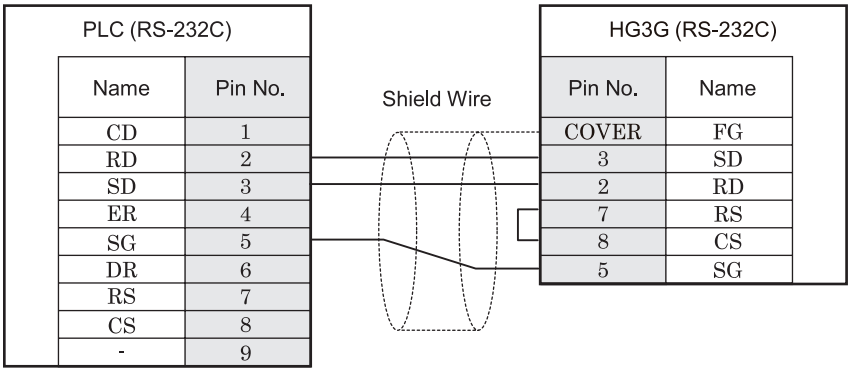
D-sub, 37P connector socket type

Connector Pin Layout for PLC side Modular jack



6.3.2 Connection Diagram 2: KV-700/1000 + KV-20R (PORT1) to MICRO/I

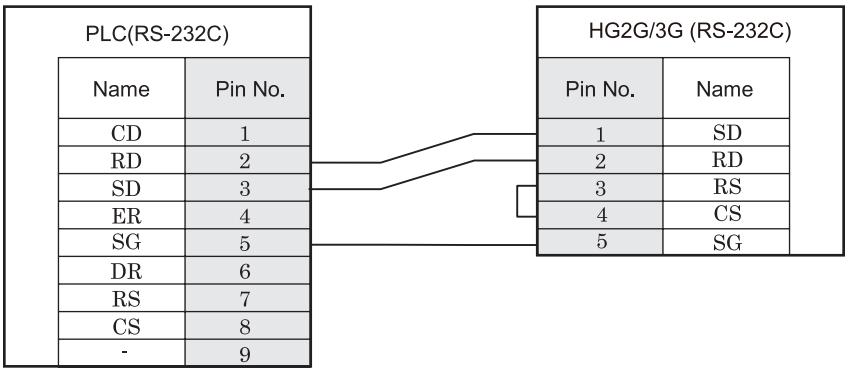
HG3G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

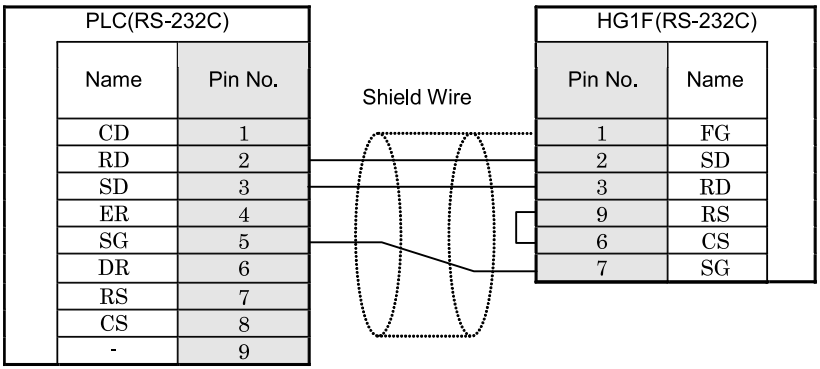
HG2G/3G (Terminal)



D-sub, 9P connector plug type

Terminal

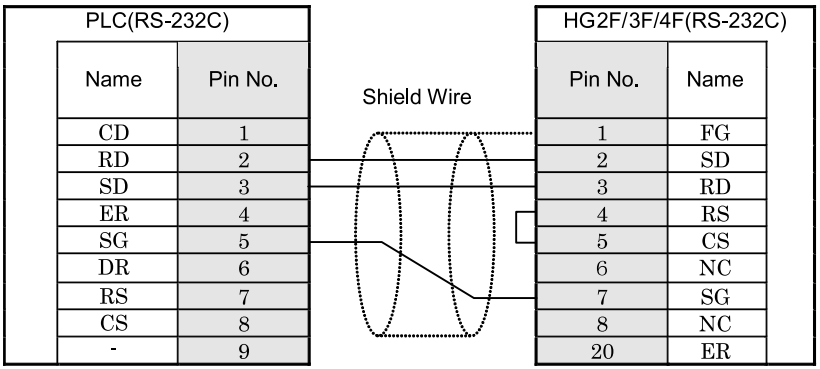
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

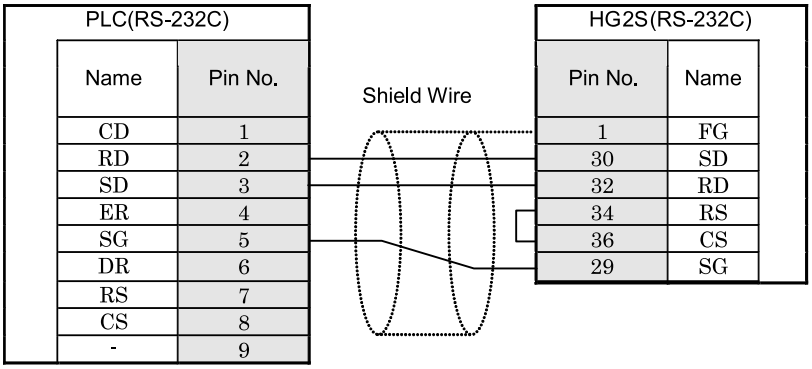
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

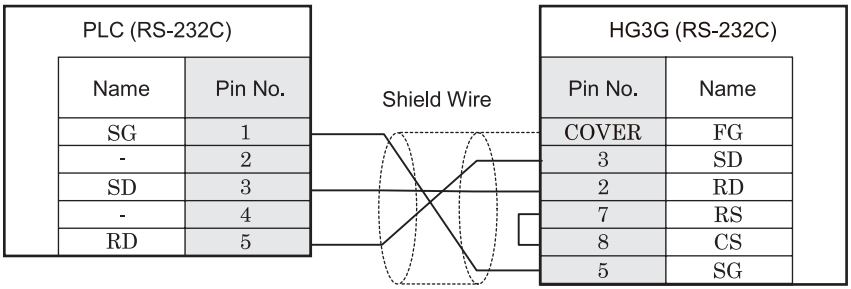


D-sub, 9P connector plug type

D-sub, 37P connector socket type

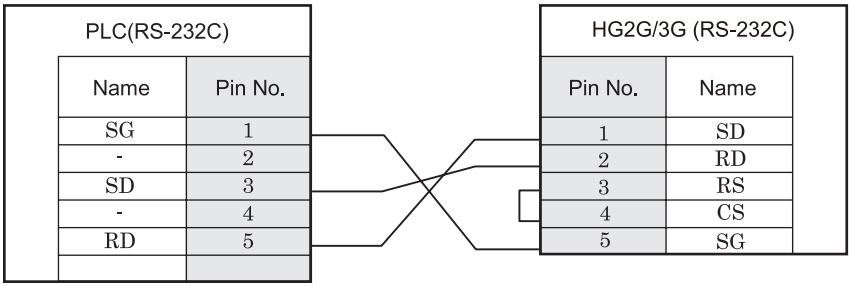
6.3.3 Connection Diagram 3: KV-700/1000 + KV-20R (PORT2-RS-232C) to MICRO/I

HG3G (Connector)



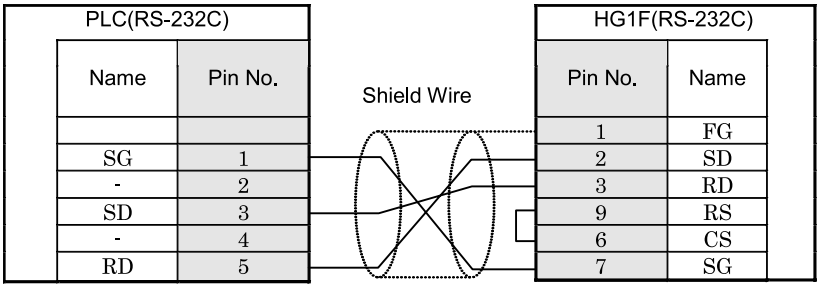
Screw terminal block — D-sub, 9P connector plug type

HG2G/3G (Terminal)



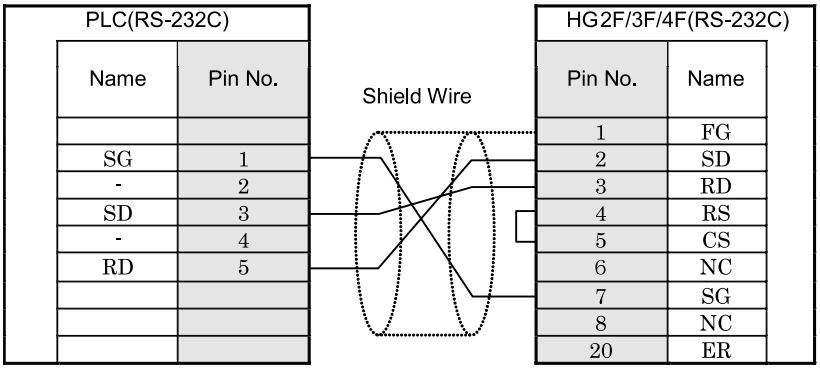
Screw terminal block — Terminal

HG1F (Connector)



Screw terminal block — D-sub, 9P connector socket type

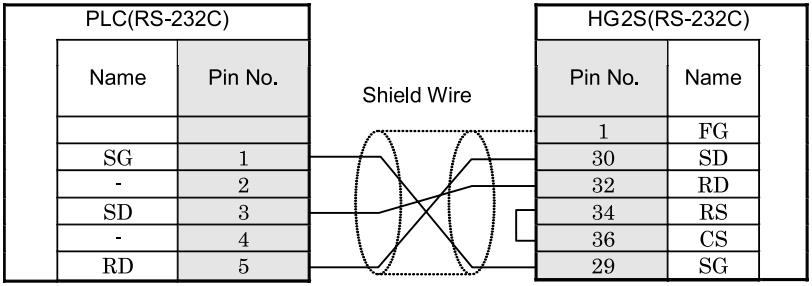
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S

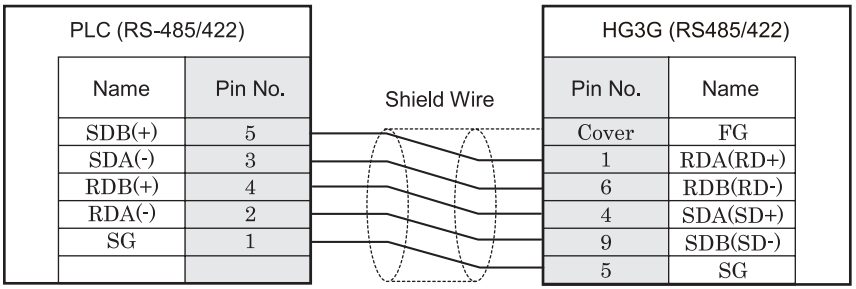


Screw terminal block

D-sub, 37P connector socket type

6.3.4 Connection Diagram 4: KV-700/1000 + KV-20R (PORT2-RS-422A/485-4wire) to MICRO/I

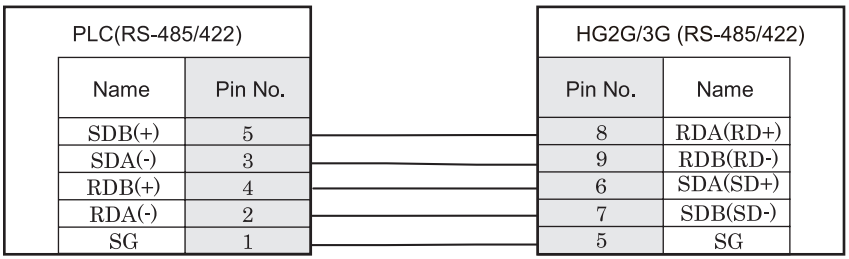
HG3G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)

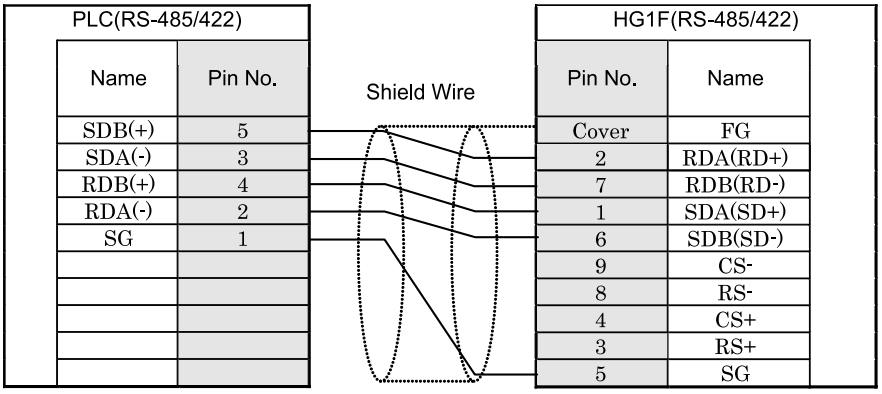


Screw terminal block

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

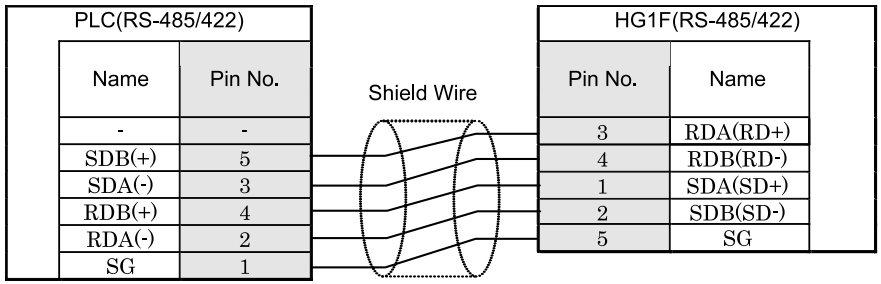
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

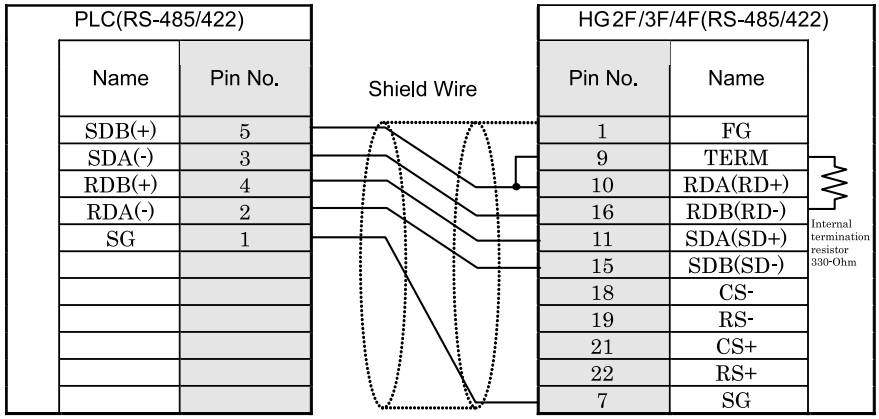


Screw terminal block

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

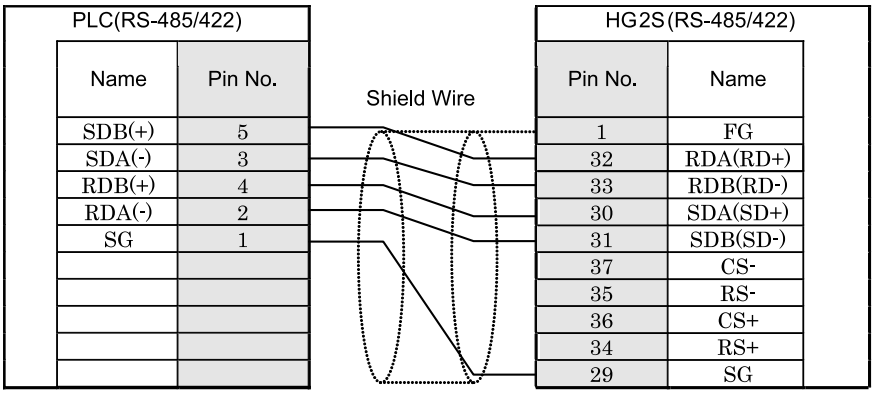
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S



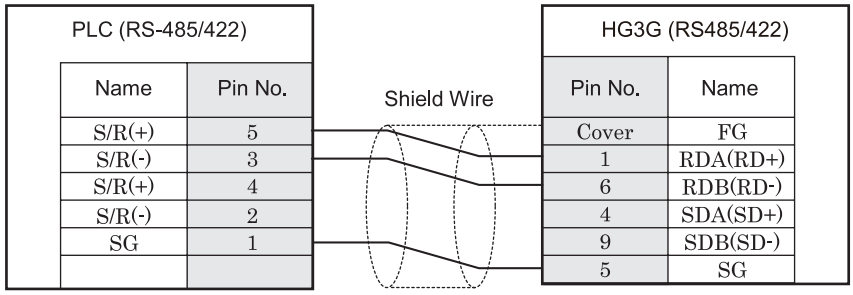
Screw terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

6.3.5 Connection Diagram 5: KV-700/1000 + KV-20R (PORT2-RS-485-2wire) to MICRO/I

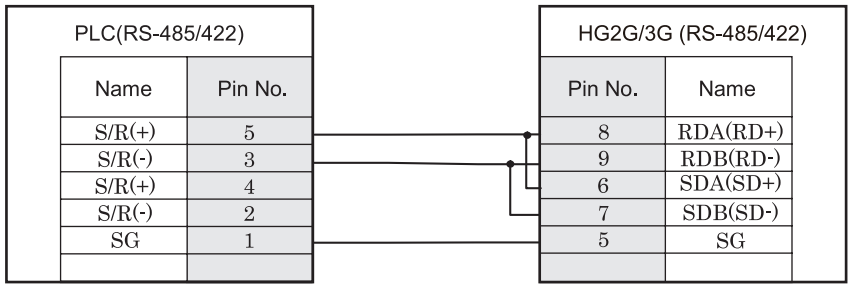
HG3G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)



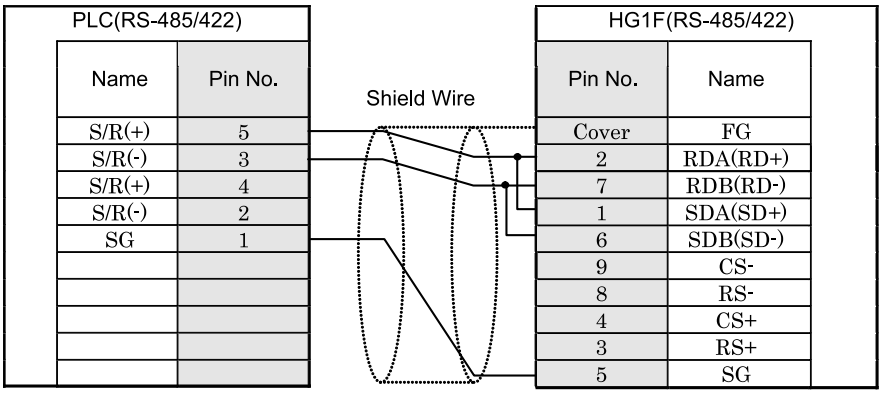
Screw terminal block

Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

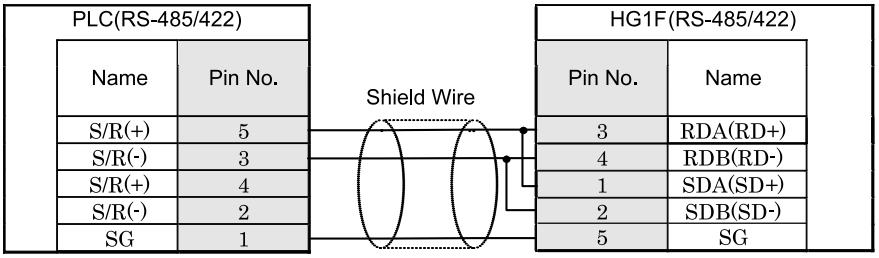
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

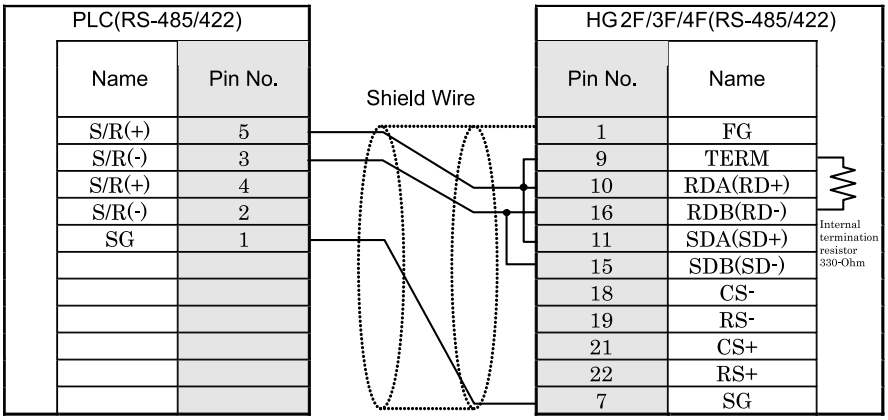


Screw terminal block

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

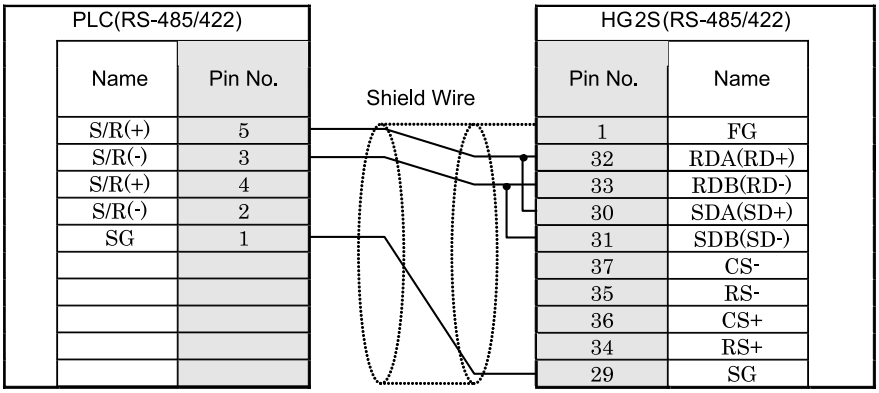
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S



Screw terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

6.4 Environment Settings

6.4.1 KV-700/1000, Conventional KV Series

Item	Setting
Communication Network Number	RS-232C
Data Bits	8
Baud Rate (bps)	9600
Parity	Even
Stop Bits	1

- Communication parameters are fixed. Please select above-mentioned settings for proper communication.
- Refer to the PLC manual for details.
- When you communicate with CPU unit for KV-700, check the check box of “Connect CPU Unit (Enable)/Link Unit (Disable)” for the communication setting.

6.4.2 Environment Settings for connection to the KV-1000

Item	Setting
Transmission method	RS-232C
Baud rate (bps)	9600/19200/38400/57600/115200
Data length (bit)	8
Parity	Even
Stop bit (bit)	1

- See the operation manual of PLC for more information.
- When setting the baud rate to less than 4800 bps, the communications was executed at the baud rate of 9600 bps.
- When you communicate with CPU unit for KV-1000, check the check box of “Connect CPU Unit (Enable)/Link Unit (Disable)” for the communication setting.

6.4.3 Environment settings for connection to the KV-700/1000 + KV-20R

Item	Setting
Transmission method	RS-232C, RS-422/485 2-wire type, RS-422/485 4-wire type
Baud rate (bps)	1200/2400/4800/9600/19200/38400/57600/115200
Data length (bit)	8
Parity	Even
Stop bit (bit)	1

- See the operation manual of PLC for more information.
- When you communicate with communication unit for KV-20R, unchecked the check box of “Connect CPU Unit (Enable)/Link Unit (Disable)” for the communication setting.

6.5 Usable Devices

6.5.1 KV-700/1000

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	-	0 - 15	R	
Output Relay	Y	-	500 - 507	R/W	
Internal Relay	M	-	504 - 915	R/W	
Exp. /Spec. Internal Relay	R	-	1000 - 59915	R/W	
Exp Int. Relay	MR	MR	0 - 99915	R/W	
Latch Relay	LR	LR	0 - 99915	R/W	
Control Relay	CR	CR	0 - 3915	R/W	*1
Timer (Relay)	T	T	0 - 3999	R/W	
Counter (Relay)	C	C	0 - 3999	R/W	
High-speed counter comparator (Relay)	CTC	CTC	0 - 3	R/W	

*1. Some addresses are read only devices. Refer to the PLC manual for details.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Timer (Preset)	TS	T	0 - 39991	R	*1
Timer (Current)	TC	T	0 - 39991	R	*1
Counter (Preset)	CS	C	0 - 39991	R	*1
Counter (Current)	CC	C	0 - 39991	R	*1
High-speed counter (Current)	CTH	TCH	00 - 11	R	*1
High-speed counter comparator (Preset)	CTCS	CTC	00 - 31	R	*1
Data Memory	DM	DM	0 - 65534	R/W	
Exp Data Memory E	EM	EM	0 - 65534	R/W	
Exp Data Memory F	FM	FM	0 - 32766	R/W	
Temporary Memory	TM	TM	0 - 511	R/W	
Control Memory	CM	CM	0 - 11998	R/W	*2
Contents Resistor	Z	Z	1 - 12	R/W	

*1. These devices are 32-bit devices.
When using these devices, please add an extra Zero to the PLC address as shown below.
Ex: In case of setting Timer (Preset)
PLC: T511, WindO/I-NV2: T5110

*2. Some addresses are read only devices. Refer to the PLC manual for details.

- Only a reset action is possible for a High-speed counter comparator (Relay).
- If set operation is performed, since a communication error will occur, please do not use it.
- The address range is dependant on the PLC model. Refer to the PLC manual for details.

6.5.2 Visual KV/Conventional KV Series

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Basic Input Relay	X	-	0 - 215	R	
Basic Output Relay	Y	-	500 - 615	R/W	
Internal Utility Relay	M	-	1000 - 1915, 3000 - 15915	R/W	
Extension Input Relay	SX	-	100 - 415	R	
Extension Output Relay	SY	-	600 - 915	R/W	
Timer (Contact)	T	T	0 - 249	R	
Counter (Contact)	C	C	0 - 249	R	
Special Internal Relay	SM		2000 - 2915	R/W	*1

*1. Refer to the PLC manual for read/write limitations.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Timer (Preset)	TS	TS	0 - 249	R/W	
Timer (Current)	TC	TC	0 - 249	R/W	
Counter (Preset)	CS	CS	0 - 249	R/W	
Counter (Current)	CC	CC	0 - 249	R/W	
Data Memory	D	D	0 - 9999	R/W	
Temporary Memory	TM	TM	0 - 31	R/W	*1

*1. Refer to the PLC manual for read/write limitations.

- The address range is dependant on the PLC model. Refer to the PLC manual for details.
- MICRO/I does not correspond to all the Visual KV series.

7 SHARP

7.1 Connection Table

7.1.1 Compatible PLCs

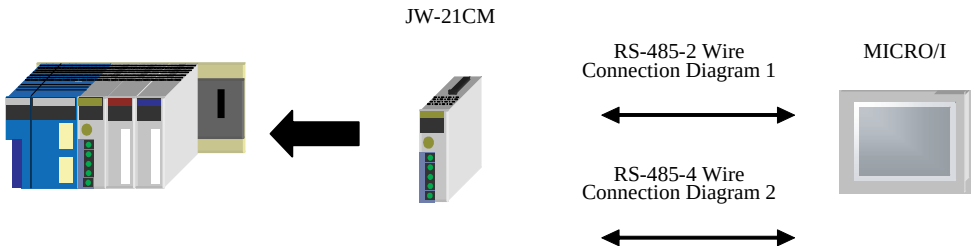
Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
New Satellite JW	JW-10	Not required (connects to CPU unit)	RS-422-MMI Port Connection Diagram 6 (refer to P260)	ER control	JW
			RS-485 Connection Diagram 7 (refer to P263)		
	JW-21CU JW-22CU JW-31CUH/H1 JW-32CUH/H1 JW-33CUH/H1*1/ H2/H3	JW-21CM	RS-485 (422) 2 wires Connection Diagram 1 (refer to P247)		
			RS-485 (422) 4 wires Connection Diagram 2 (refer to P250)		
	JW-50CU/CUH JW-70CU/CUH JW-100CU/CUH	JW-10CM	RS-485 (422) 4 wires Connection Diagram 2 (refer to P250)		
	JW-22CU JW-70CU/CUH JW-100CU/CUH	Not required (connects to CPU unit)	RS-232C Connection Diagram 3 (refer to P253)		
	JW-32CUH/H1 JW-33CUH/H1*1/ H2/H3		RS-232C Connection Diagram 4 (refer to P255)		
			RS-485 (422) 4 wires Connection Diagram 5 (refer to P257)		

*1. We tested with the PLC of these parts.

7.2 System Configuration

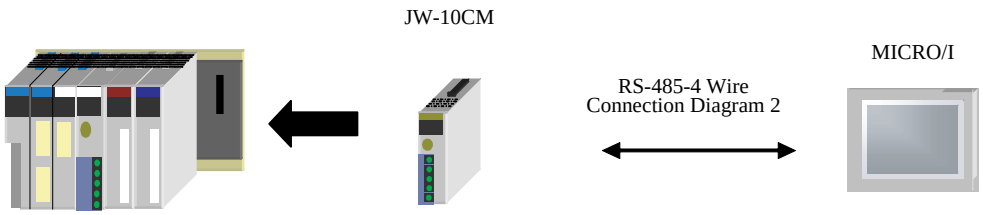
This is the system configuration for connection of SHARP PLCs to the MICRO/I.

7.2.1 JW20/30 Series (using link module)



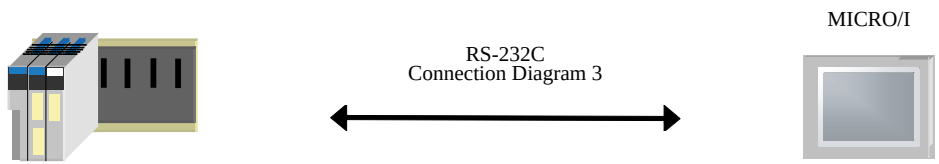
JW-21CU, JW-22CU
JW-31CUH/H1
JW-32CUH/H1
JW-33CUH/H1/H2/H3

7.2.2 JW50/70/100 Series (using link module)



JW-50CU/CUH
JW-70CU/CUH
JW-100CU/CUH

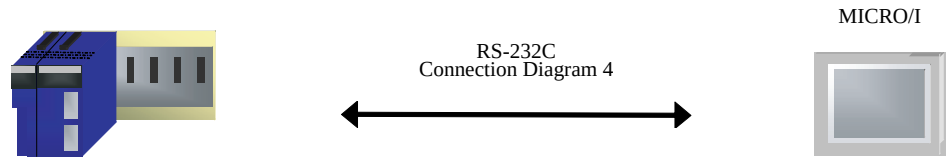
7.2.3 JW50/70/100 Series (using communication port)



JW-22CU
JW-70CU/CUH
JW-100CU/CUH

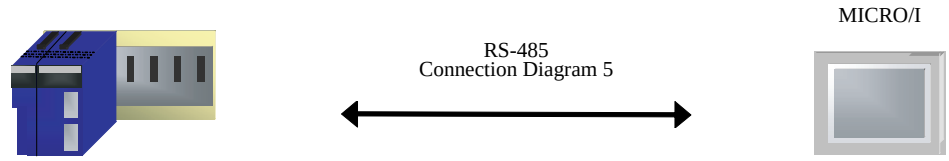
Connect to the communication port of CPU unit.

7.2.4 JW30 Series (using communication port)



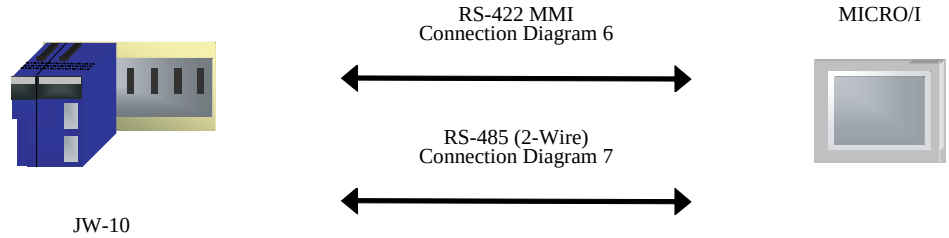
Connect to the communication port2 of CPU unit.

7.2.5 JW30 Series (using communication port)



Connect to the communication port1 or the communication port2 of CPU unit.

7.2.6 JW10 Series



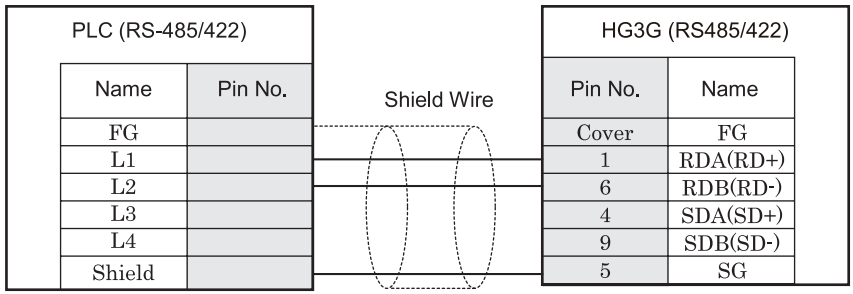
Connect to MMI port or communication port on CPU unit.

7.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

7.3.1 Connection Diagram 1: RS-485 Link Unit to MICRO/I

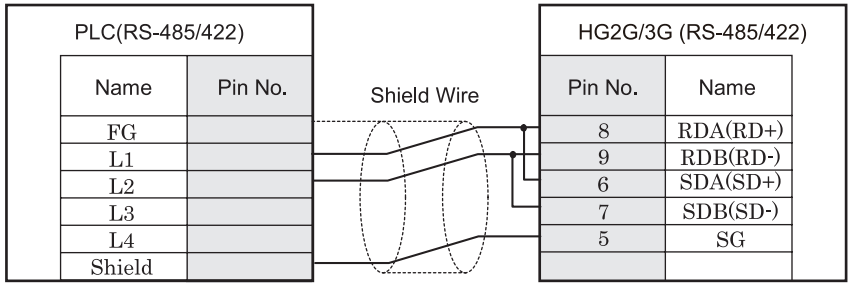
HG3G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)

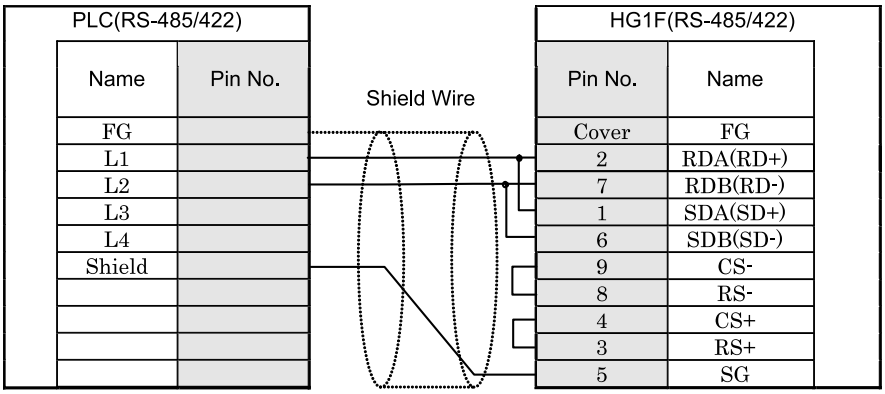


Screw terminal block

Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB.
  If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

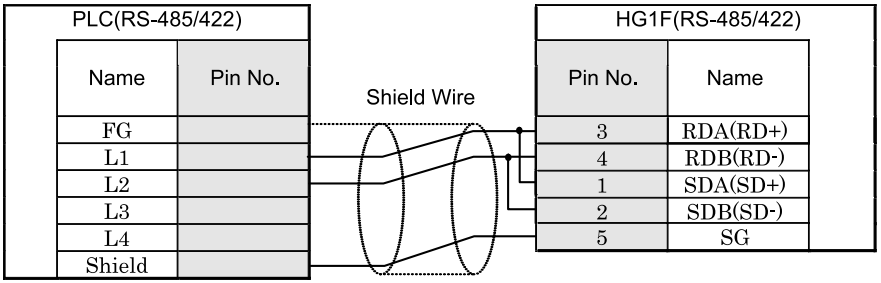
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)



Screw terminal block

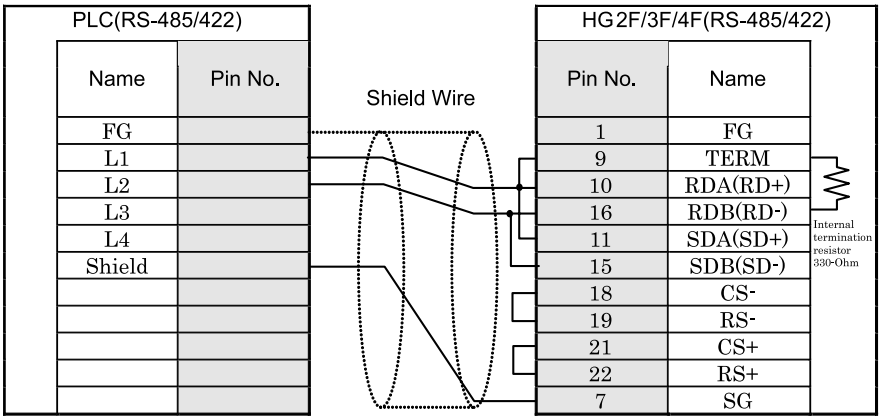
Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F

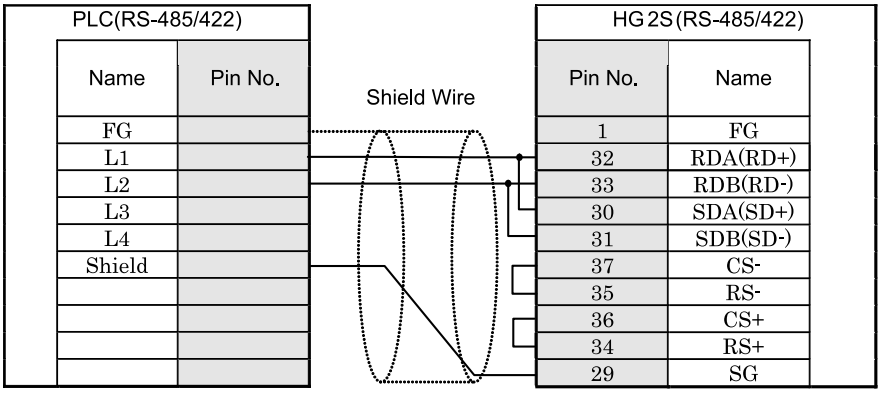


Screw terminal block

D-sub, 25P connector socket type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.

HG2S



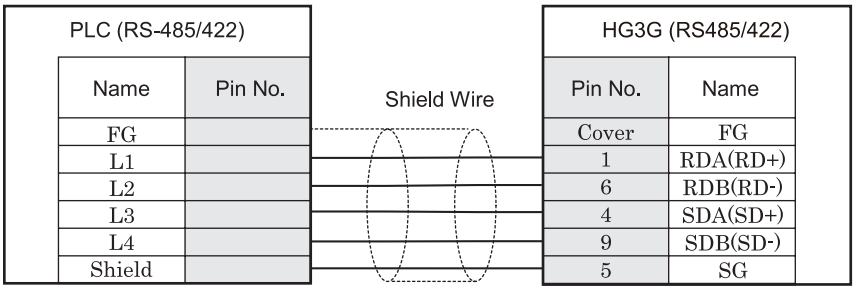
Screw terminal block

D-sub, 37P connector socket type

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

7.3.2 Connection Diagram 2: RS-485 Link Unit to MICRO/I

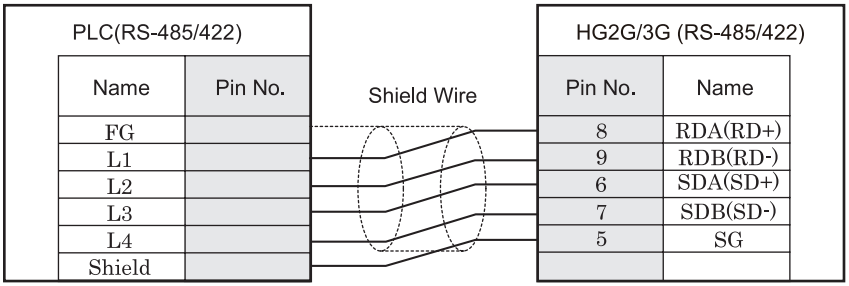
HG3G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)

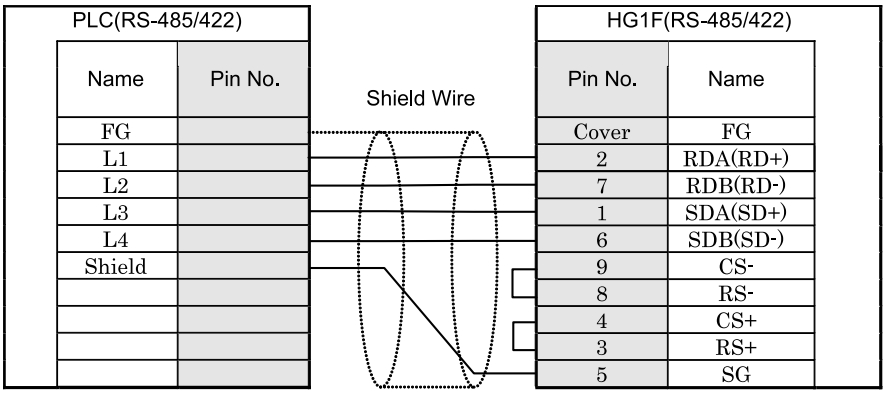


Screw terminal block

Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

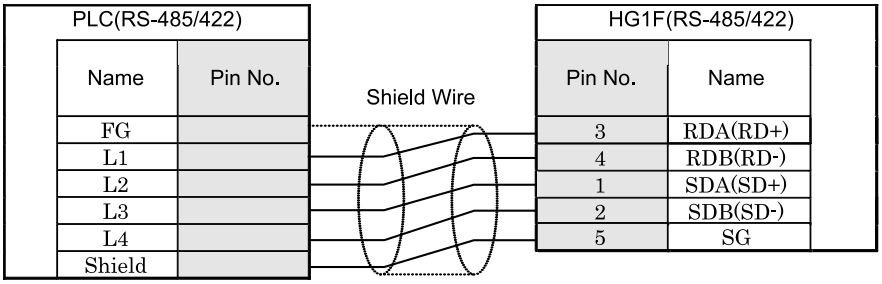
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)



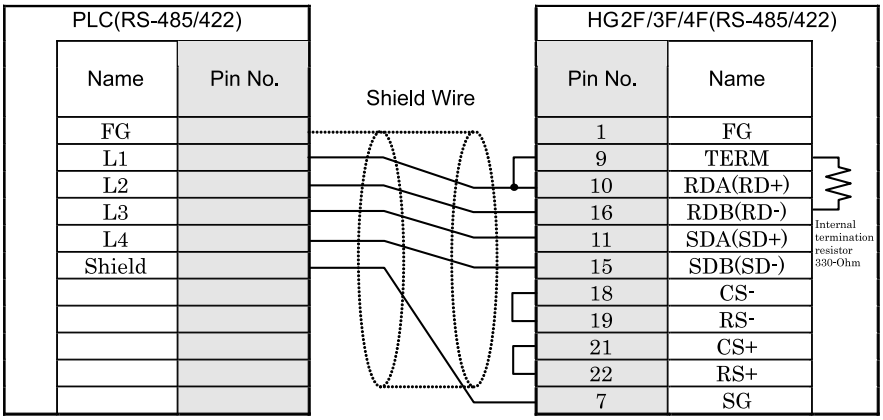
Screw terminal block

Terminal

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F

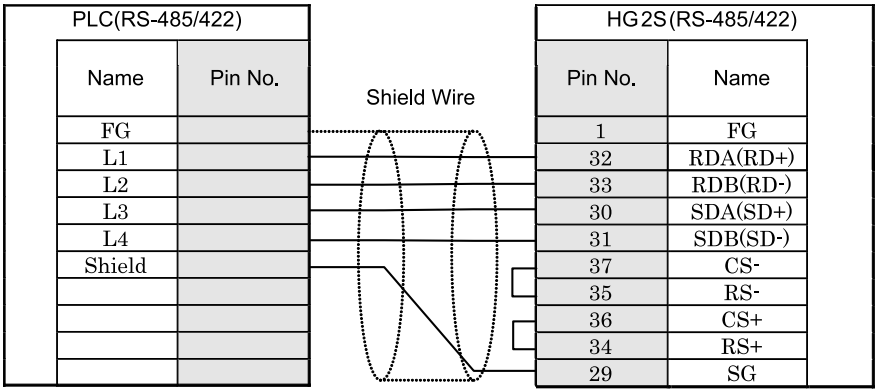


Screw terminal block

D-sub, 25P connector socket type

We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.

HG2S



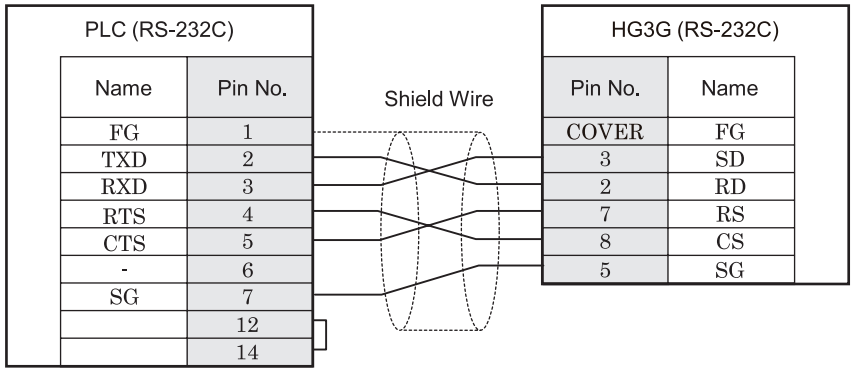
Screw terminal block

D-sub, 37P connector socket type

- We recommend that you switch on the termination resistor on the PLC Link Unit side for long-distance transmission connection cable is available.
- There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

7.3.3 Connection Diagram 3: PLC (RS-232C) Communication Port to MICRO/I

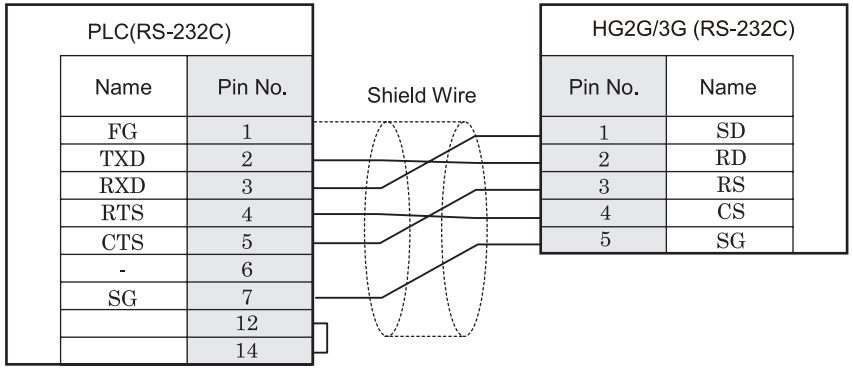
HG3G (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector plug type

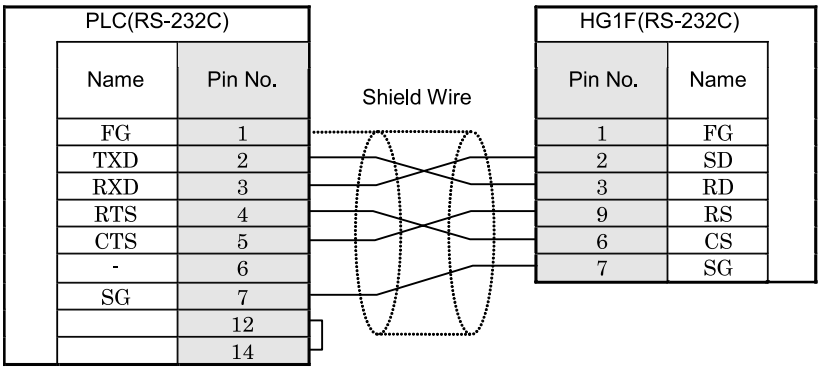
HG2G/3G (Terminal)



D-sub, 15P connector socket type

Terminal

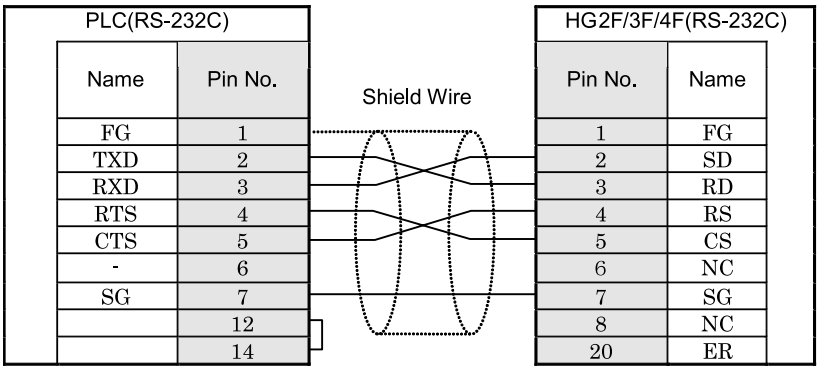
HG1F (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector socket type

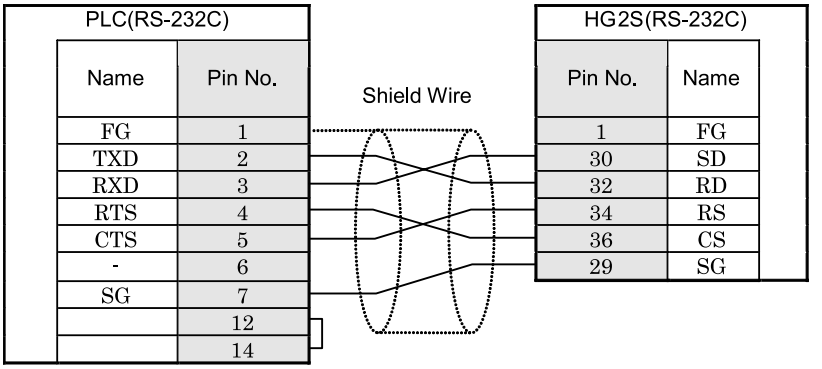
HG2F/3F/4F



D-sub, 15P connector socket type

D-sub, 25P connector socket type

HG2S

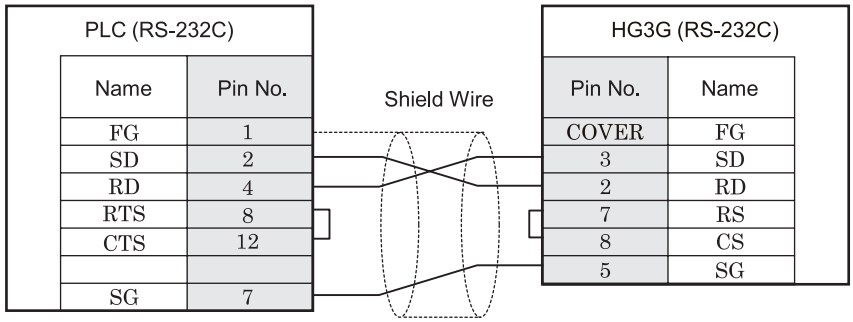


D-sub, 15P connector socket type

D-sub, 37P connector socket type

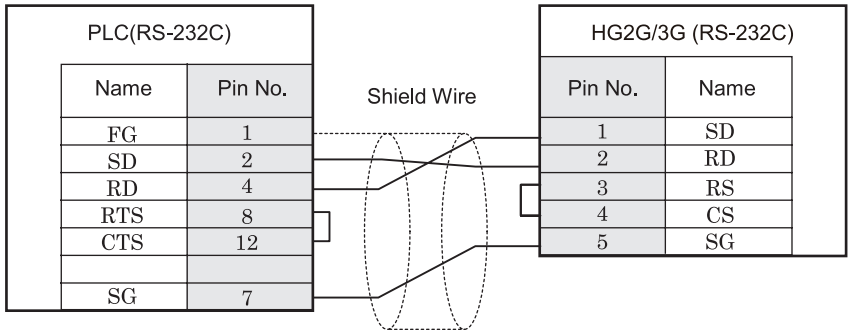
7.3.4 Connection Diagram 4: PLC (RS-232C) Communication Port to MICRO/I

HG3G (Connector)



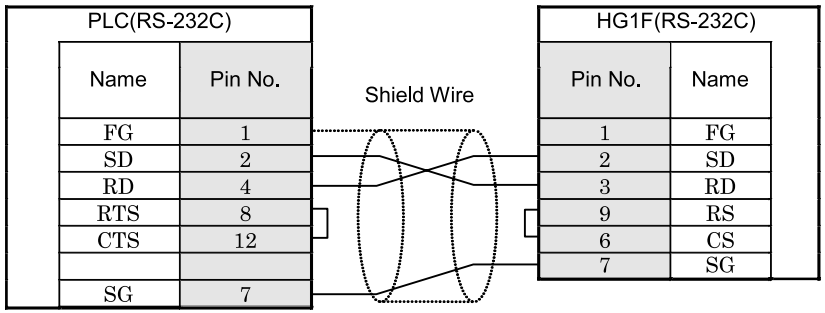
D-sub, 15P connector socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



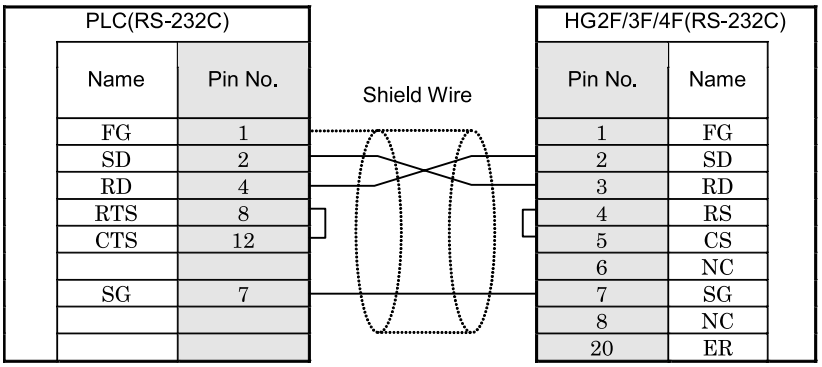
D-sub, 15P connector socket type — Terminal

HG1F (Connector)



D-sub, 15P connector socket type — D-sub, 9P connector socket type

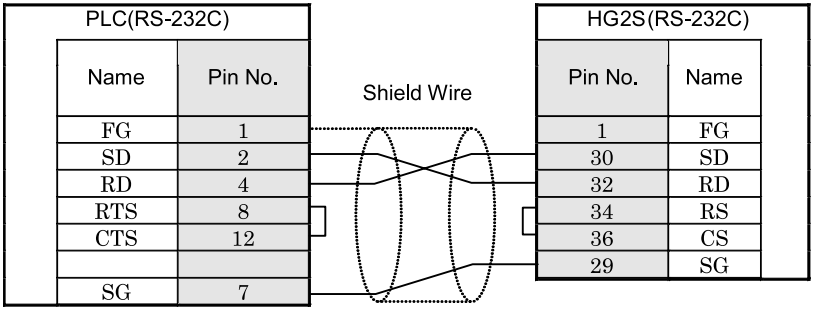
HG2F/3F/4F



D-sub, 15P connector socket type

D-sub, 25P connector socket type

HG2S

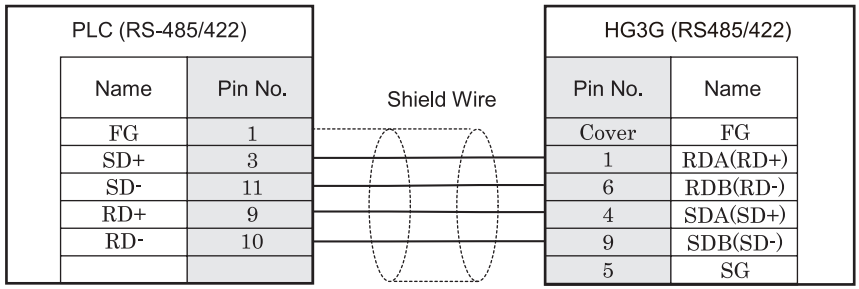


D-sub, 15P connector socket type

D-sub, 37P connector socket type

7.3.5 Connection Diagram 5: PLC (RS-485) Communication Port to MICRO/I

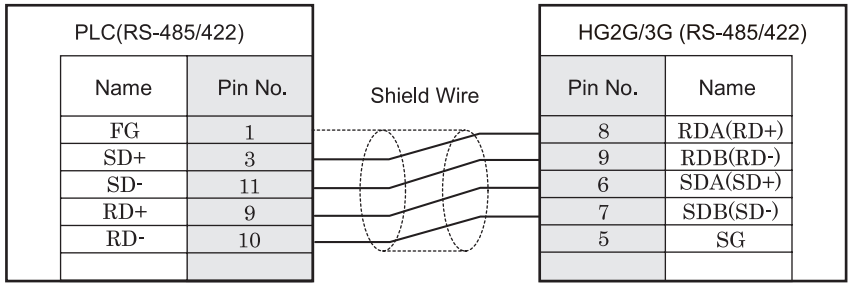
HG3G (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 25P connector socket type

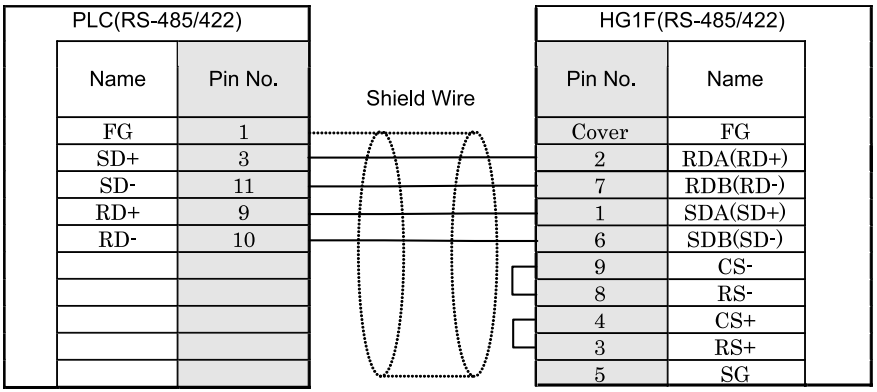
Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG2G/3G doesn’t have control lines.

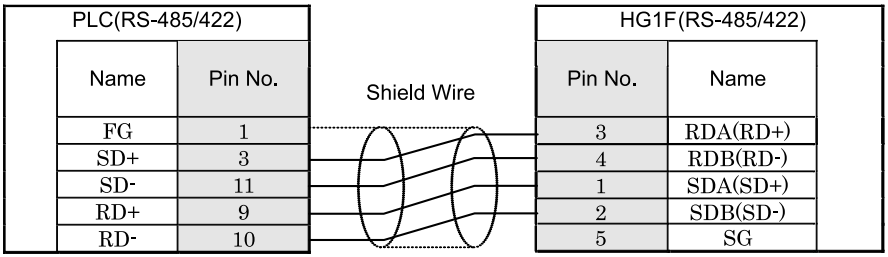
HG1F (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 25P connector socket type

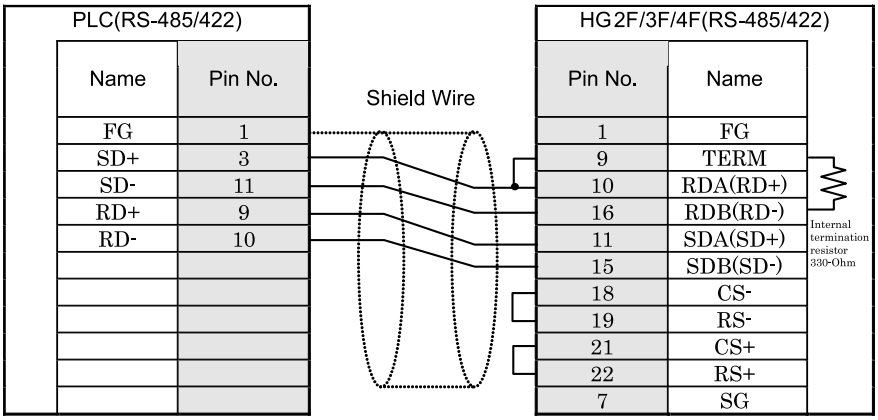
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

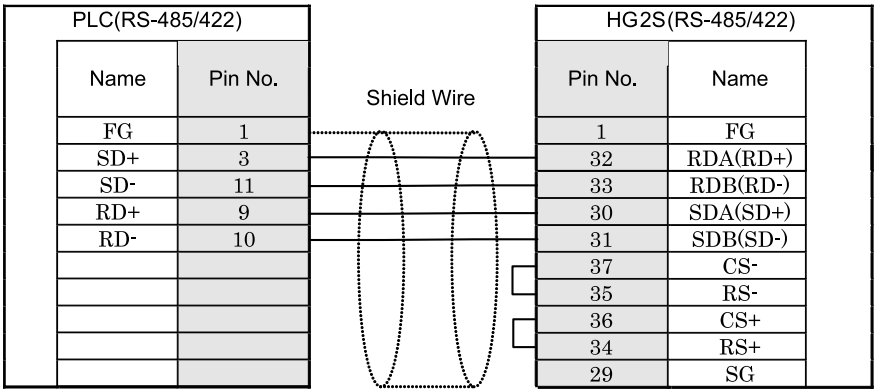
HG2F/3F/4F



D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S



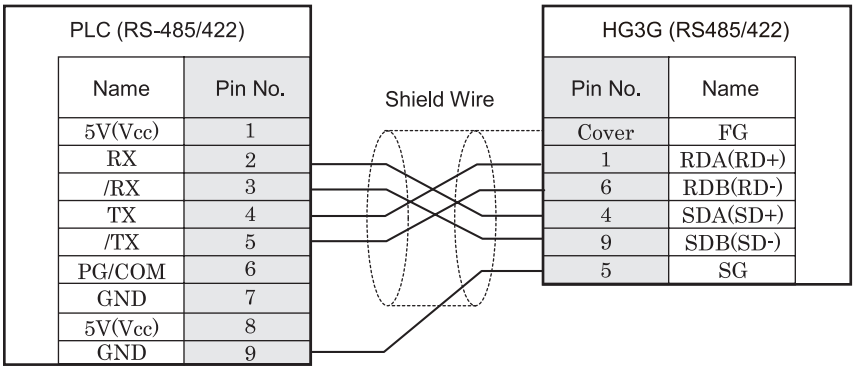
D-sub, 25P connector socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

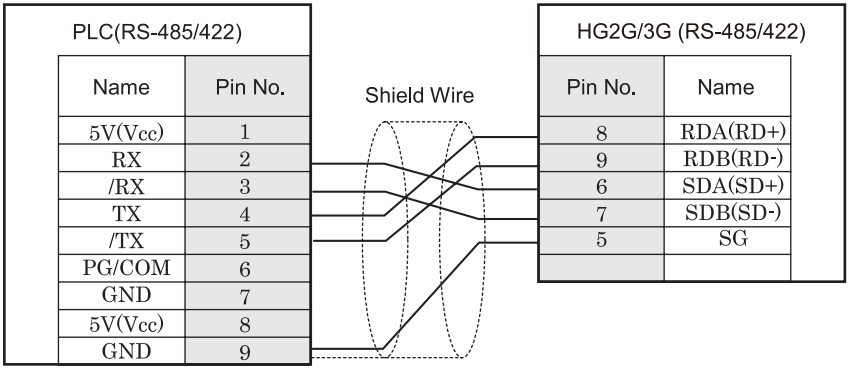
7.3.6 Connection Diagram 6: JW-10 MMI Port (RS-422) to MICRO/I

HG3G (Connector)



D-sub, 9P connector socket type D-sub, 9P connector plug type

HG2G/3G (Terminal)



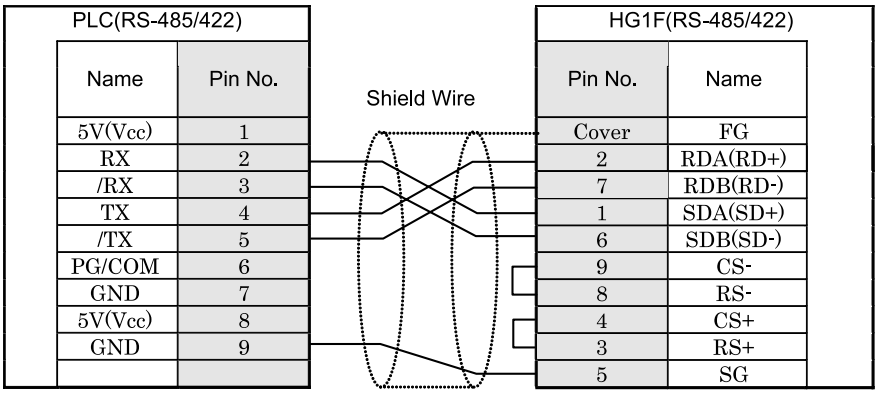
D-sub, 9P connector socket type Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG2G/3G doesn’t have control lines.

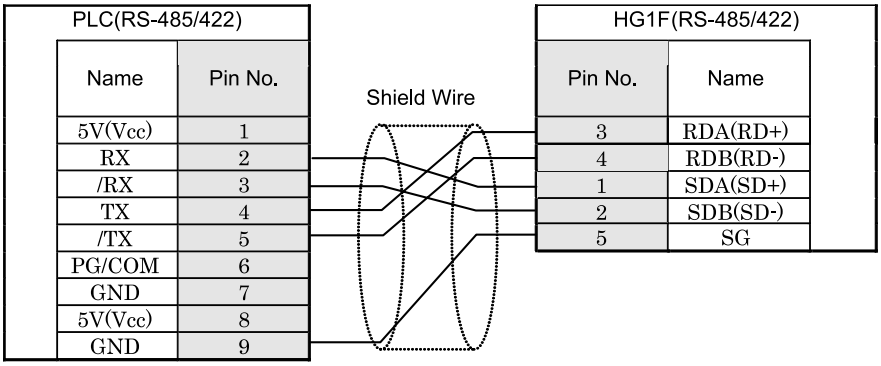
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 9P connector socket type

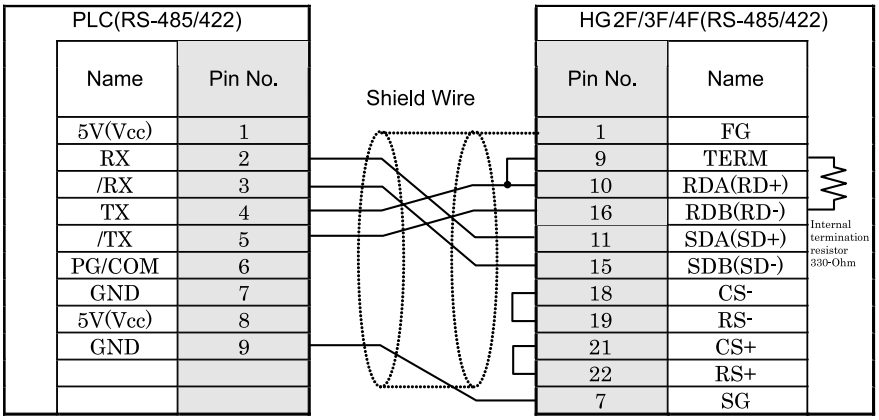
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

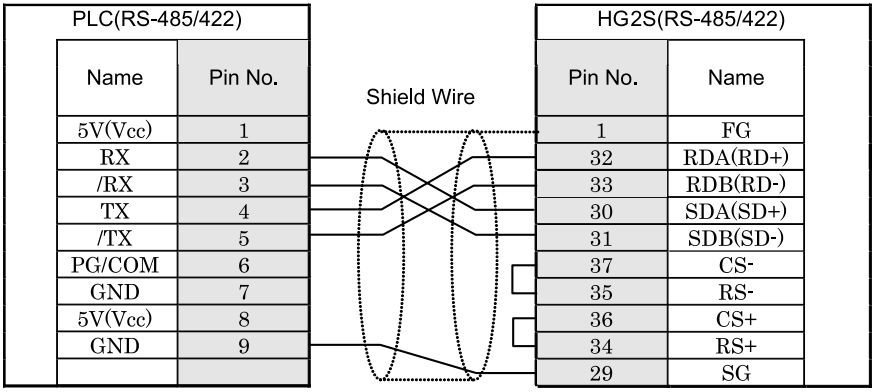
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S



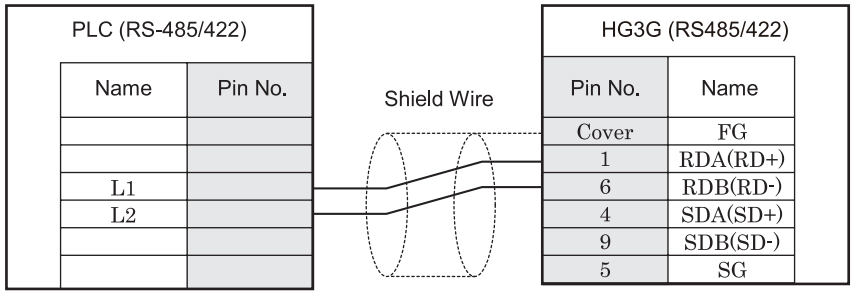
D-sub, 9P connector socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

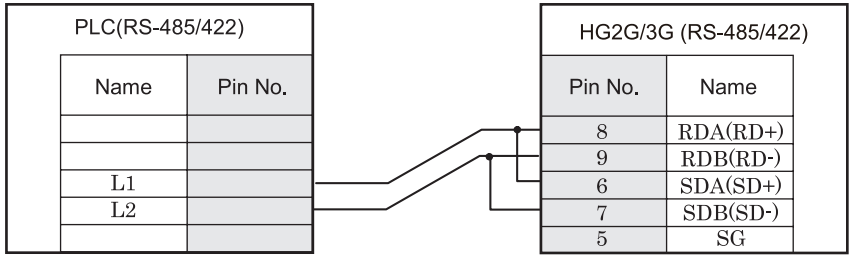
7.3.7 Connection Diagram 7: JW-10 Communication Port (RS-485) to MICRO/I

HG3G (Connector)



Terminal D-sub, 9P connector plug type

HG2G/3G (Terminal)

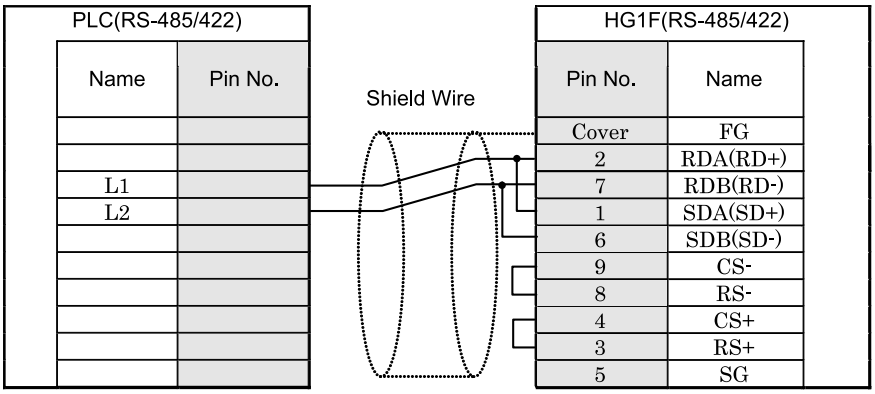


Terminal Terminal

- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don't need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Important Points Regarding Wiring" on page 18.

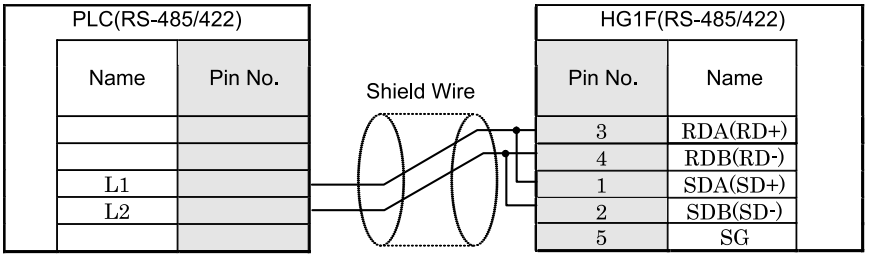
WARNING When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn't have control lines.

HG1F (Connector)



Terminal D-sub, 9P connector socket type

HG1F (Terminal)

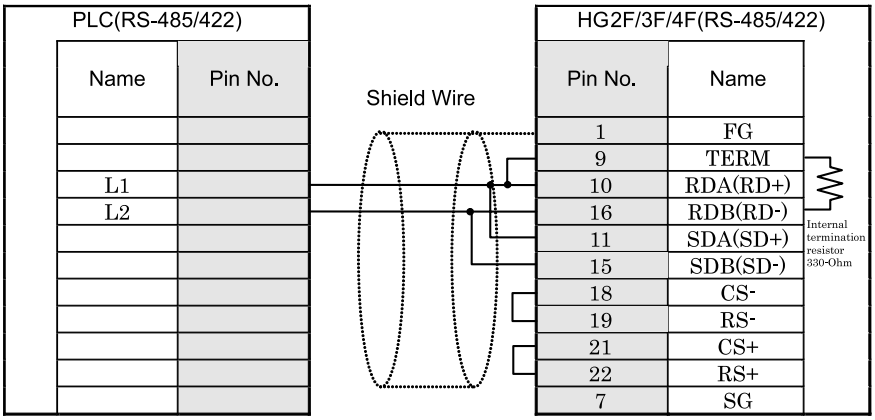


Terminal Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

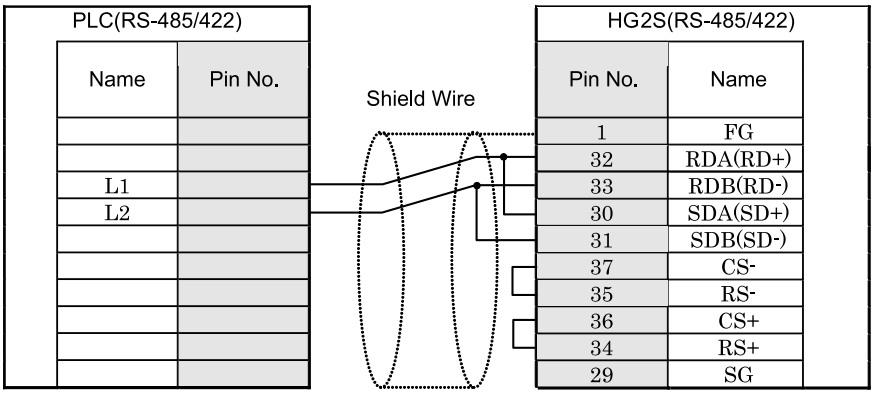
HG2F/3F/4F



Terminal

D-sub, 25P connector socket type

HG2S



Terminal

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

7.4 Environment Settings

7.4.1 Using Computer Link Module

Item		Setting	
Communication Method		RS-485-2 wires (Set DIP switch SW3-2 to OFF)	RS-485-4 wires (Set DIP switch SW3-2 to ON)
Communication Mode		Computer Link (Command mode) (Set DIP switch SW0 to"4")	
Station No.	Set to the same setting as the MICRO/I	01 to 17(oct) (Set DIP switch SW1 / SW2)	
Data Bits [bit]		7(fixed)	
Baud Rate [bps]		1200/2400/4800/9600/19200 (Set DIP switch SW4)	
Parity		Even / Odd (Set DIP switch SW3-4)	
Stop Bits [bit]		2(fixed)	

7.4.2 Using Communication Port

Item		Setting	
Communication Method		RS-232C	RS-485(422)
Station No.	Set to the same setting as the MICRO/I	001 to 037(oct) (Set System Memory #235/#237)	
Data Bits [bit]		7(fixed)	
Baud Rate [bps]		1200/2400/4800/9600/19200/38400/57600/115200 (Set the bit position D2D1D0 System Memory of #234/#236)	
Parity		Even / Odd / None (Set the bit position D4D3 of System Memory #234/#236)	
Stop Bits [bit]		1/2 (Set the bit position D5 of System Memory #234/#236)	

- Set System Memory #234 for communication conditions of PLC (JW30 Communication port1: RS-422), and set System Memory #235 for Station No.
- Set System Memory #236 for communication conditions of PLC (JW20/70/100 Communication port, JW30 Communication port2: RS-232C/ RS-422), and set System Memory #237 for Station No.
- Confirm the PLC manuals as the speed of Baud Rate may not use according to PLC.
- When connecting with the communication port of a CPU unit and making it communicate, after receiving a response from PLC depending on the model of PLC, while MICRO/I transmit data, some which need waiting time are. In this time, please adjust [Configuration]-[System Setup]-[Project]-[Host I/F Driver]-[transmission wait] of WindO/I-NV2. Confirm the manual. (chapter of a communication port) of PLC about whether a [transmitting wait] setup need to be adjusted.
- Refer to "New Satellite JW manual "or "New Satellite JW Link Unit manual" for details.

7.5 Usable Devices

The types of devices handles by the MICRO/I and their ranges are shown below.

Bit Device

WindO/I-NV2 Device Name	R/W	WindO/I-NV2 address	PLC Device Name	PLC address
Relay	R/W	R0 - R15777	Relay	00000 - 15777
Ext. Relay	R/W	ER20000 - ER75777		20000 - 75777
Timer (Contact)	R	T0 - T777	Timer (Contact)	T0000 - T0777
Ext. Timer (Contact)	R	ET1000 - ET1777		T1000 - T1777
Counter (Contact)	R	C0 - C777	Counter (Contact)	C0000 - C0777
Ext. Counter (Contact)	R	EC1000 - EC1777		C1000 - C1777

Word Device

WindO/I-NV2 Device Name	R/W	WindO/I-NV2 address	PLC Device Name	PLC address
Timer (Current Value)	R	TC0 - TC777	Timer (Current Value)	0000 - 0777
Ext.Counter(Current Value)	R	ETC1000 - ETC1777		1000 - 1777
Counter (Current Value)	R	CC0 - CC777	Counter (Current Value)	0000 - 0777
Ext.Counter (Current Value)	R	ECC1000 - ECC1777		1000 - 1777
Register (A)	R/W	RA0 - RA1576	Register	a0000 - a1576
Ext.Register (A)	R/W	ERA2000 - ERA7576		a2000 - a7576
Register (B)	R/W	RB0 - RB1776		b0000 - b1776
Ext.Register (B)	R/W	ERB2000 - ERB3776		b2000 - b3776
Register (09)	R/W	R09_ 0 - R09_ 776		09000 - 09776
Register (19)	R/W	R19_ 0 - R19_ 776		19000 - 19776
Register (29)	R/W	R29_ 0 - R29_ 776		29000 - 29776
Register (39)	R/W	R39_ 0 - R39_ 776		39000 - 39776
Register (49)	R/W	R49_ 0 - R49_ 776		49000 - 49776
Register (59)	R/W	R59_ 0 - R59_ 776		59000 - 59776
Register (69)	R/W	R69_ 0 - R69_ 776		69000 - 69776
Register (79)	R/W	R79_ 0 - R79_ 776		79000 - 79776
Register (89)	R/W	R89_ 0 - R89_ 776		89000 - 89776
Register (99)	R/W	R99_ 0 - R99_ 776		99000 - 99776
Register (E)	R/W	RE0 - RE1776		E0000 - E1776
Ext.Register (E)	R/W	ERE2000 - ERE7776		E2000 - E7776
System Memory	R	S0 - S2176	System Memory	#0000 - #2176
File Register (1)	R/W	F1_ 0 - F1_ 37776	File Register1	000000 - 037776
File Register (2)	R/W	F2_ 0 - F2_ 177776	File Register2	000000 - 177776
File Register (3)	R/W	F3_ 0 - F3_ 177776	File Register3	000000 - 177776

- Set all devices using octal.
- Confirm the PLC manuals as device or device address may not use according to PLC.
- R/W specifies Read and Write device. R specify Read only device.
- Word device address below “Register (A)” increase +2. (The other device increase +1.)
- Device address of WindO/I NV2 does not display as the number of figure used PLC.
  Example: if you set to “Register 19005” using WindO/I NV2, it set to not “R19_ 005” but “R19_5”.

8 Hitachi

8.1 Supported Programmable Logic Controllers

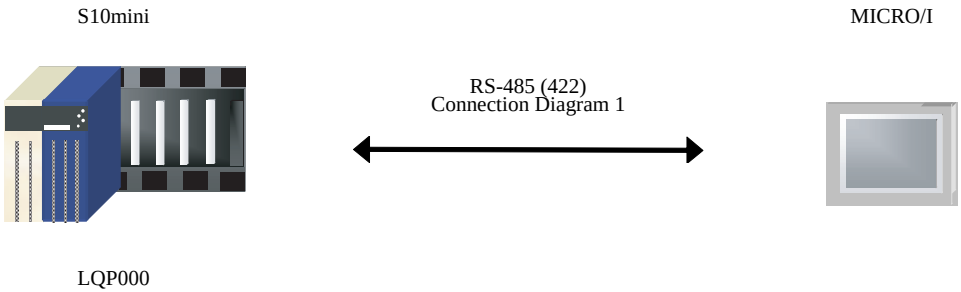
Series Name	System (CPU unit)	Link unit	WindO/I-NV2 Setting Name		
			Interface	Flow control	Host I/F Driver
S10mini	S10mini*1	Not required (built into the CPU unit)	RS-485(422) 4wires Connection Diagram 1 (refer to P272)	ER control	S10mini
		LQE160	RS-232C Connection Diagram 2 (refer to P275)		
		LQE165	RS-485(422) 4wires Connection Diagram 3 (refer to P278)		
		LQE560	RS-232C Connection Diagram 2 (refer to P275)		
		LQE565	RS-485(422) 4wires Connection Diagram 3 (refer to P278)		
S10V	LQP510	Not required (built into the CPU unit)	RS-232C Connection Diagram 2 (refer to P275)		
			RS-485(422) 4wires Connection Diagram 3 (refer to P278)		
		LQE560	RS-232C Connection Diagram 2 (refer to P275)		
		LQE565	RS-485(422) 4wires Connection Diagram 3 (refer to P278)		

*1. We tested with the PLC of these parts.

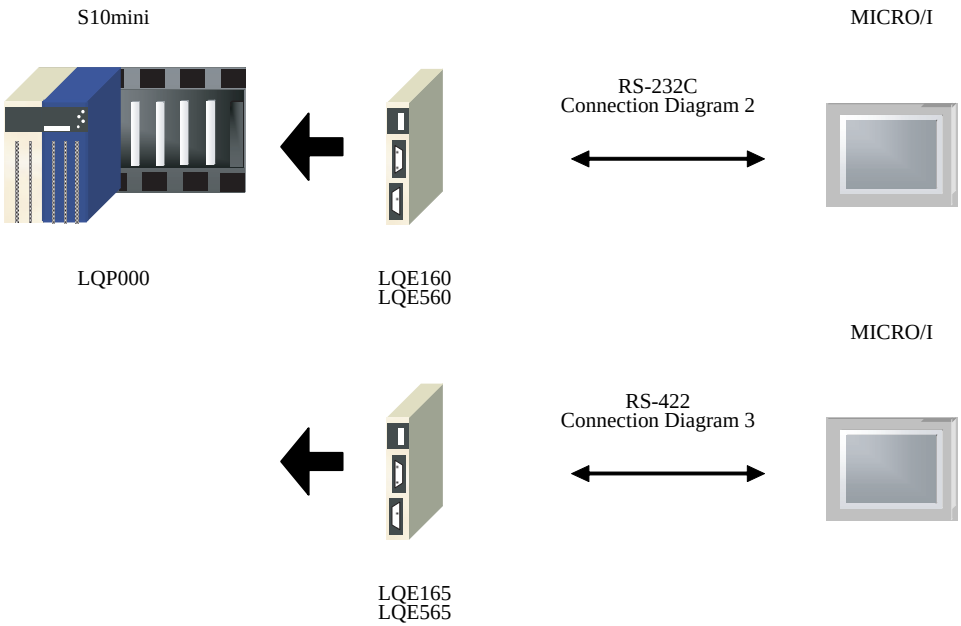
8.2 System Configuration

This is the system configuration for connection of Hitachi PLC to the MICRO/I.

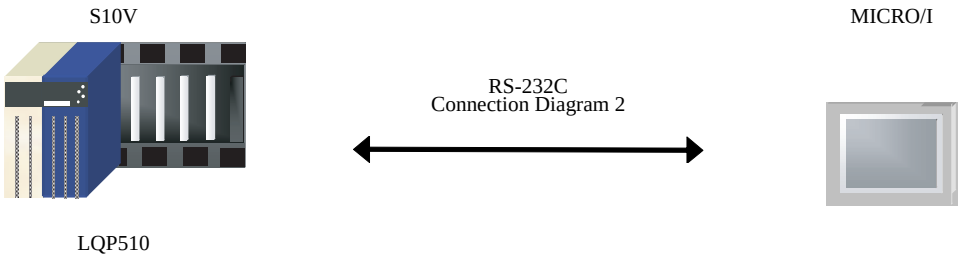
8.2.1 S10mini (LQP000) (connect to CPU unit RS-232C port)



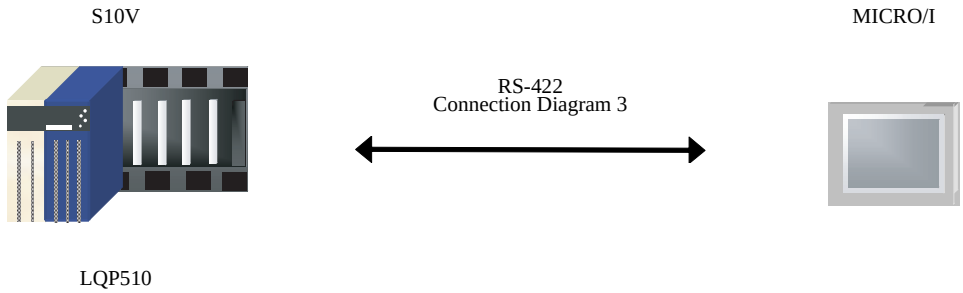
8.2.2 10mini Communication module



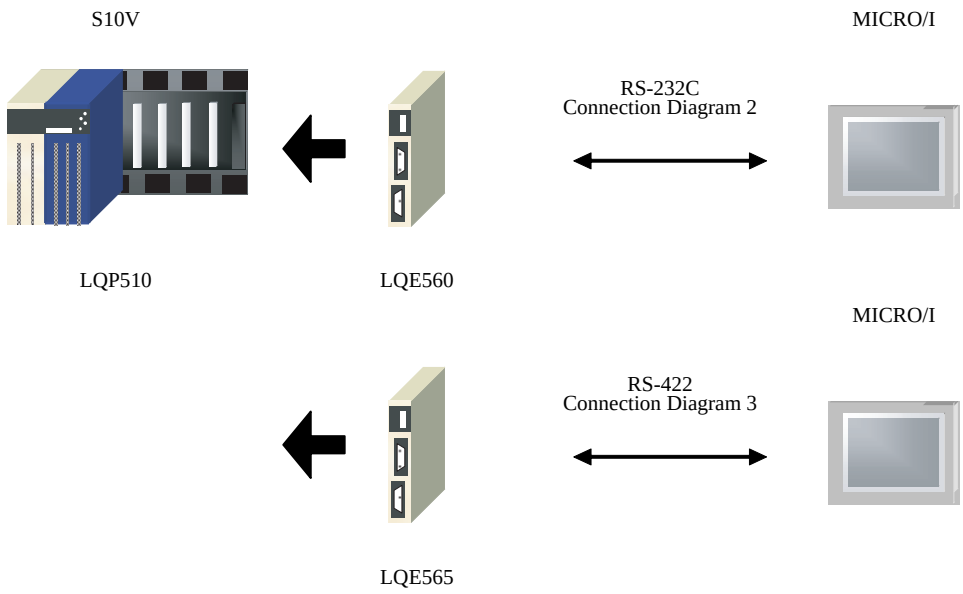
8.2.3 S10V RS-232C Port on CPU Unit



8.2.4 S10V RS-422 Port on CPU Unit



8.2.5 S10V Communication Module

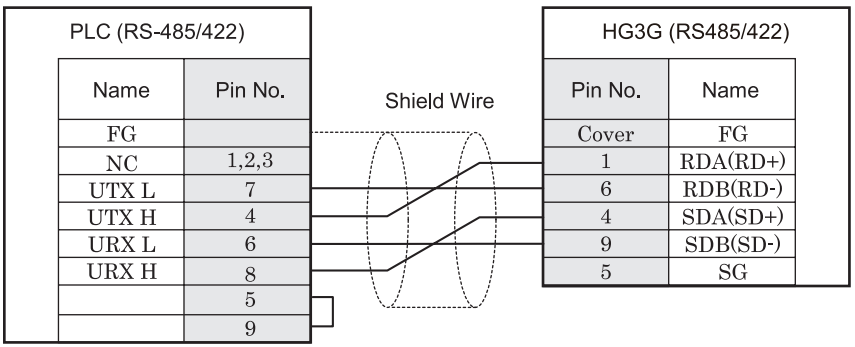


8.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

8.3.1 Connection Diagram 1: S10mini (RS-485 (422)) to MICRO/I

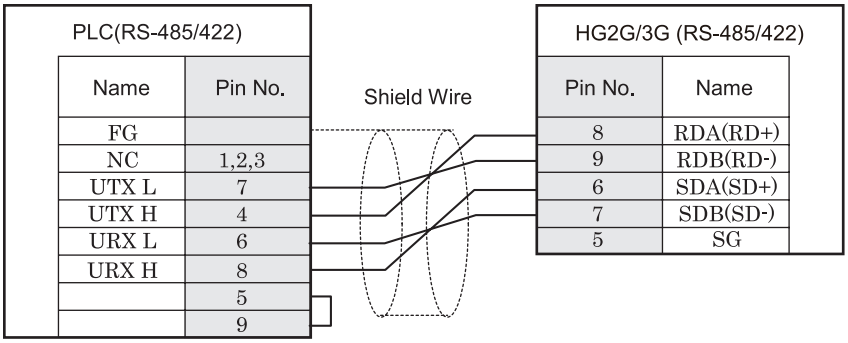
HG3G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 9P connector plug type

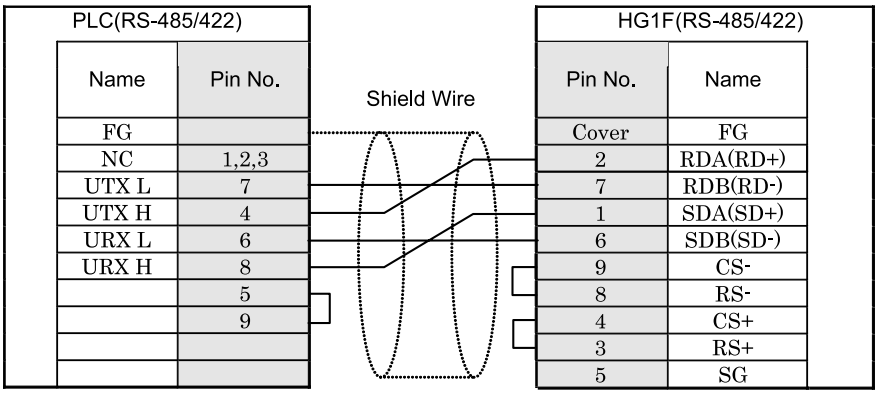
Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

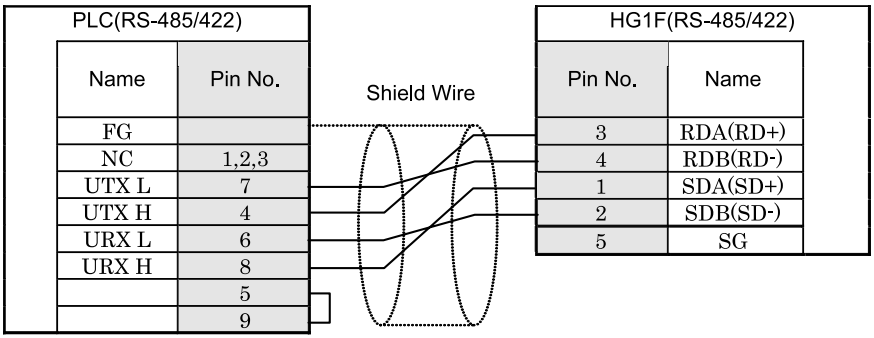
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 9P connector plug type

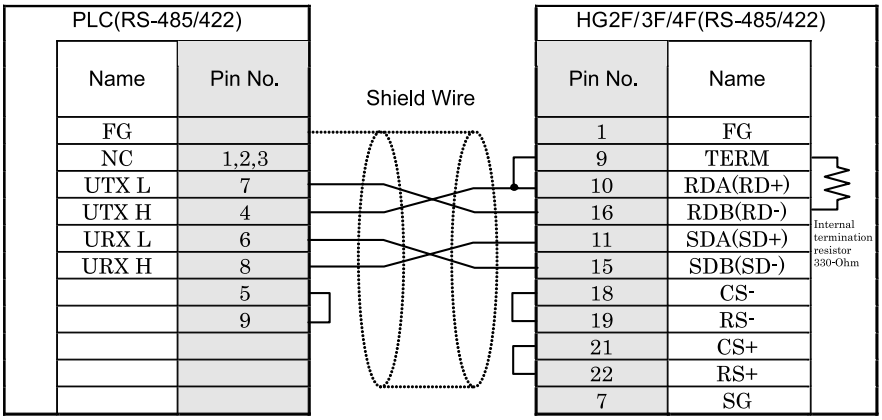
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

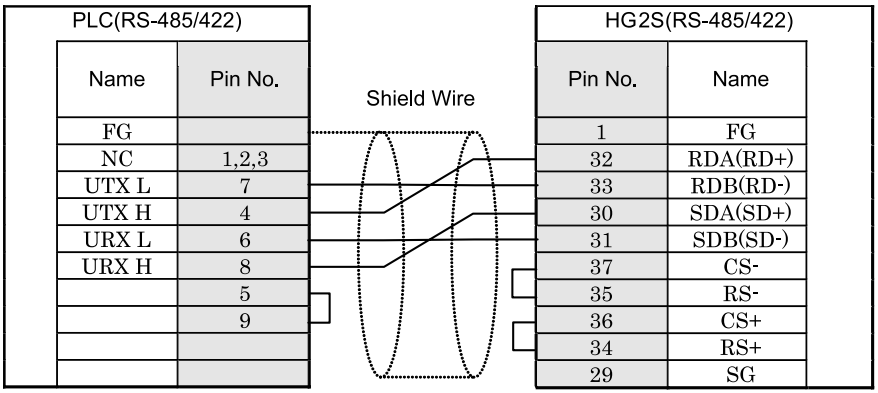
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S



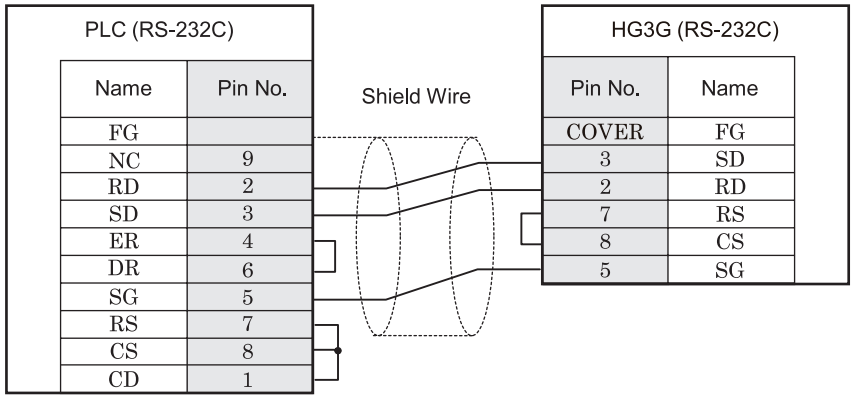
D-sub, 9P connector plug type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

8.3.2 Connection Diagram 2: S10mini (RS-232C) to MICRO/I

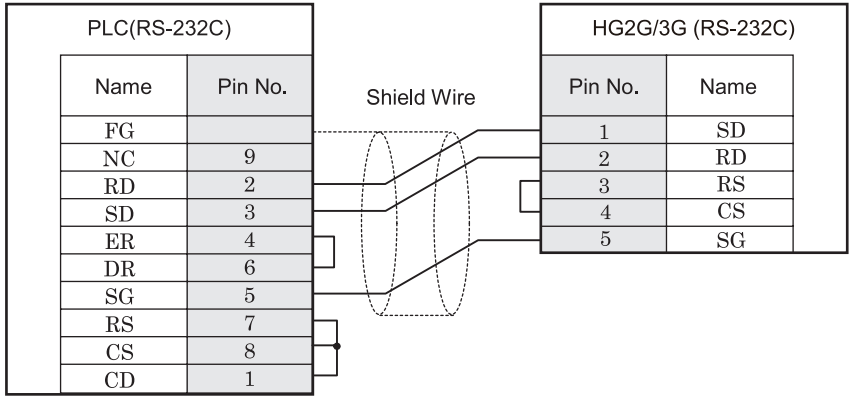
HG3G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

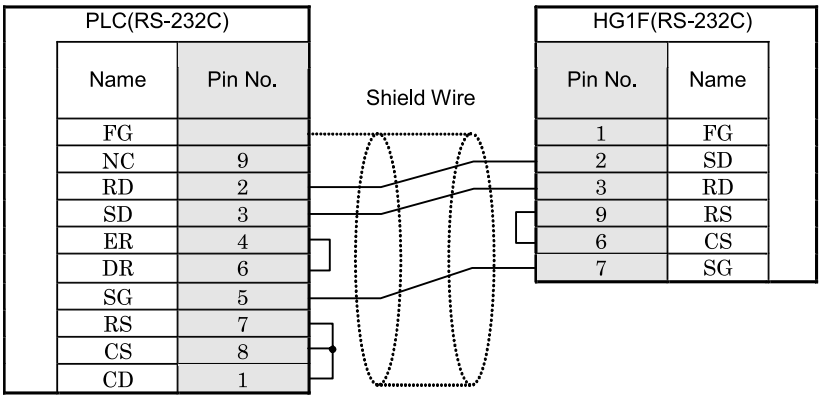
HG2G/3G (Terminal)



D-sub, 9P connector plug type

Terminal

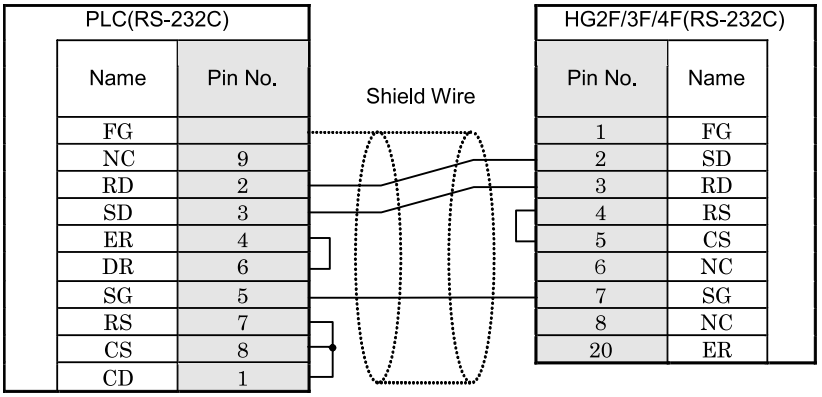
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

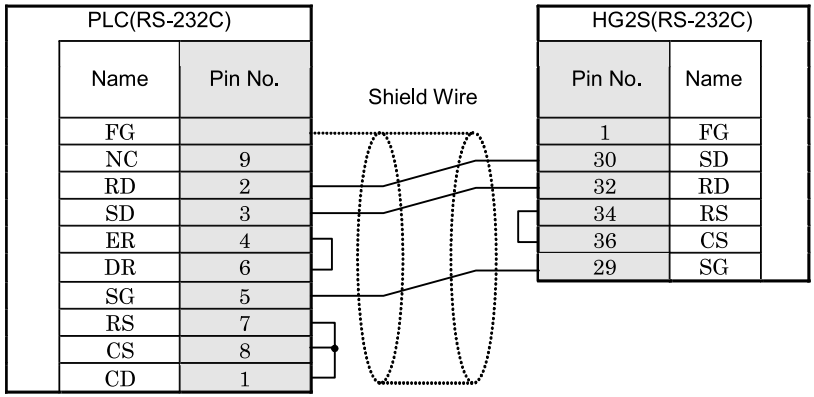
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

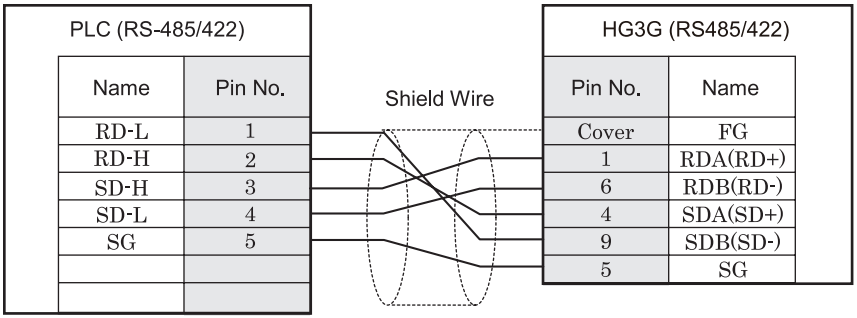


D-sub, 9P connector plug type

D-sub, 37P connector socket type

8.3.3 Connection Diagram 3: S10V (RS-485 (422)) to MICRO/I

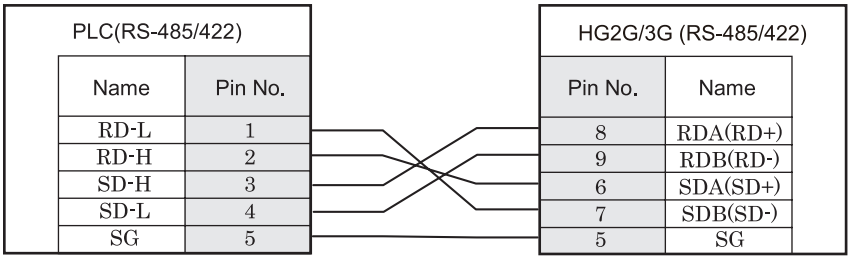
HG3G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 9P connector plug type

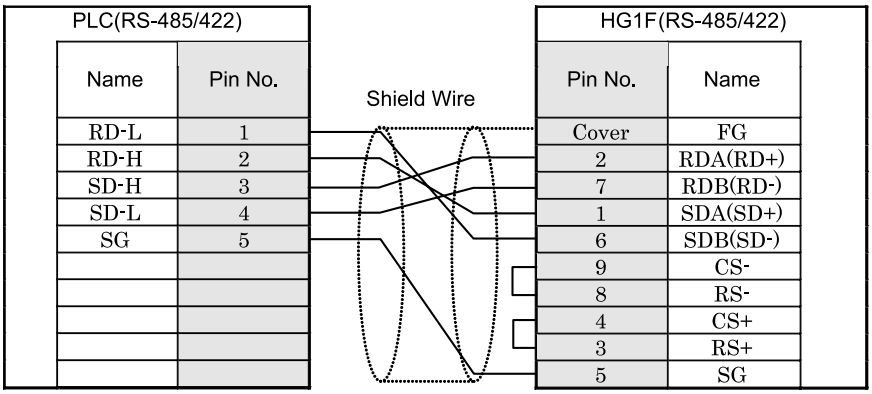
Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

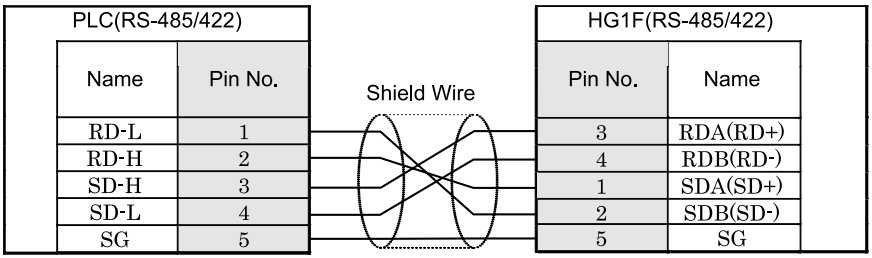
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 9P connector plug type

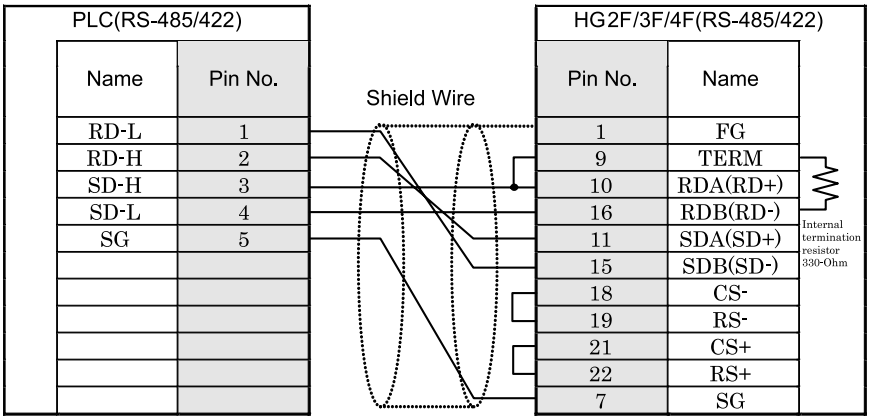
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

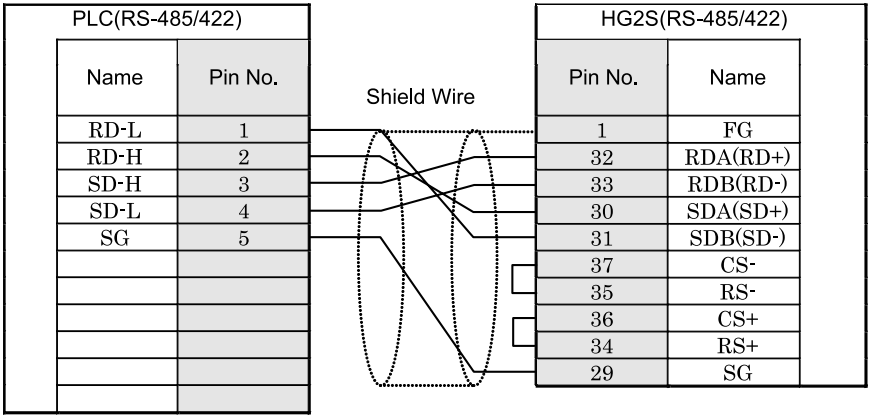
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S



D-sub, 9P connector plug type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

8.4 Environment Settings

8.4.1 S10mini, S10V

Item	Setting
Serial Interface	RS-232C, RS-485(422) 4wires
Baud Rate (bps)	19200
Data Bits (bit)	8
Parity	Odd
Stop Bits (bit)	1

Communication parameters are not flexible. Refer to the PLC manual for details.

8.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 7FF	R/W	
Output Relay	Y	Y	0 - 7FF	R/W	
Internal Relay	R	R	0 - 7FF	R/W	
Global Link	G	G	0 - FFF	R/W	
System Register	S	S	0 - BFF	R	
E Word	BEW	EW	400 - FFF	R/W	
Event	E	E	0 - FF	R/W	
Keep Relay	K	K	0 - 1FF	R/W	
On-Delay Timer (contact)	T	T	0 - 1FF	R	
One Shot Timer (contact)	U	U	0 - 7F	R	
Up/Down Counter (contact)	C	C	0 - 3F	R	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	XW	X	0 - 7F0	R/W	
Output Relay	YW	Y	0 - 7F0	R/W	
Internal Relay	RW	R	0 - 7F0	R/W	
Global Link	GW	G	0 - FF0	R/W	
System Register	SW	S	0 - BF0	R	
E Word	EW	EW	400 - FF0	R/W	
Event	WE	E	0 - F0	R/W	
Keep Relay	KW	K	0 - 1F0	R/W	
On-Delay Timer (contact)	TW	T	0 - 1F0	R	
One Shot Timer (contact)	UW	U	0 - 70	R	
Up/Down Counter (contact)	CW	C	0 - 30	R	
On-Delay Timer (elapsed value)	TC	T	0 - 1FF	R	
On-Delay Timer (setup value)	TS	T	0 - 1FF	R/W	
One Shot Timer (elapsed value)	UC	U	0 - 7F	R	
One Shot Timer (setup value)	US	U	0 - 7F	R/W	
Up/Down Counter (elapsed value)	CC	C	0 - 3F	R	
Up/Down Counter (setup value)	CS	C	0 - 3F	R/W	
Work Register	FW	FW	0 - BFF	R/W	
Data Register[*1]	DW	DW	0 - FFF	R/W	

*1. When you use word device as bit device, the bit position reverses the order, as shown in the example.

Example: specified address read address

DW 0-0	DW 0-15
DW 0-1	DW 0-14
:	:
DW 0-14	DW 0-1
DW 0-15	DW 0-0

9 JTEKT (Toyoda)

9.1 Connection Table

9.1.1 Compatible PLCs

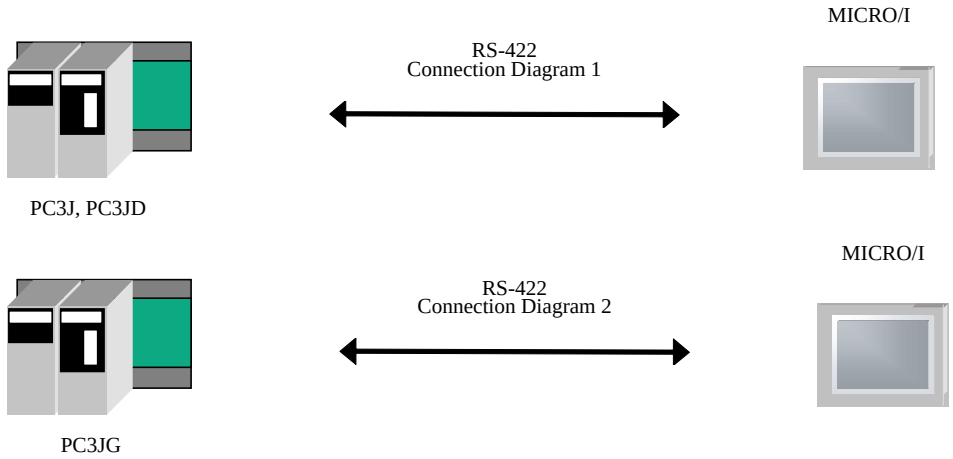
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
TOYOPUC-PC2J	PC2J*1	Not required (connects to Built-in Link)	RS-485 (422)-2 Connection Diagram 1 (refer to P285)	Hardware	TOYOPUC-PC3J
TOYOPUC-PC3J	PC3J*1 PC3JD*1	Not required (connects to Built-in Link)	RS-485 (422)-2 Connection Diagram 1 (refer to P285)		
	PC3JG*1	Not required (connects to Built-in Link)	RS-485 (422)-2 Connection Diagram 2 (refer to P288)		

*1. We tested with the PLC of these parts.

9.2 System Configuration

This is the system configuration for connection of JTEKT (Toyoda) PLCs to the MICRO/I.

9.2.1 TOYOPUC-PC3J series (using the Built-in Link)

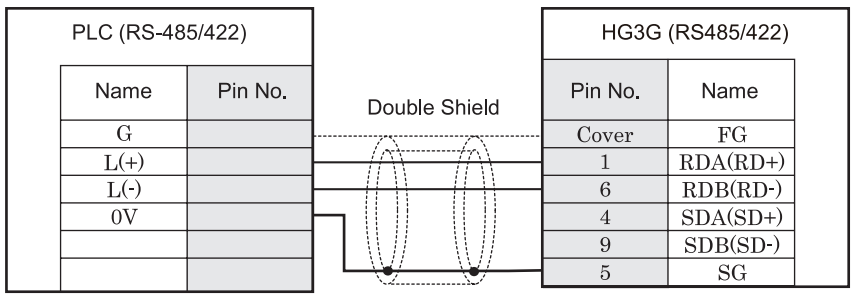


9.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

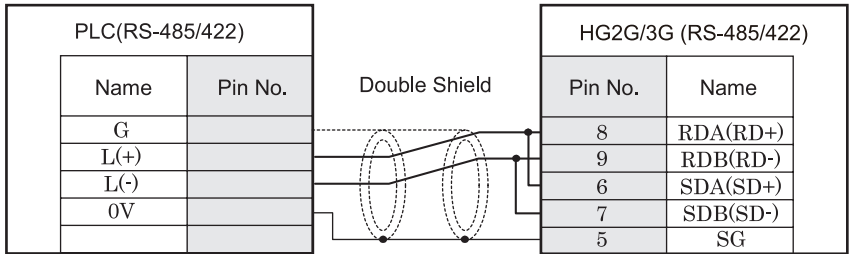
9.3.1 Connection Diagram 1: TOYOPUC-PC3J, PC3JD (Built-in Link) - MICRO/I

HG3G (Connector)



Screw Terminal D-sub, 9P connector plug type

HG2G/3G (Terminal)



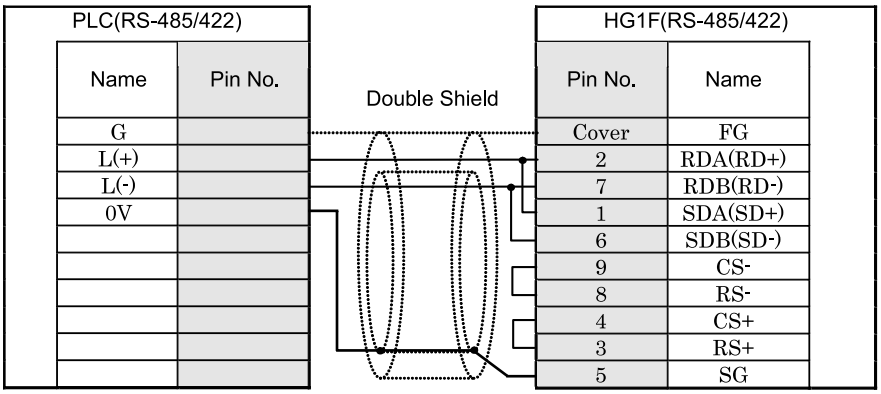
Screw Terminal Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

WARNING

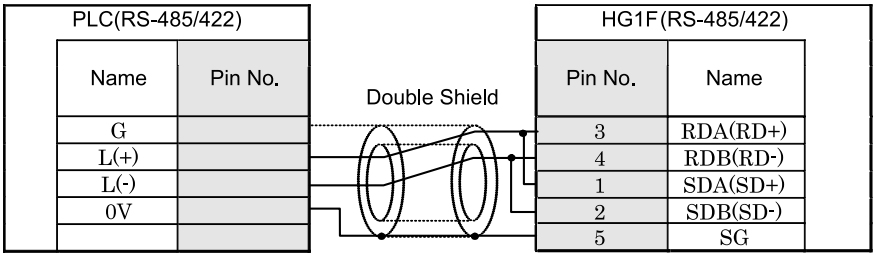
When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG1F (Connector)



Screw Terminal — D-sub, 9P connector socket type

HG1F (Terminal)



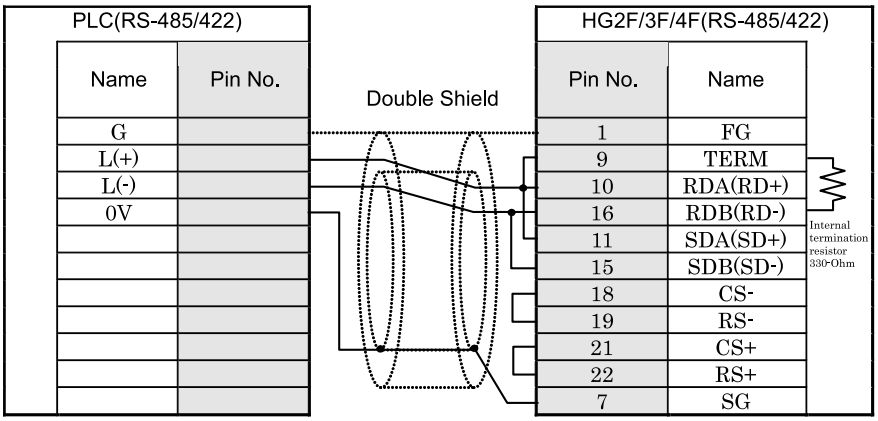
Screw Terminal — Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

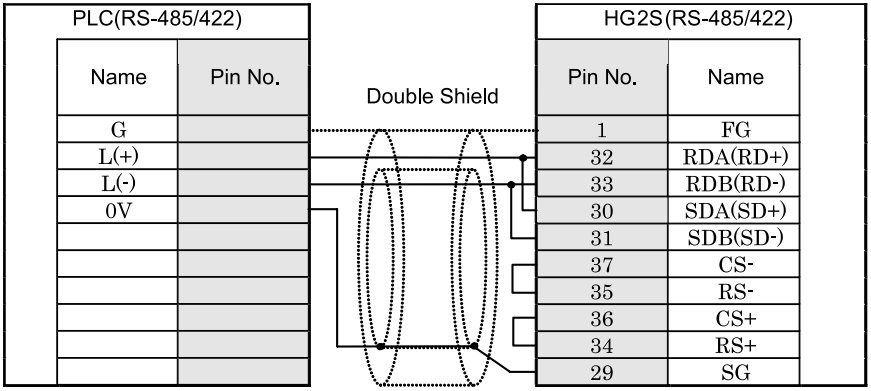
HG2F/3F/4F



Screw Terminal

D-sub, 25P connector socket type

HG2S



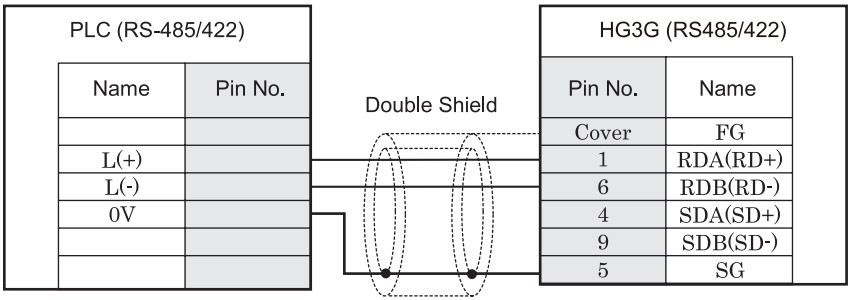
Screw Terminal

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

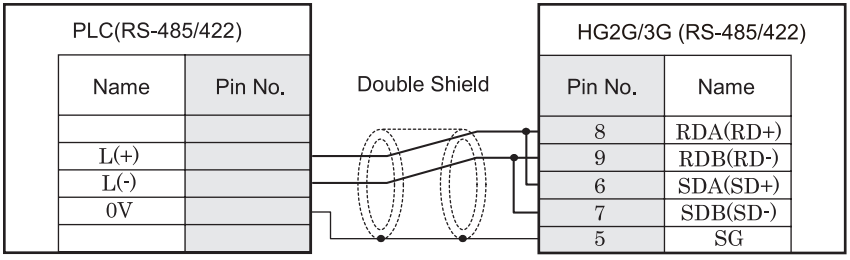
9.3.2 Connection Diagram 2: TOYOPUC-PC3JG (Built-in Link) - MICRO/I

HG3G (Connector)



Screw Terminal D-sub, 9P connector plug type

HG2G/3G (Terminal)



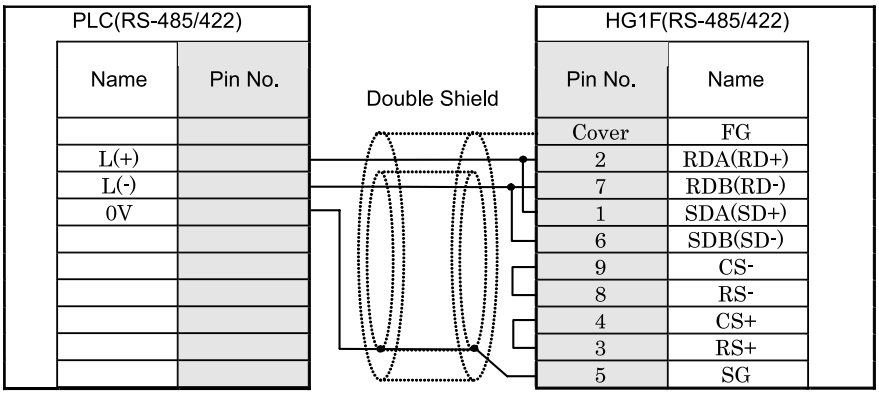
Screw Terminal Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

WARNING

When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

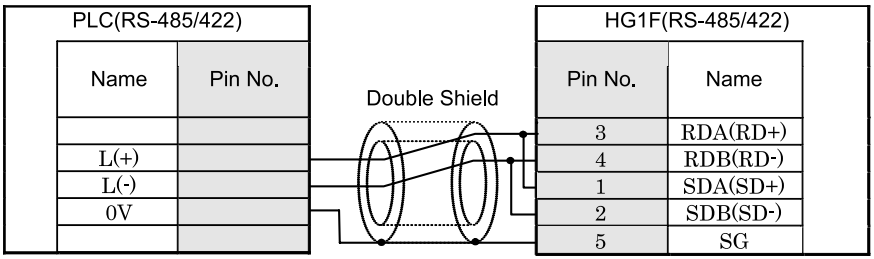
HG1F (Connector)



Screw Terminal

D-sub, 9P connector socket type

HG1F (Terminal)



Screw Terminal

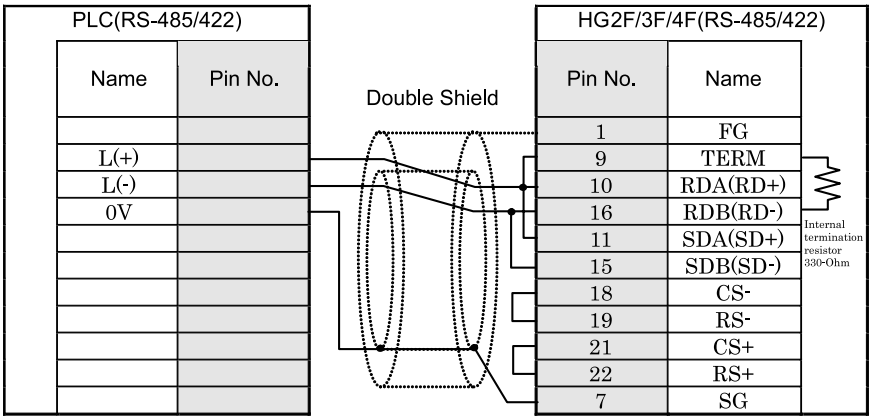
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

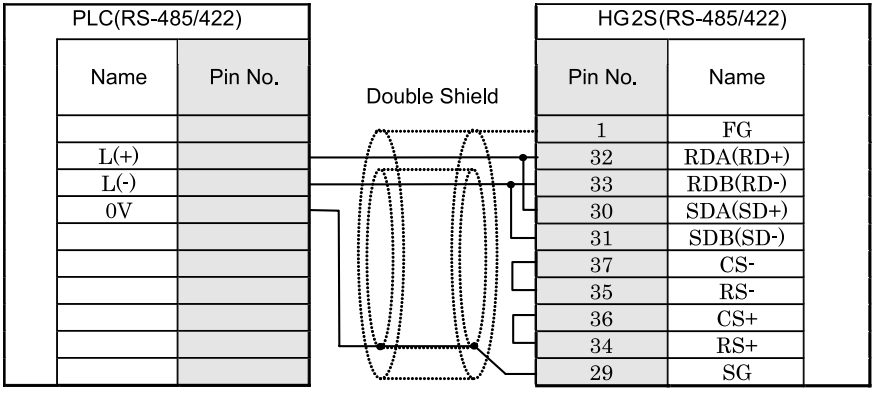
HG2F/3F/4F



Screw Terminal

D-sub, 25P connector socket type

HG2S



Screw Terminal

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

9.4 Environment Settings

9.4.1 TOYOPUC-PC3J Series

Item	Setting
Interface	RS485(422)-2
Station No.	0-37 [set with octal number] *1
Data length (bit)	7/8
Communication Speed (bps)	1200/2400/4800/9600/19200/38400/57600
Parity	Even (fix)
Stop bit (bit)	1/2

*1. Although a Station No. is the number of octal in PC3J, please set it up with the number of Hexadecimal by WindO/I-NV2.
For example, when set up with “37” in PC3J, please set up with “1F” in WindO/I-NV2.

- Please set the communication conditions of PC3J in the built-in standard link parameters.
- When the built-in standard link parameters are not set, the link acts as the computer link for below settings.
  Communication Speed: 19200bps
  Data length: 8bit
  Stop bit: 1bit
  Parity: Even
  Station No.: 0
- Please refer to “JTEKT TOYOPUC PC3J CPU MODULE OPERATION MANUAL” for details.

9.5 Usable Devices

9.5.1 TOYOPUC-PC3J

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 7FF	R/W	
Output Relay	Y	Y	0 - 7FF	R/W	
Internal relay	M	M	0 - 7FF	R/W	*1
Keep-relay	K	K	0 - 2FF	R/W	*1
Link relay	L	L	0 - 7FF	R/W	*1
Special relay	V	V	0 - FF	R/W	*1
Edge detection	P	P	0 - 1FF	R/W	*1
Timer contact	T	T	0 - 1FF	R	*1
Counter contact	C	C	0 - 1FF	R	*1
Internal relay	P3M	M	0 - 7FF	R/W	
Keep-relay	P3K	K	0 - 2FF	R/W	
Link relay	P3L	L	0 - 7FF	R/W	
Special relay	P3V	V	0 - FF	R/W	
Edge detection	P3P	P	0 - 1FF	R/W	
Timer contact	P3T	T	0 - 1FF	R	
Counter contact	P3C	C	0 - 1FF	R	
Internal relay	P2M	M	0 - 7FF	R/W	
Keep-relay	P2K	K	0 - 2FF	R/W	
Link relay	P2L	L	0 - 7FF	R/W	
Special relay	P2V	V	0 - FF	R/W	
Edge detection	P2P	P	0 - 1FF	R/W	
Timer contact	P2T	T	0 - 1FF	R	
Counter contact	P2C	C	0 - 1FF	R	
Internal relay	P1M	M	0 - 7FF	R/W	
Keep-relay	P1K	K	0 - 2FF	R/W	
Link relay	P1L	L	0 - 7FF	R/W	
Special relay	P1V	V	0 - FF	R/W	
Edge detection	P1P	P	0 - 1FF	R/W	
Timer contact	P1T	T	0 - 1FF	R	
Counter contact	P1C	C	0 - 1FF	R	

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Extended input	EX	EX	0 - 7FF	R/W	
Extended output	EY	EY	0 - 7FF	R/W	
Extended Internal relay	EM	EM	0 - 1FFF	R/W	
Extended keep-relay	EK	EK	0 - FFF	R/W	
Extended link relay	EL	EL	0 - 1FFF	R/W	
Extended special relay	EV	EV	0 - FFF	R/W	
Extended edge detection	EP	EP	0 - FFF	R/W	
Extended timer contact	ET	ET	0 - 7FF	R	
Extended counter contact	EC	EC	0 - 7FF	R	
Extended input	GX	GX	0 - FFFF	R/W	*2
Extended output	GY	GY	0 - FFFF	R/W	*2
Extended Internal relay	GM	GM	0 - FFFF	R/W	*2

*1. Parameter-set program No. in “Link parameter” is an objective of command processing.When the built-in standard link parameters are not set, Probram1 is an objective of command processing.

*2. These devices are available in the case of a PC3JG mode.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input	WX	X	0 - 7F	R/W	
Output	WY	Y	0 - 7F	R/W	
Internal relay	WM	M	0 - 7F	R/W	*1
Keep-relay	WK	K	0 - 2F	R/W	*1
Link relay	WL	L	0 - 7F	R/W	*1
Timer contact	WT	T	0 - 1F	R	*1
Counter contact	WC	C	0 - 1F	R	*1
Present value register	N	N	0 - 1FF	R	*1
Data register	D	D	0 - 2FFF	R/W	*1
Link register	R	R	0 - 7FF	R/W	*1
Special register	S	S	0 - 3FF	R/W	*1
File register	B	B	0 - 1FFF	R/W	*1*2
Internal relay	P3WM	M	0 - 7F	R/W	
Keep-relay	P3WK	K	0 - 2F	R/W	
Link relay	P3WL	L	0 - 7F	R/W	
Timer contact	P3WT	T	0 - 1F	R	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Counter contact	P3WC	C	0 - 1F	R	
Present value register	P3N	N	0 - 1FF	R	
Data register	P3D	D	0 - 2FFF	R/W	
Link register	P3R	R	0 - 7FF	R/W	
Special register	P3S	S	0 - 3FF	R/W	
File register	P3B	B	0 - 1FFF	R/W	*2
Internal relay	P2WM	M	0 - 7F	R/W	
Keep-relay	P2WK	K	0 - 2F	R/W	
Link relay	P2WL	L	0 - 7F	R/W	
Timer contact	P2WT	T	0 - 1F	R	
Counter contact	P2WC	C	0 - 1F	R	
Present value register	P2N	N	0 - 1FF	R	
Data register	P2D	D	0 - 2FFF	R/W	
Link register	P2R	R	0 - 7FF	R/W	
Special register	P2S	S	0 - 3FF	R/W	
File register	P2B	B	0 - 1FFF	R/W	*2
Internal relay	P1WM	M	0 - 7F	R/W	
Keep-relay	P1WK	K	0 - 2F	R/W	
Link relay	P1WL	L	0 - 7F	R/W	
Timer contact	P1WT	T	0 - 1F	R	
Counter contact	P1WC	C	0 - 1F	R	
Present value register	P1N	N	0 - 1FF	R	
Data register	P1D	D	0 - 2FFF	R/W	
Link register	P1R	R	0 - 7FF	R/W	
Special register	P1S	S	0 - 3FF	R/W	
File register	P1B	B	0 - 1FFF	R/W	*2
Extended input	WEX	EX	0 - 7F	R/W	
Extended output	WEY	EY	0 - 7F	R/W	
Extended internal relay	WEM	EM	0 - 1FF	R/W	
Extended keep-relay	WEK	EK	0 - FF	R/W	
Extended link relay	WEL	EL	0 - 1FF	R/W	
Extended timer contact	WET	ET	0 - 7F	R	*1
Extended counter contact	WEC	EC	0 - 7F	R	*1
Extended present value register	EN	EN	0 - 7FF	R	
Extended data register	U	U	0 - 7FFF	R/W	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Extended special register	ES	ES	0 - 7FF	R/W	
Extended setup value register	H	H	0 - 7FF	R/W	
Extended input	WGX	GX	0 - FFF	R/W	*3
Extended output	WGY	GY	0 - FFF	R/W	*3
Extended internal relay	WGM	GM	0 - FFF	R/W	*3
Extended Buffer register 0	EB0	EB	0 - 7FFF	R/W	*3
Extended Buffer register 1	EB1	EB	8000 - FFFF	R/W	*3
Extended Buffer register 2	EB2	EB	10000 - 17FFF	R/W	*3
Extended Buffer register 3	EB3	EB	18000 - 1FFFF	R/W	*3

*1. Parameter-set program No. in “Link parameter” is an objective of command processing.When the built-in standard link parameters are not set, Probram1 is an objective of command processing.

*2. When CPU operation mode is division mode, File register is not available.

*3. These devices are available in the case of a PC3JG mode.

Depending on the type of CPU operation mode of PC3J that you will be using, the there are limits to the areas that can be used within the device ranges given above. Refer to the PLC manual for details.

10 Toshiba Machine Works

10.1 Connection Table

10.1.1 Compatible PLCs

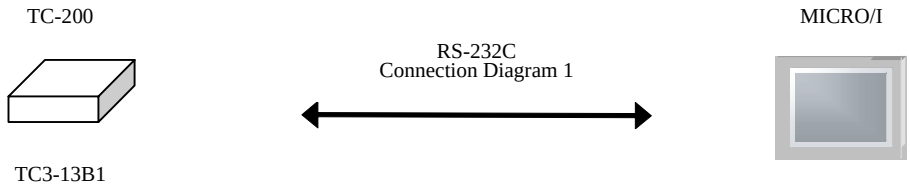
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
TC200	TC3-13B1*1	Not required (connects to CPU unit)	RS-232C Connection Diagram 1 (refer to P298)	Hardware /None	TC200
TCmini	TC03-01 TC03-02*1	Not required (connects to CPU unit)	RS-232C Connection Diagram 2 (refer to P300)		
		Not required (connects to CPU unit)	RS-232C Connection Diagram 3 (refer to P302)		

*1. We tested with the PLC of these parts.

10.2 System Configuration

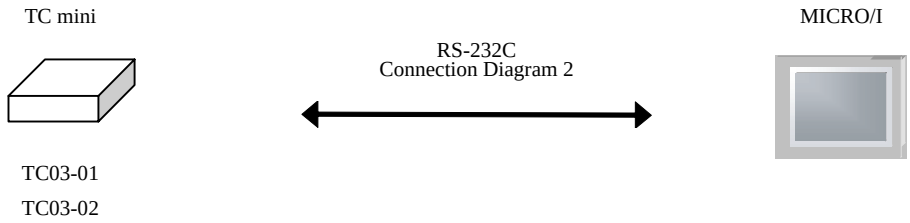
This is the system configuration for connection of Toshiba machine works PLCs to the MICRO/I.

10.2.1 TC200

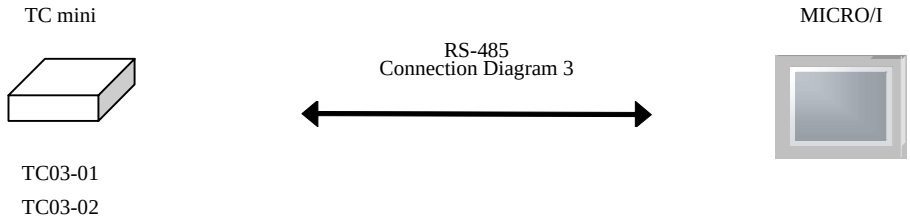


Connects to Serial port of CPU unit.

10.2.2 TCmini (connected to the RS-232C Port)



10.2.3 TCmini (connected to the RS-485 Port)

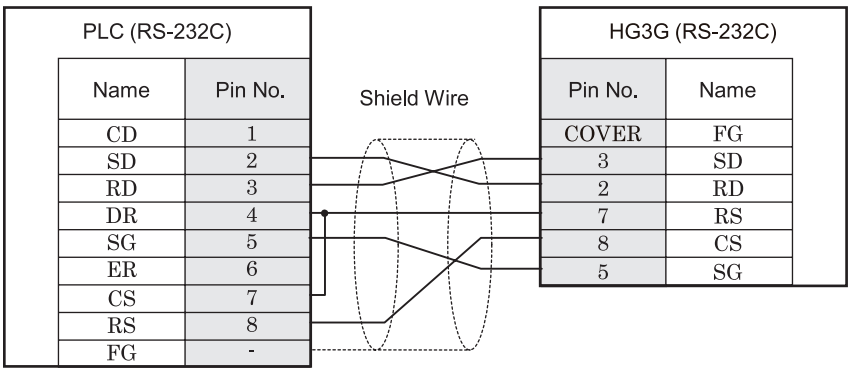


10.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

10.3.1 Connection Diagram 1: TC200 (RS-232C) - MICRO/I

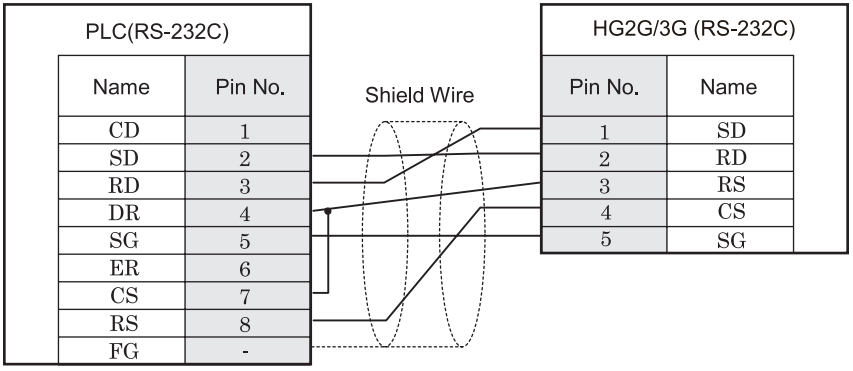
HG3G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

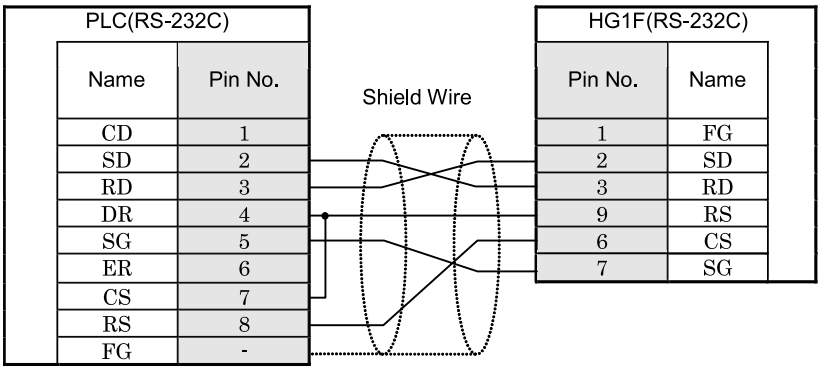
HG2G/3G (Terminal)



D-sub, 9P connector plug type

Terminal

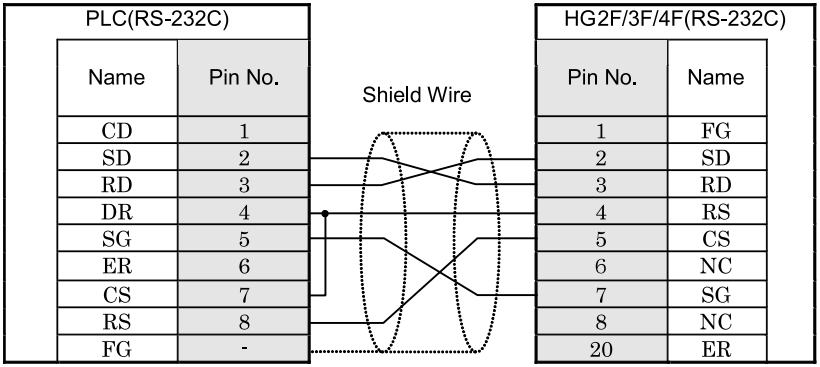
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

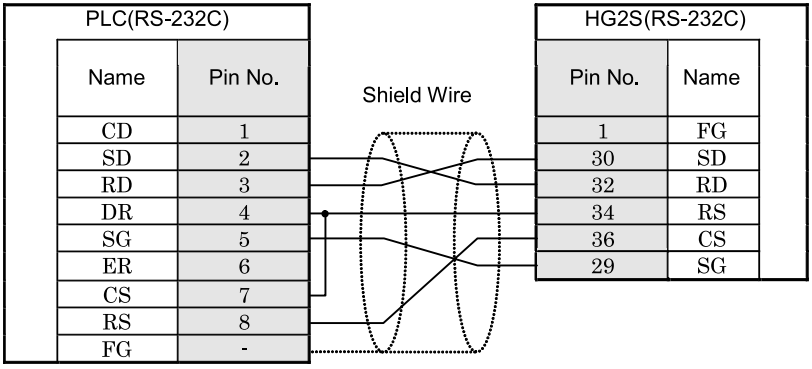
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

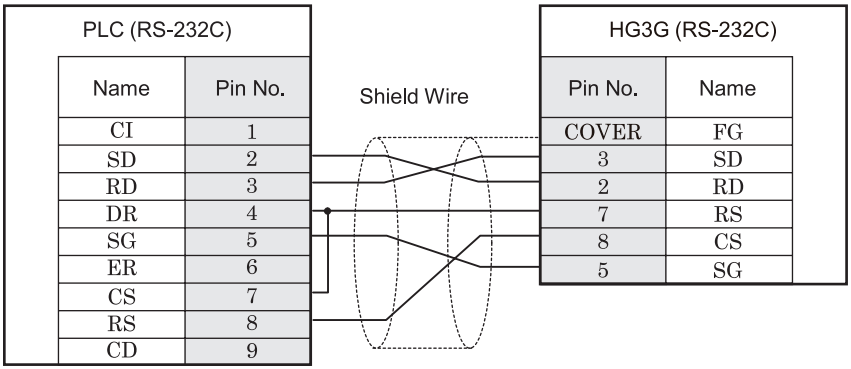


D-sub, 9P connector plug type

D-sub, 37P connector socket type

10.3.2 Connection Diagram 2: TCmini (RS-232C) - MICRO/I

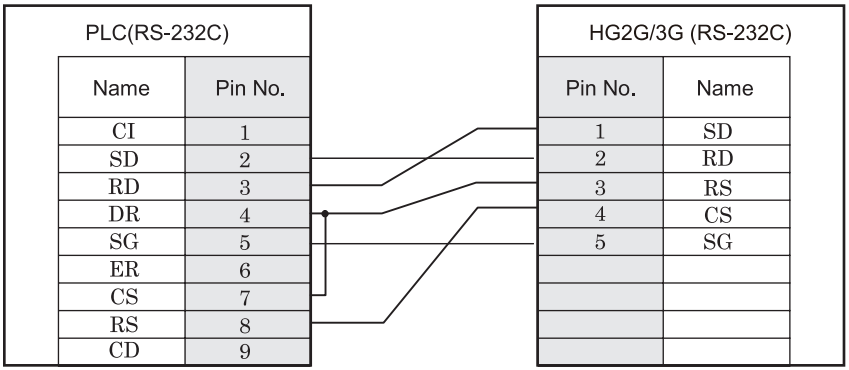
HG3G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

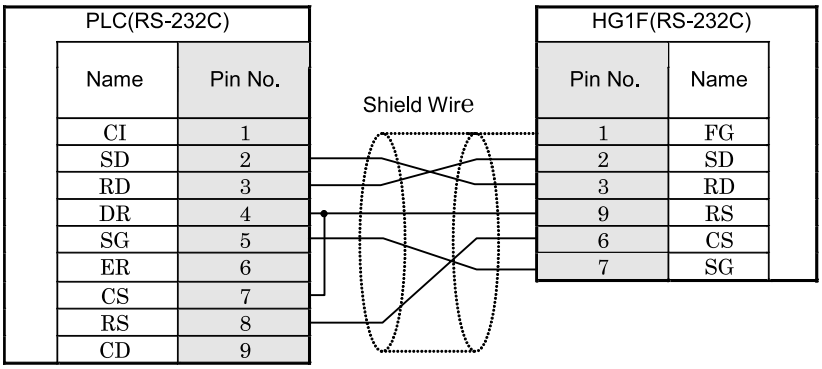
HG2G/3G (Terminal)



D-sub, 9P connector plug type

Terminal

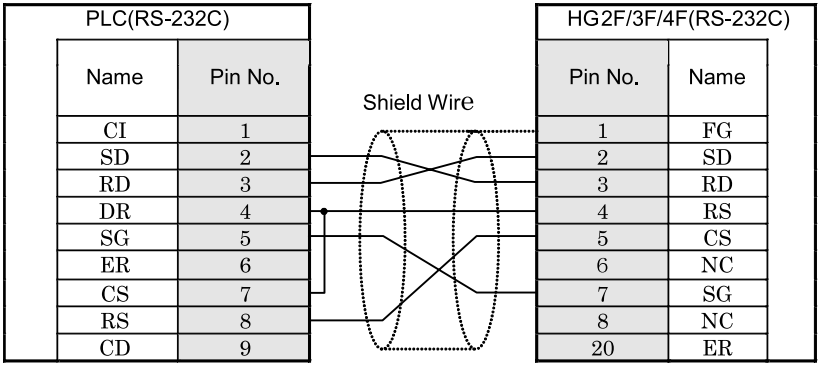
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

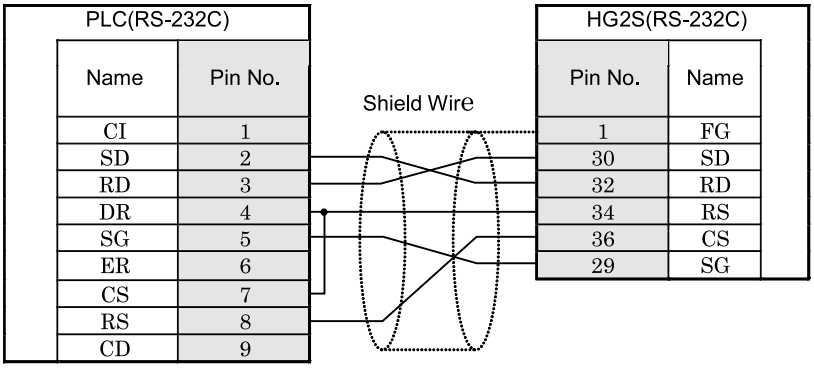
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S

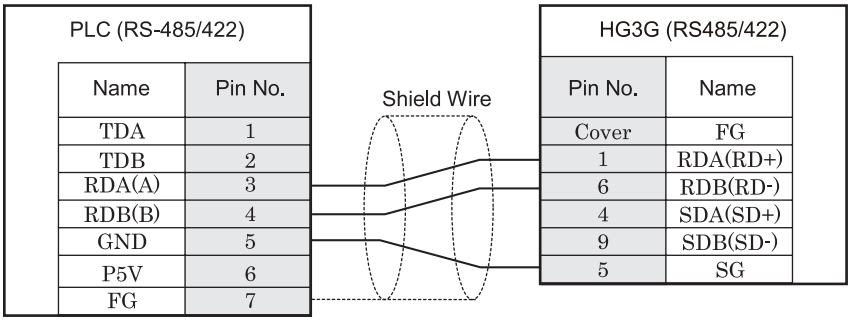


D-sub, 9P connector plug type

D-sub, 37P connector socket type

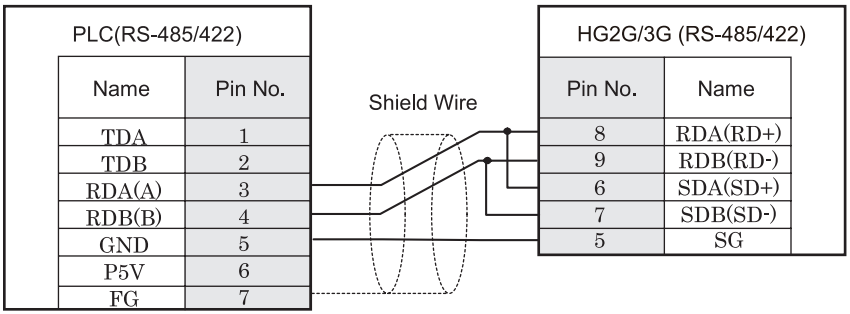
10.3.3 Connection Diagram 3:TCmini (RS-485) - MICRO/I

HG3G (Connector)



D-sub, 9P connector plug type

HG2G/3G (Terminal)



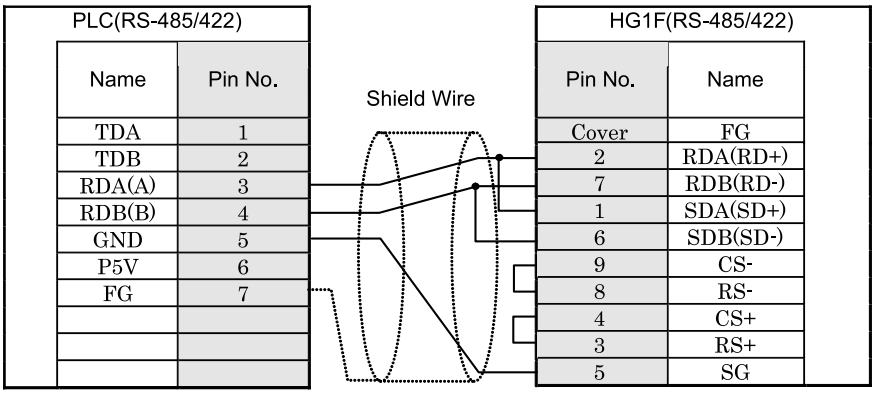
Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

WARNING

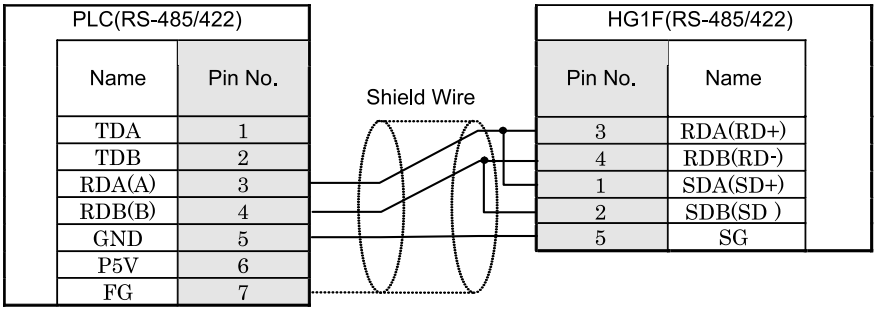
When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG1F (Connector)



D-sub, 9P connector socket type

HG1F (Terminal)



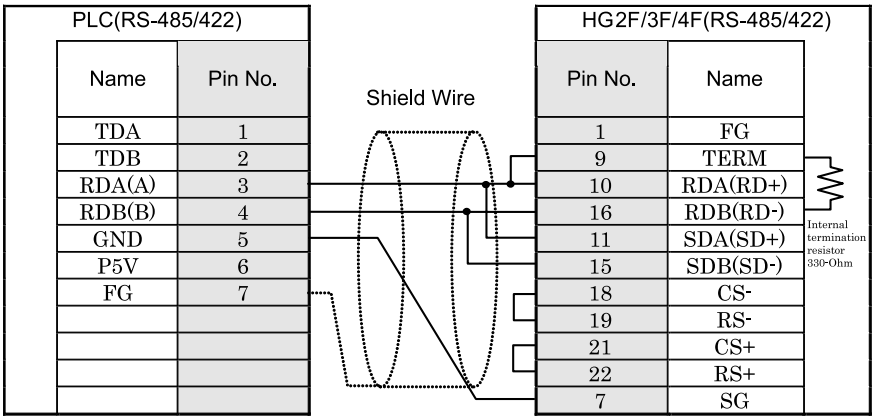
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

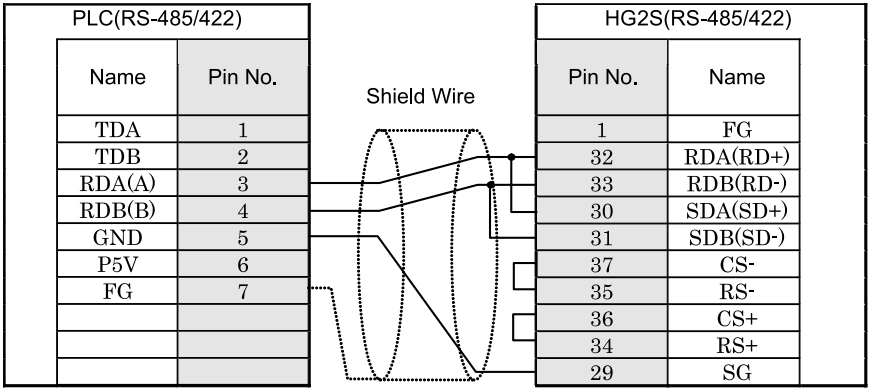
When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F



D-sub, 25P connector socket type

HG2S



D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

10.4 Environment Settings

10.4.1 TC200

Items	Details
Serial Interface	RS-232C
PC No.	00 - 63 (Set same as MICRO/I) (DEC)
Baud Rate (bps)	9600
Data Bits (bit)	8
Parity	None
Stop Bits (bit)	2

10.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - F7F	R	
Output Relay	Y	Y	0 - F7F	R/W	
Internal Relay	R	R	0 - 77F	R/W	
Latch Relay	L	L	0 - 7F	R/W	
Exp.Int.Relay1	G	G	0 - F7F	R/W	
Exp.Int.Relay2	H	H	0 - F7F	R/W	
Spec. Aid Relay	A	A	0 - 16F	R/W	
Timer (Relay)	T	T	0 - 37F	R	
Counter (Relay)	C	C	0 - 37F	R	
Sift Register	S	S	0 - 7F	R/W	
Edge Relay	E	E	0 - 77F	R/W	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	WX	X	0 -F7	R	
Output Relay	WY	Y	0 - F7	R/W	
Internal Relay	WR	R	0 - 77	R/W	
Latch Relay	WL	L	0 - 7	R/W	
Exp.Int.Relay1	WG	G	0 - F7	R/W	
Exp.Int.Relay2	WH	H	0 - F7	R/W	
Spec. Aid Relay	WA	A	0 - 16	R/W	
Tim/Cnt.(Current Value)	P	P	0 - 77F	R	

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Tim/Cnt.(Preset Value)	V	V	0 - 77F	R/W	
General Register1	D	D	0 - F7F	R/W	
General Register2	B	B	0 - F7F	R/W	
Sift Register	WS	S	0 - 7	R/W	
Edge Relay	WE	E	0 - 77	R/W	
Timer Relay (Word)	WT	T	0 - T77	R	
Counter Relay (Word)	WC	C	0 - 77	R	

11 GE Fanuc Automation

11.1 Connection Table

11.1.1 Compatible PLCs

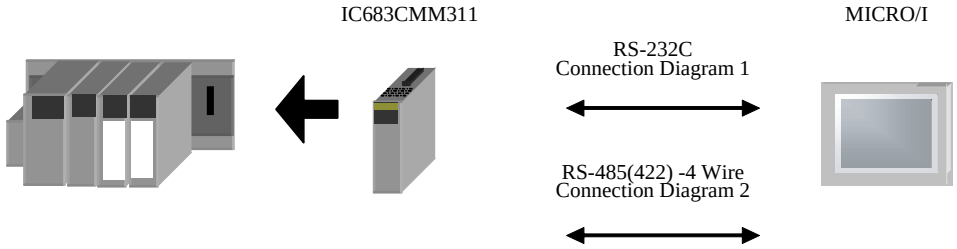
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
Series90-30	CPU331[*1], CPU341, CPU350, CPU351, CPU352, CPU360, CPU363, CPU364, CPU374	IC693CMM311	RS-232C Connection Diagram 1 (refer to P309)	Hardware	Series 90 (SNP-X)
			RS-485 (422)-4 Connection Diagram 2 (refer to P311)		
	CPU311, CPU313, CPU323, CPU331[*1], CPU341, CPU350, CPU351, CPU352, CPU360, CPU363, CPU364, CPU374	Not required (connects to CPU (Power Supply) unit directly)	RS-485 (422)-4 Connection Diagram 3 (refer to P314)		
VersaMax	Nano	Not required (connects to CPU unit directly)	RS-232C Connection Diagram 4 (refer to P317)		
	Micro (14point)				
	Micro (23, 28[*1]point)		RS-232C Connection Diagram 4 (refer to P317)		
			RS-485 (422)-4 Connection Diagram 3 (refer to P314)		

*1. We tested with the PLC of these parts.

11.2 System Configuration

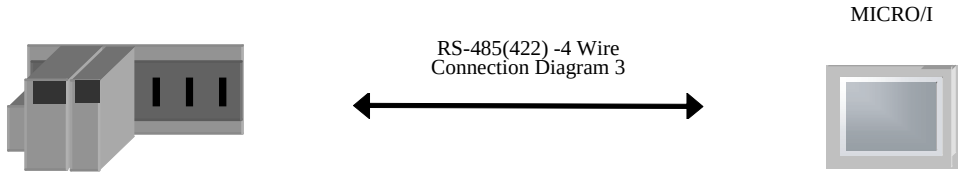
The following document explains the connection of GE Fanuc PLCs to MICRO/I screens.

11.2.1 Series 90-30 (Using Communication Coprocessor Module (CMM))



Series 90-30

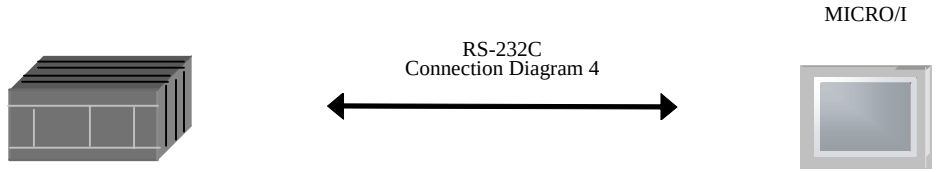
11.2.2 Series 90-30, VersaMax Micro (Using CPU Serial Port)



Series 90-30
VersaMax Micro (23, 28 point)

Connects to Serial port on Series 90-30 PLC Power Supply. Connects to Serial port 2 on VersaMax Micro PLC.

11.2.3 VersaMax Micro/Nano (Using Serial Port 1)



VersaMax Micro/ Nano

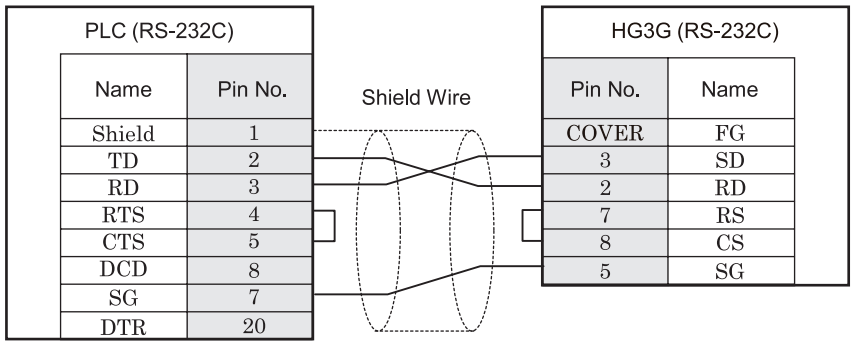
Connects to Serial port 1(RS-232C) on VersaMax Micro/Nano PLC.

11.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not for the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

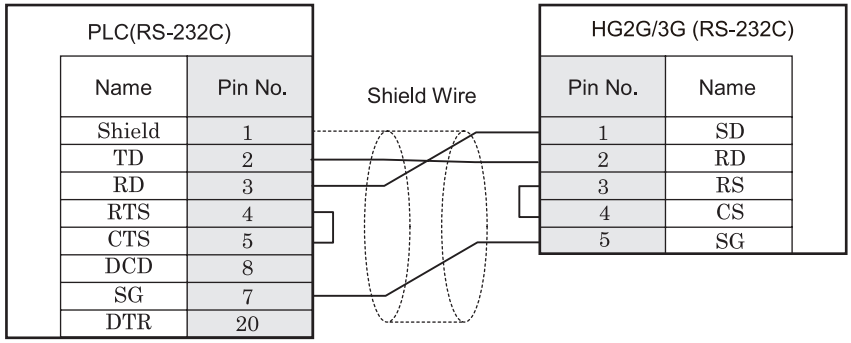
11.3.1 Connection Diagram 1: Series 90-30 Communication Coprocessor Module (CMM) (RS-232C) to MICRO/I

HG3G (Connector)



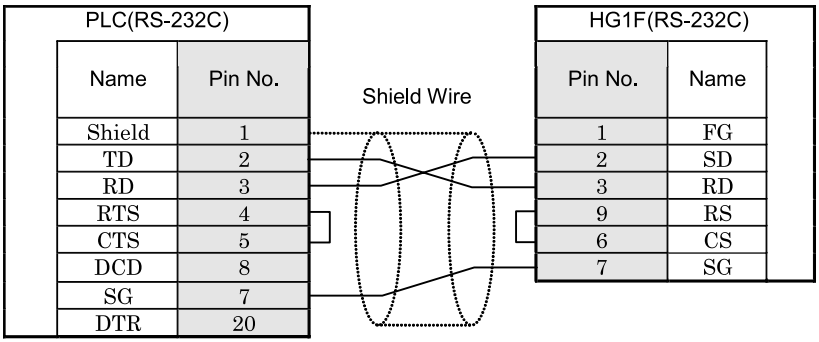
D-sub, 25P connector socket type (unit side) D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 25P connector socket type (unit side) Terminal

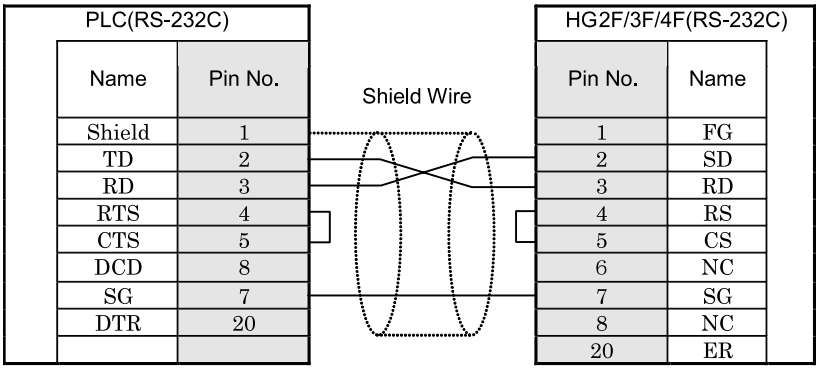
HG1F (Connector)



D-sub, 25P connector socket type (unit side)

D-sub, 9P connector socket type

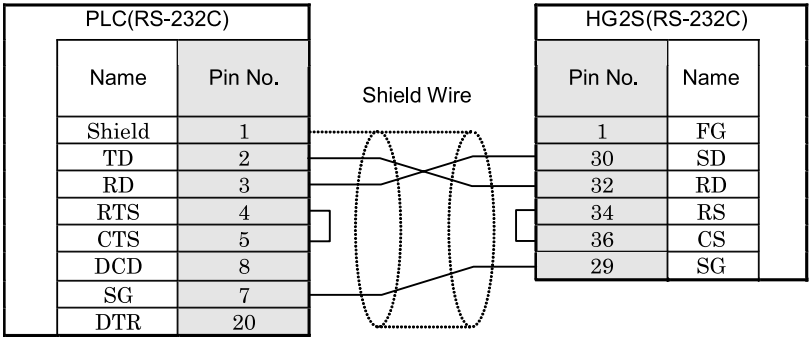
HG2F/3F/4F



D-sub, 25P connector socket type (unit side)

D-sub, 25P connector socket type

HG2S

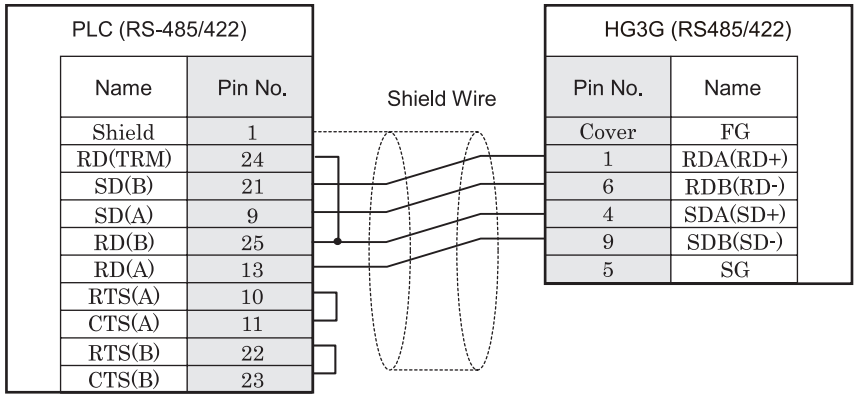


D-sub, 25P connector socket type (unit side)

D-sub, 37P connector socket type

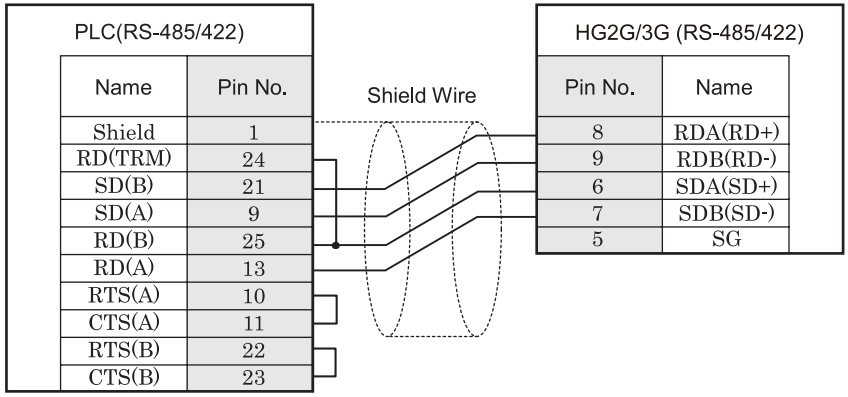
11.3.2 Connection Diagram 2: Series 90-30 Communication Coprocessor Module (CMM) (RS-422(485)) to MICRO/I

HG3G (Connector)



D-sub, 25P connector socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



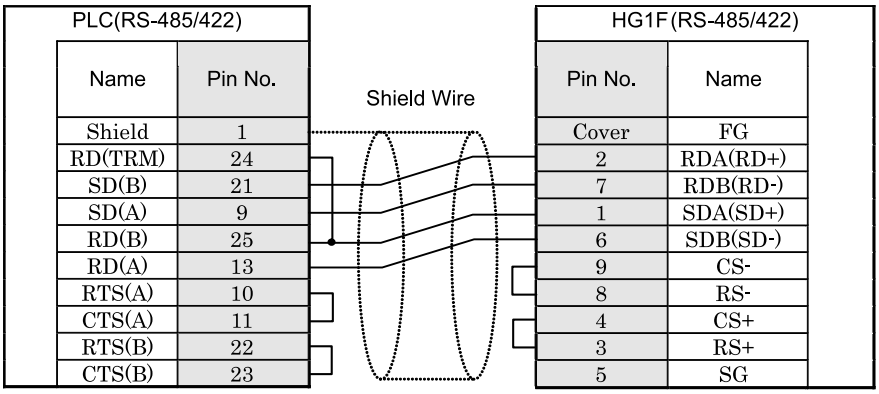
D-sub, 25P connector socket type — Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

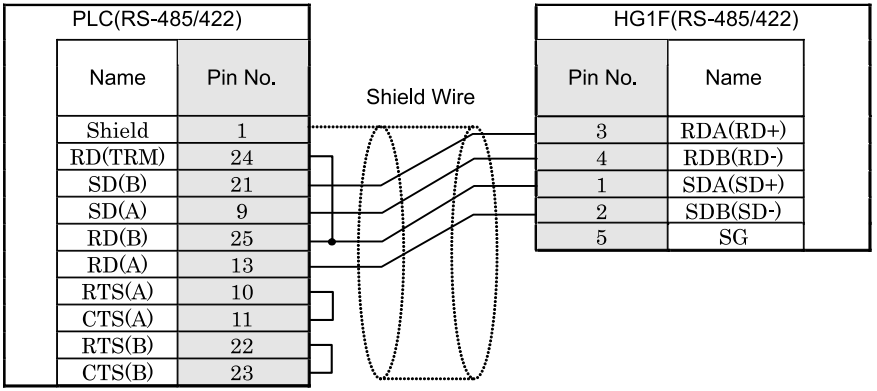
HG1F (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 25P connector socket type

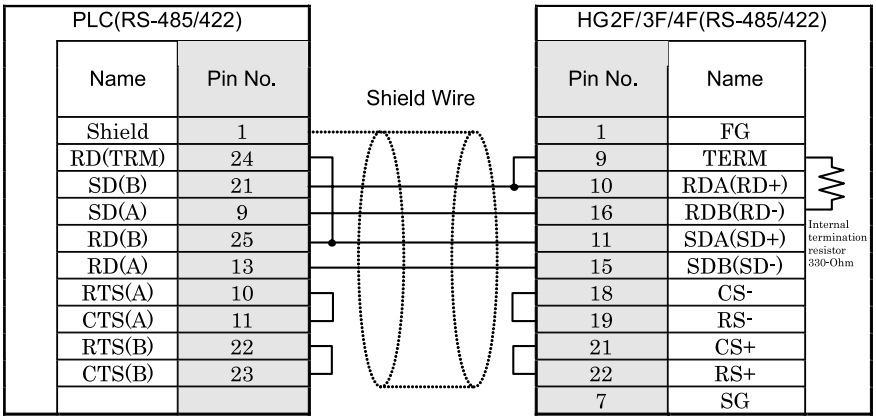
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

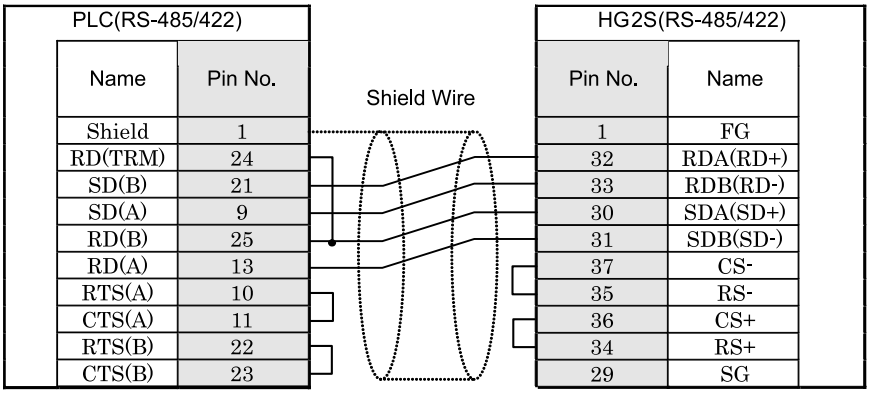
HG2F/3F/4F



D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S



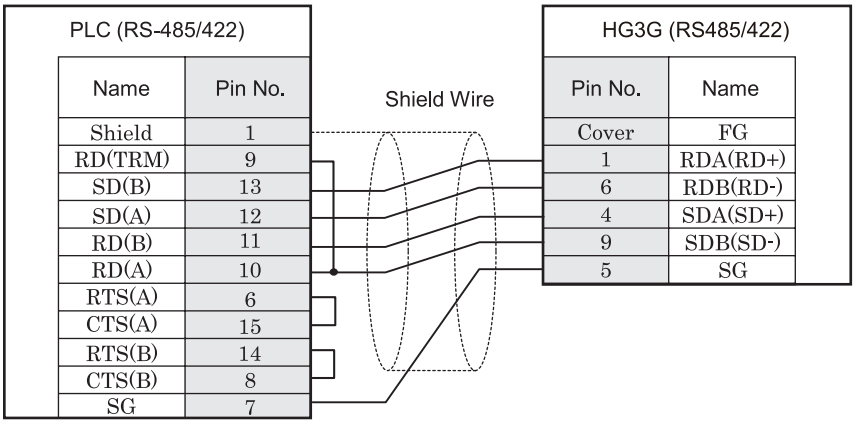
D-sub, 25P connector socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

11.3.3 Connection Diagram 3: PLC (RS-485) to MICRO/I

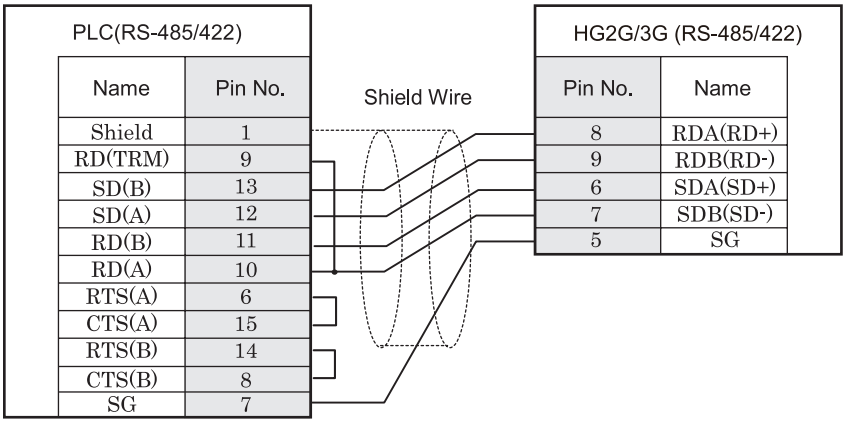
HG3G (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 15P connector socket type

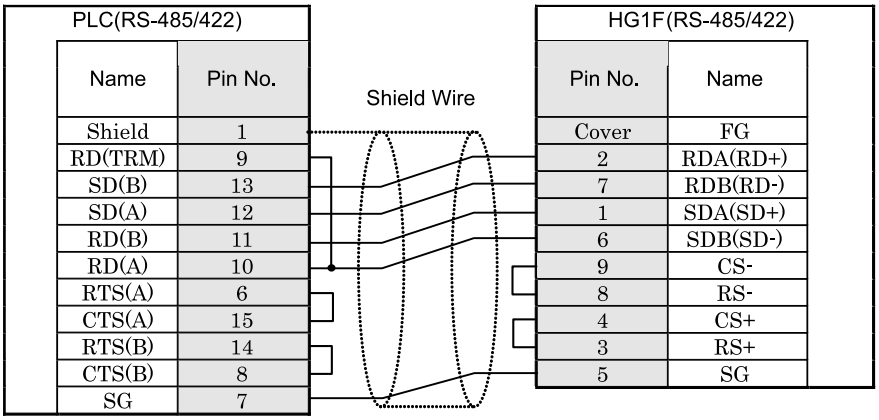
Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG2G/3G make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

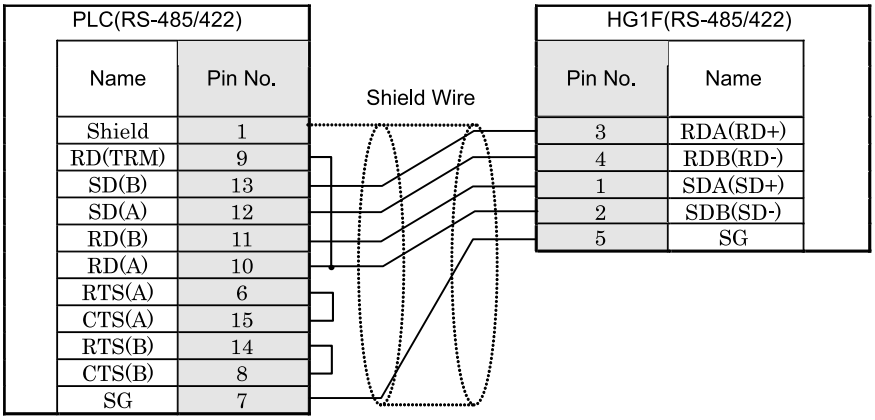
HG1F (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 15P connector socket type

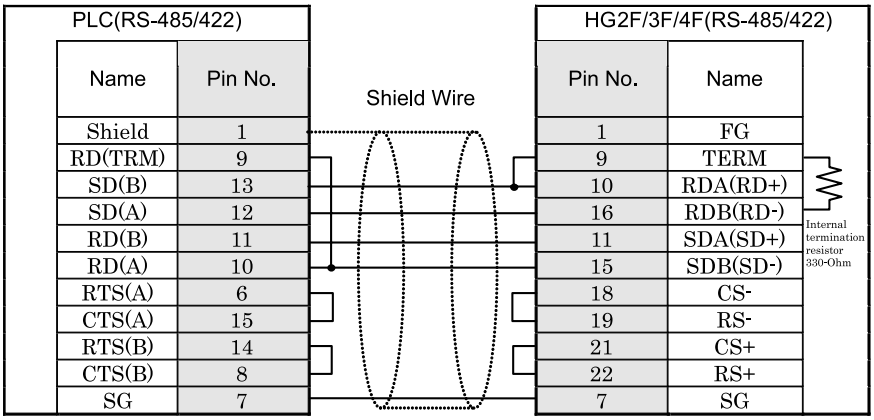
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

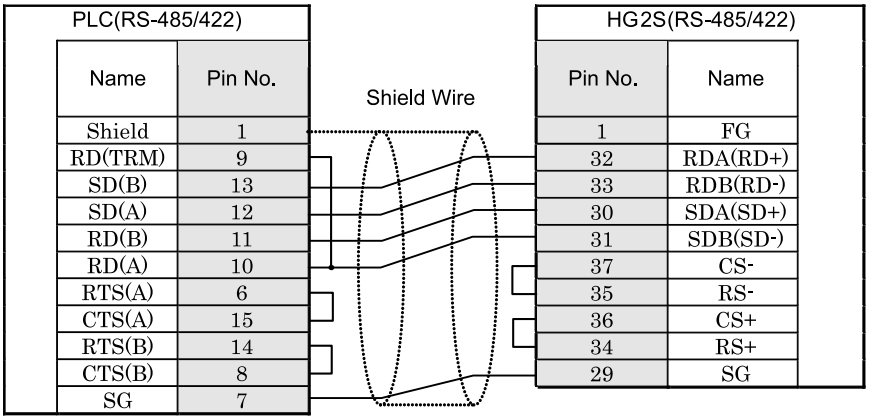
HG2F/3F/4F



D-sub, 15P connector socket type

D-sub, 25P connector socket type

HG2S



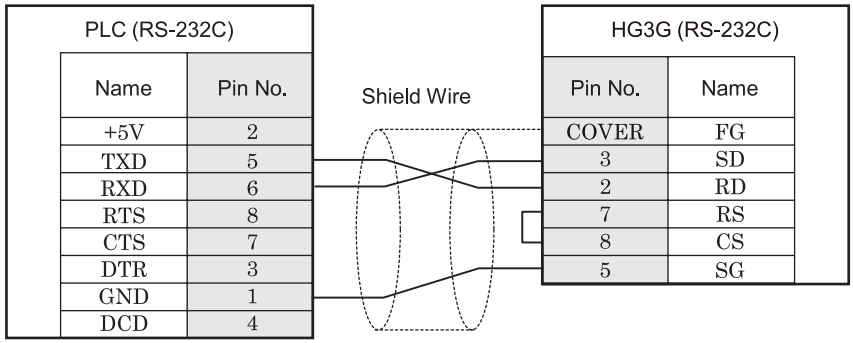
D-sub, 15P connector socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

11.3.4 Connection Diagram 4: PLC (RS-232C) to MICRO/I

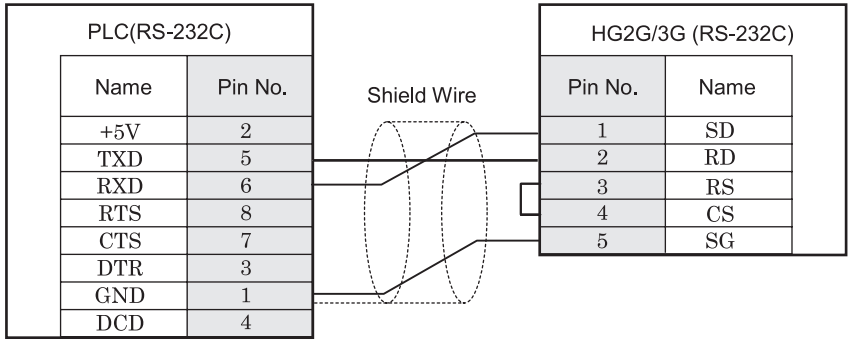
HG3G (Connector)



RJ-45, 8P modular connector socket type

D-sub, 9P connector plug type

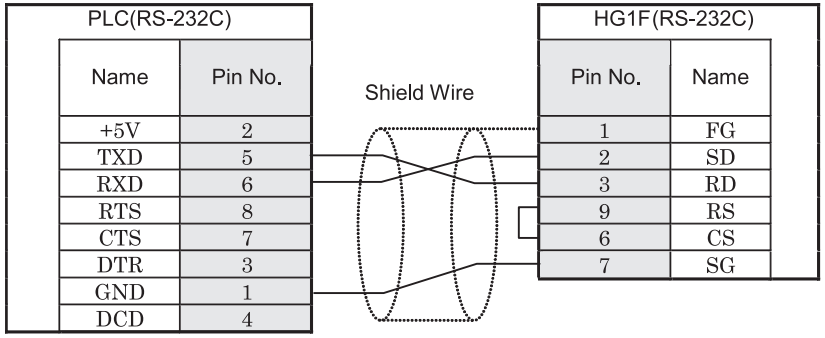
HG2G/3G (Terminal)



RJ-45, 8P modular connector socket type

Terminal

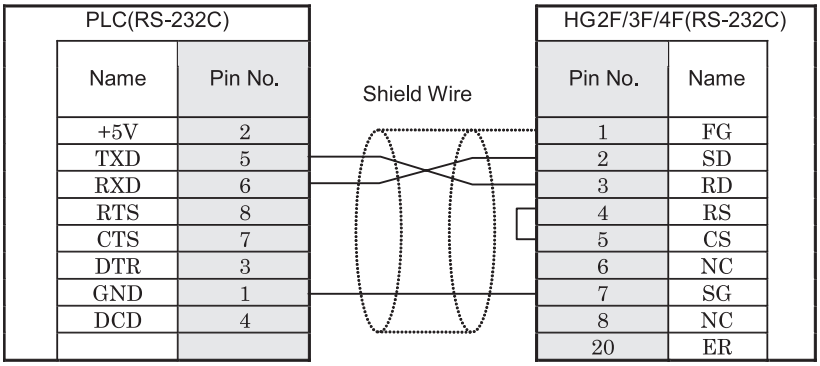
HG1F (Connector)



RJ-45, 8P modular connector socket type

D-sub, 9P connector socket type

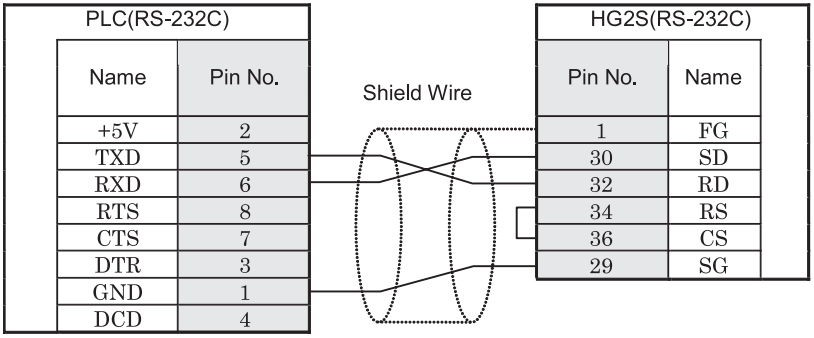
HG2F/3F/4F



RJ-45, 8P modular connector socket type

D-sub, 25P connector socket type

HG2S



RJ-45, 8P modular connector socket type

D-sub, 37P connector socket type

11.4 Environment Settings

The communication port settings for GE Fanuc PLCs and MICRO/I host port are as follows

11.4.1 Series 90-30 Communication Coprocessor Module (CMM)

Item		Setting	
Interface	Set to the same setting as the MICRO/I	RS-232C	RS-485-4wires
Baud Rate [bps]		1200/2400/4800/9600/19200	
Data Bits [bit]		8 (fixed)	
Parity		Odd /Even / None	
Stop Bits [bit]		1 / 2	
Flow Control		None	Hardware / None
Configuration Mode		SNP Only	
SNP Enable		Yes	
SNP Mode		Slave	

Do not set SNP ID for the PLC. If you set it, MICRO/I will not communicate with PLC.

11.4.2 Series 90-30 CPU Module

Item		Setting
Interface	Set to the same setting as the MICRO/I	RS-485-4wires
Baud Rate [bps]		1200/2400/4800/9600/19200
Data Bits [bit]		8 (fixed)
Parity		Odd /Even / None
Stop Bits [bit]		1 / 2

Do not set SNP ID for the PLC. If you set it, MICRO/I will not communicate with PLC.

11.4.3 VersaMax Micro/Nano

Item		Setting	
Interface	Set to the same setting as the MICRO/I	RS-232C (Port 1)	RS-485-4wires (Port 2)
Baud Rate [bps]		1200/2400/4800/9600/19200	
Data Bits [bit]		8 (fixed)	
Parity		Odd /Even / None	
Stop Bits [bit]		1 / 2	
Port Mode		SNP	
Port Type		Slave	

- Do not set SNP ID for the PLC. If you set it, MICRO/I will not communicate with PLC.
- Refer to the manuals of Series90-30 or VersaMax Micro/Nano PLCs for details.

11.5 Usable Devices

The types of devices supported by the MICRO/I and their ranges are shown below.

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Discrete Inputs	I	%I	1 - 12288	R	Dec
Discrete Outputs	Q	%Q	1 - 12288	R/W	Dec
Internal Coils	M	%M	1 - 12288	R/W	Dec
Temporary Coils	T	%T	1 - 256	R/W	Dec
Discrete Globals	G	%G	1 - 7680	R/W	Dec
System Status References S	S	%S	1 - 128	R	Dec
System Status References SA	SA	%SA	1 - 128	R/W	Dec
System Status References SB	SB	%SB	1 - 128	R/W	Dec
System Status References SC	SC	%SC	1 - 128	R/W	Dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Discrete Inputs	WI	%I	1 - 12273	R	Dec
Discrete Outputs	WQ	%Q	1 - 12273	R/W	Dec
Internal Coils	WM	%M	1 - 12273	R/W	Dec
Temporary Coils	WT	%T	1 - 241	R/W	Dec
Discrete Globals	WG	%G	1 - 7665	R/W	Dec
System Status References S	WS	%S	1 - 113	R	Dec
System Status References SA	WSA	%SA	1 - 113	R/W	Dec
System Status References SB	WSB	%SB	1 - 113	R/W	Dec
System Status References SC	WSC	%SC	1 - 113	R/W	Dec
Register Memory	R	%R	1 - 16384	R/W	Dec
Analog Inputs	AI	%AI	1 - 8192	R/W	Dec
Analog Outputs	AQ	%AQ	1 - 8192	R/W	Dec

The device ranges may differ depending on the PLC model. Please refer to PLC Manual for supported memory ranges of the PLC you are using.

12 Panasonic (AROMAT)

12.1 Connection Table

12.1.1 Compatible Protocols

Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
FP Series	FP0 *1	Not required*1 (Connects to CPU unit directly)	RS-232C Connection Diagram 1 (refer to P325)	Hardware	MEWNET
	FP1*1	Not required (Connects to RS-232C Port)	RS-232C Connection Diagram 2 (refer to P327)		
		Not required (Connects to CPU unit directly)	RS-232C (AFP8550) Connection Diagram 3 (refer to P329)		
		Not required*1 (Connects to CPU unit directly)	RS-422 Connection Diagram 4 (refer to P332)		
	FPΣ*1	Not required*1 (Connects to CPU unit directly)	RS-232C Connection Diagram 1 (refer to P325)		
		Used Communication cassette AFPG801*1	RS-232C Connection Diagram 5 (refer to P335)		
		Used Communication cassette AFPG802*1	RS-232C Connection Diagram 6 (refer to P337)		
		Used Communication cassette AFPG803*1	RS-485-2 Connection Diagram 7 (refer to P339)		
	FP10, FP10SH	Not required*1 (Connects to Tool Pot or Com Port)	RS-232C Connection Diagram 8 (refer to P342)		
		AFP3462*1			
	FP2, FP2SH	Not required (Connects to Com Port)			
		AFP2462			

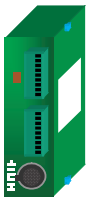
*1. We tested with the PLC of these parts.

12.2 System Configuration

This is the system configuration for connection of Panasonic (AROMAT) PLCs to the MICRO/I.

12.2.1 AROMAT

FP0



C16CT, C32CT

RS-232C
Connection Diagram 1

MICRO/I

FPΣ

C16CT, C32CT

RS-232C
Connection Diagram 1

MICRO/I

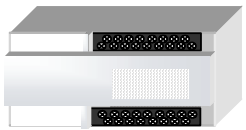
FP1

C24C, C40C, C56C, C72C

RS-232C
Connection Diagram 2

MICRO/I

FP1



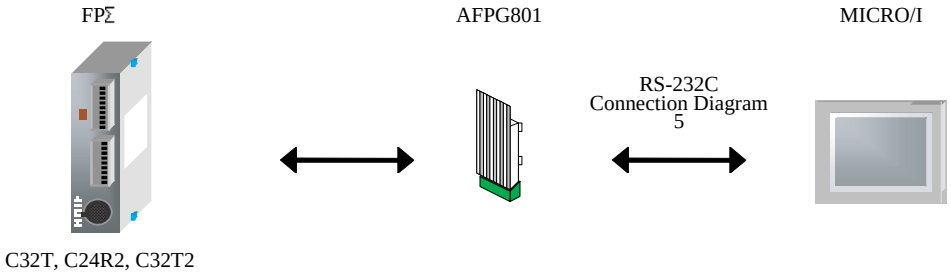
C14, C16, C24, C40, C56, C72,
C24C, C40C, C56C, C72C

AFP8550

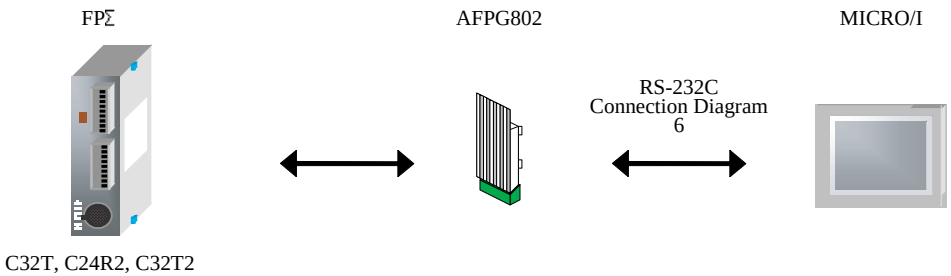
RS-422
Connection Diagram
3

RS-422
Connection Diagram 4

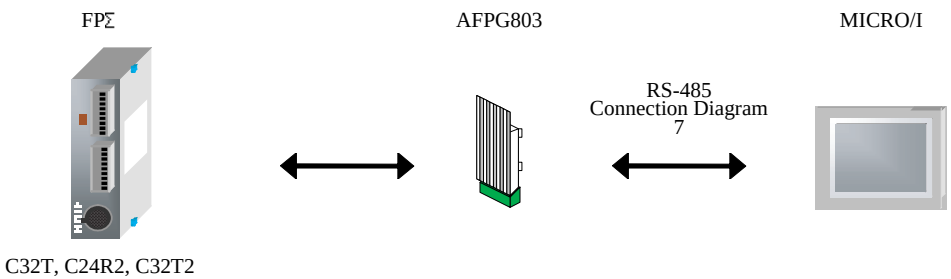
MICRO/I



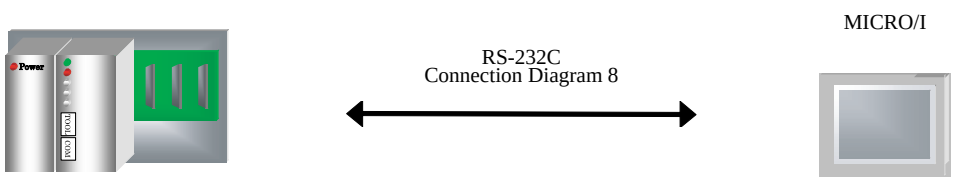
C32T, C24R2, C32T2



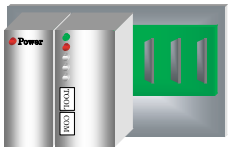
C32T, C24R2, C32T2



C32T, C24R2, C32T2



FP2, FP2SH
FP10, FP10SH

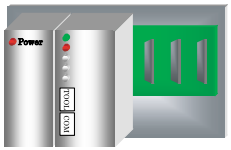


FP10, FP10SH

AFP3462

RS-232C
Connection Diagram
8

MICRO/I



FP2, FP2SH

AFP2462

RS-232C
Connection Diagram
8

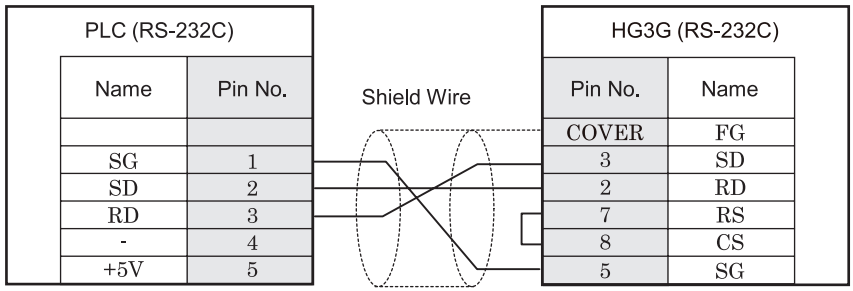
MICRO/I

12.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not for the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

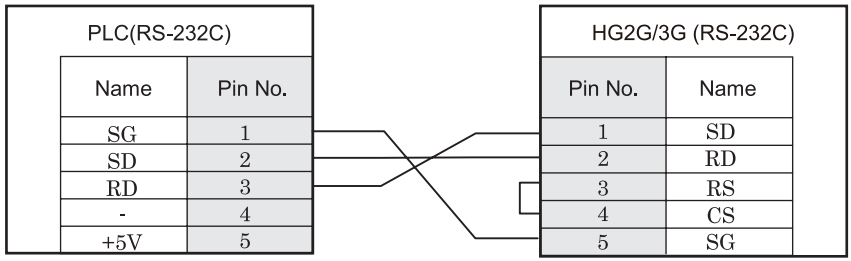
12.3.1 Connection Diagram 1: FP0, FPΣ- MICRO/I

HG3G (Connector)



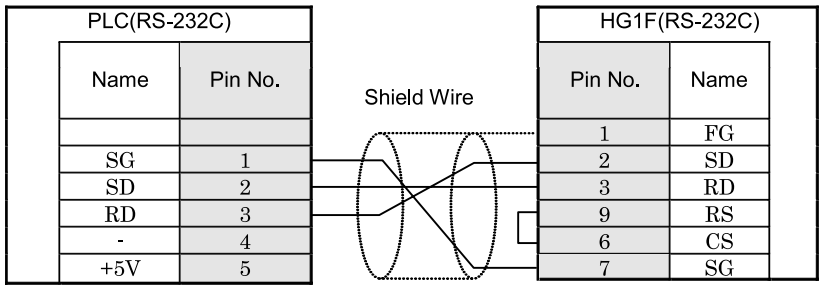
Mini Din 5P, socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



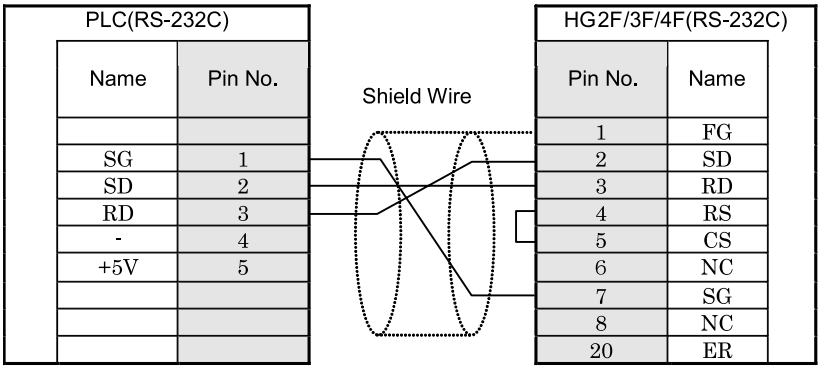
Mini Din 5P, socket type — Terminal

HG1F (Connector)



Mini Din 5P, socket type — D-sub, 9P connector socket type

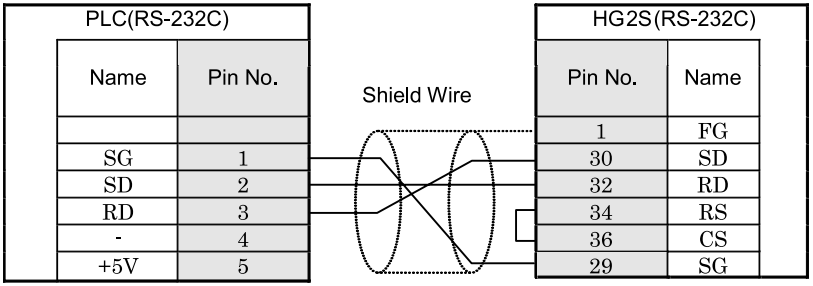
HG2F/3F/4F



Mini Din 5P, socket type

D-sub, 25P connector socket type

HG2S

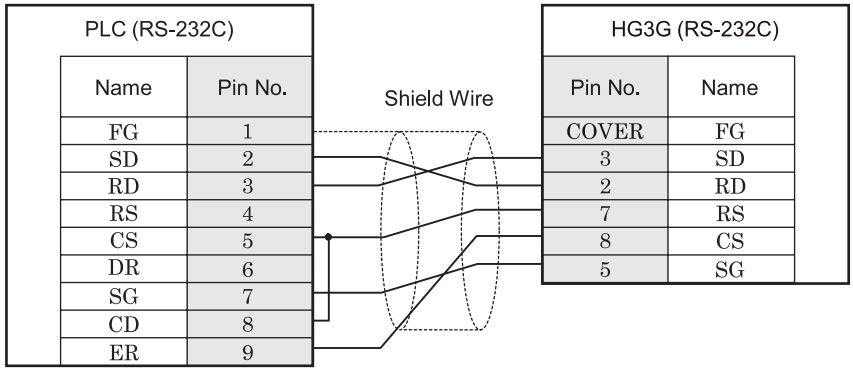


Mini Din 5P, socket type

D-sub, 37P connector socket type

12.3.2 Connection Diagram 2: FP1 (RS232C Port) - MICRO/I

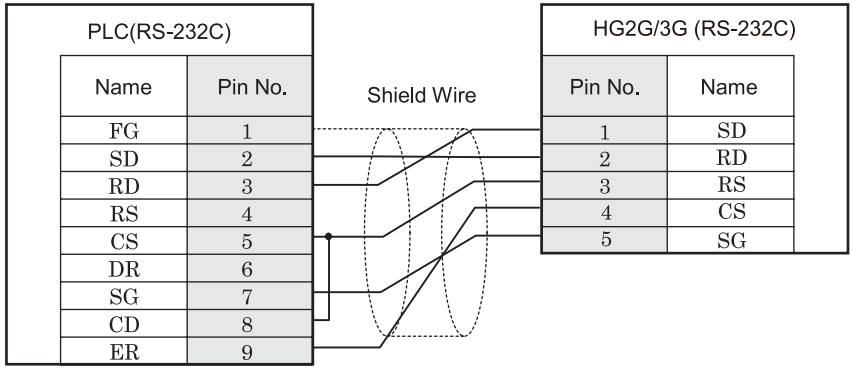
HG3G (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector plug type

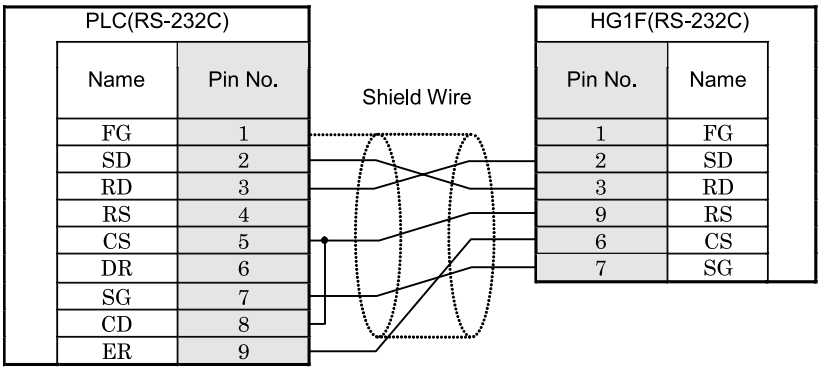
HG2G/3G (Terminal)



D-sub, 9P connector socket type

Terminal

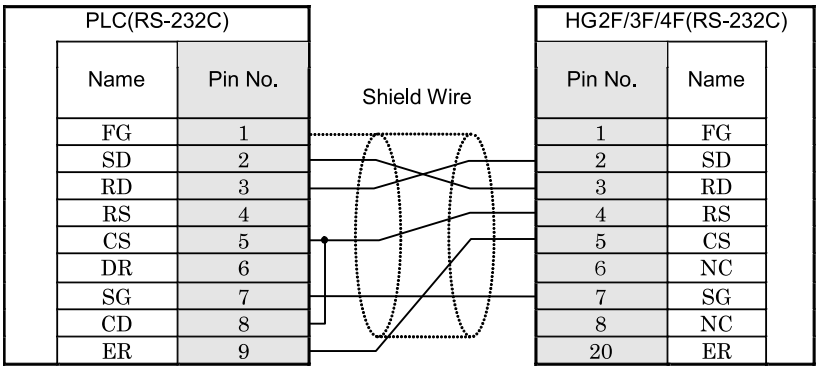
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

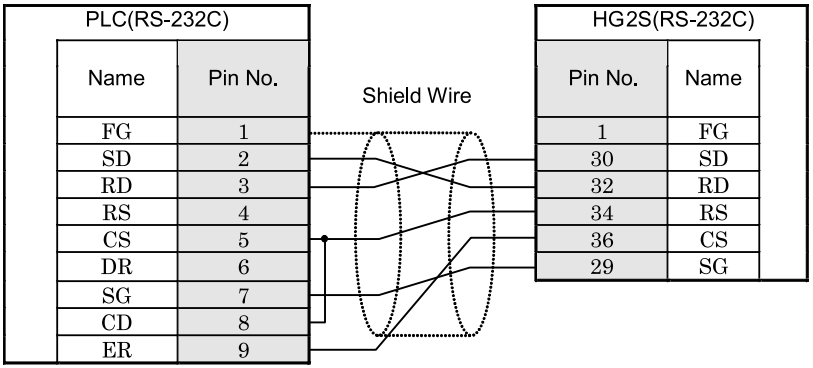
HG2F/3F/4F



Mini DIN 5P, socket type

D-sub, 25P connector socket type

HG2S

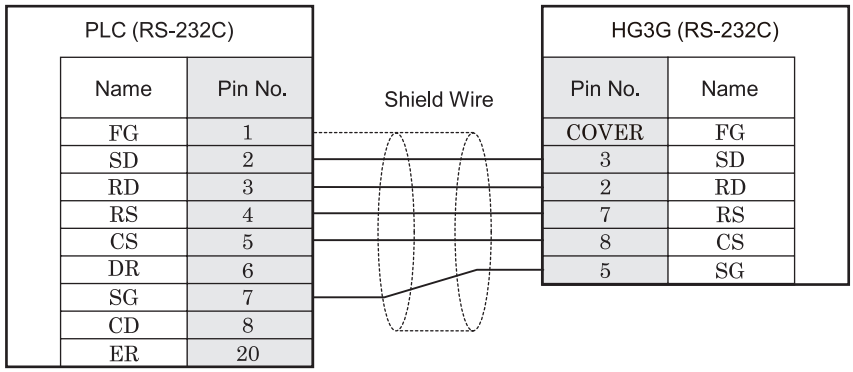


D-sub, 25P connector plug type

D-sub, 37P connector socket type

12.3.3 Connection Diagram 3: FP1 (AFP8550) - MICRO/I

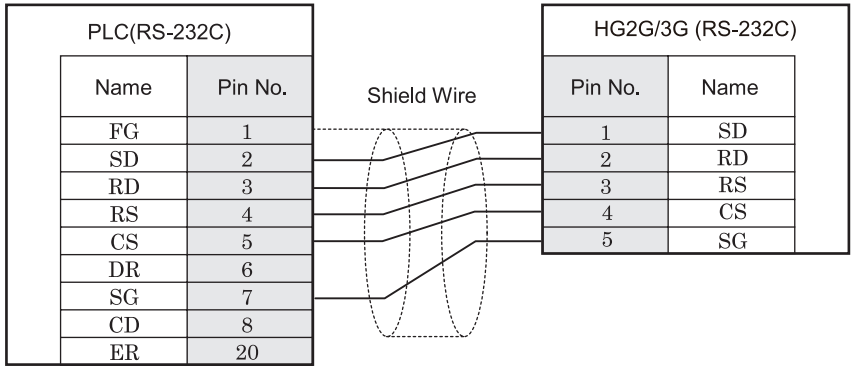
HG3G (Connector)



D-sub, 25P connector plug type D-sub, 9P connector plug type

This figure shows the connection diagram when using the cable (AFP8550) from AROMAT
In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

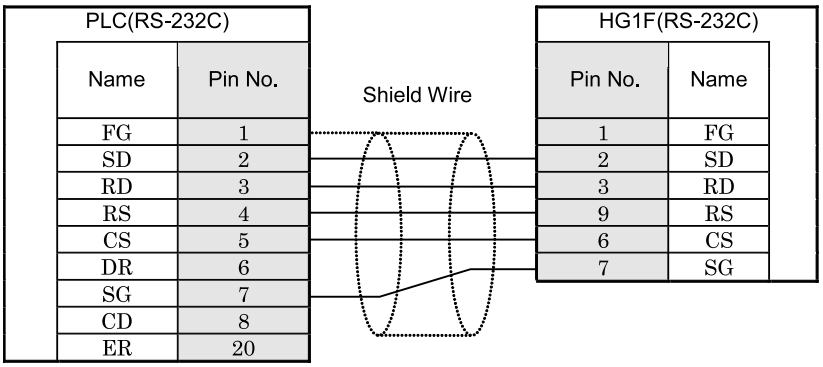
HG2G/3G (Terminal)



D-sub, 25P connector plug type Terminal

This figure shows the connection diagram when using the cable (AFP8550) from AROMAT
In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

HG1F (Connector)

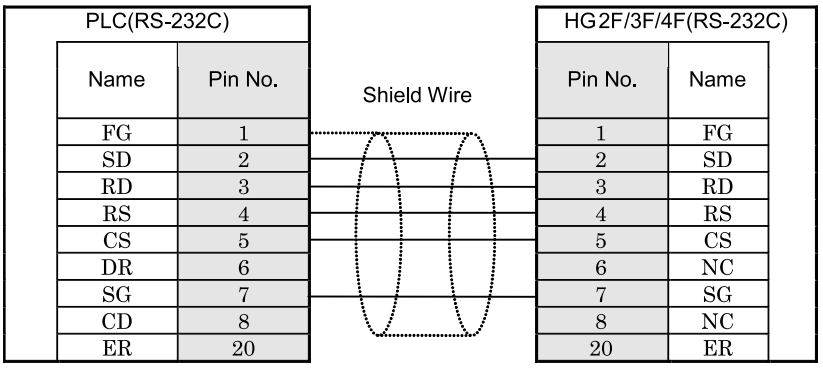


D-sub, 25P connector plug type

D-sub, 9P connector socket type

This figure shows the connection diagram when using the cable (AFP8550) from AROMAT
In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

HG2F/3F/4F

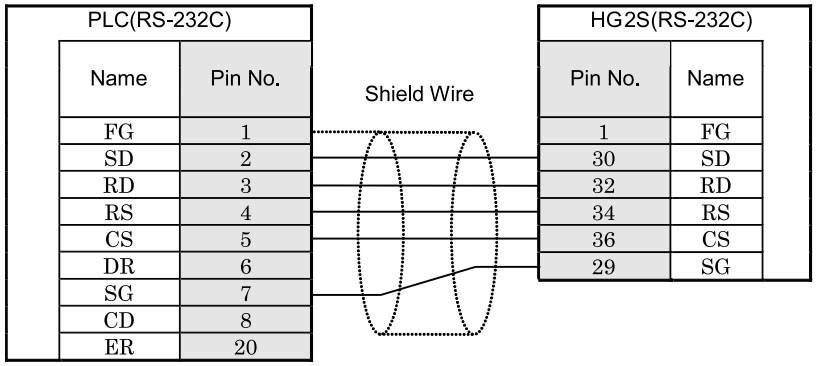


D-sub, 25P connector plug type

D-sub, 25P connector socket type

This figure shows the connection diagram when using the cable (AFP8550) from AROMAT
In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

HG2S



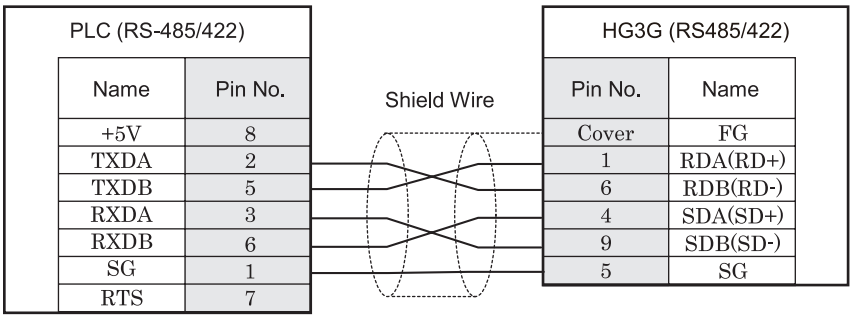
D-sub, 25P connector plug type

D-sub, 37P connector socket type

This figure shows the connection diagram when using the cable (AFP8550) from AROMAT
In D sub connector of AFP8550, D sub connector of a plug type and MICRO/I main part is a socket type. (In case you create a cable, as for the AFP8550 side, the socket type and MICRO/I side should use plug type D sub connector.)

12.3.4 Connection Diagram 4: FP1 - MICRO/I

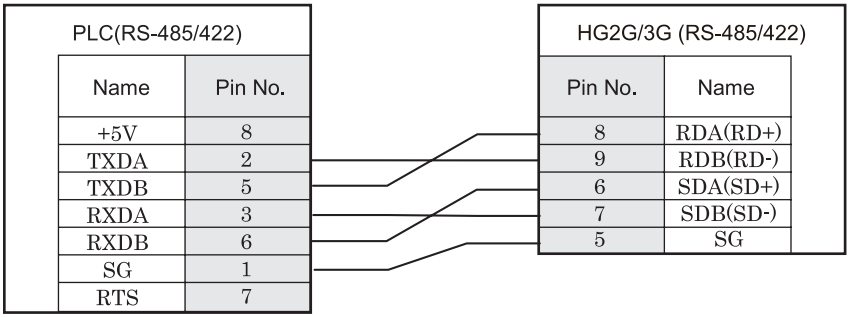
HG3G (Connector)



Mini Din 8P socket type

D-sub, 9P connector plug type

HG2G/3G (Terminal)



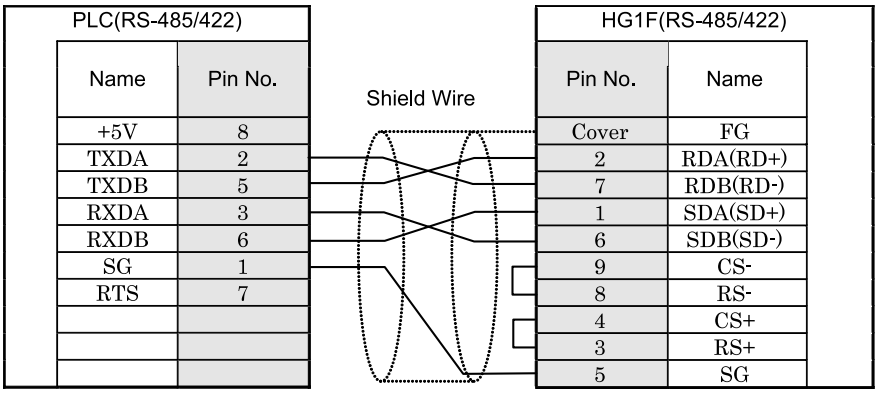
Mini Din 8P socket type

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

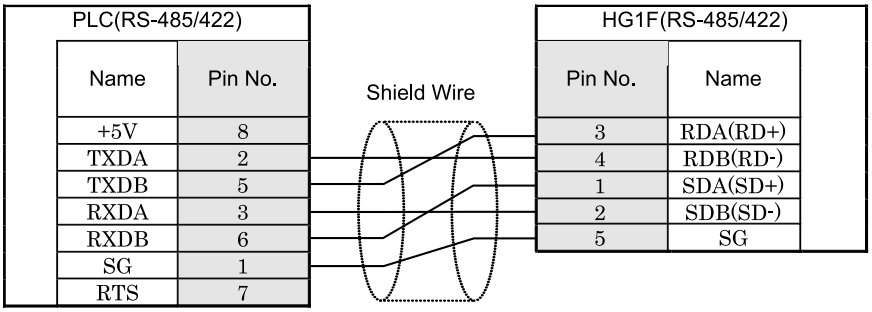
HG1F (Connector)



Mini Din 8P socket type

D-sub, 9P connector socket type

HG1F (Terminal)



Mini Din 8P socket type

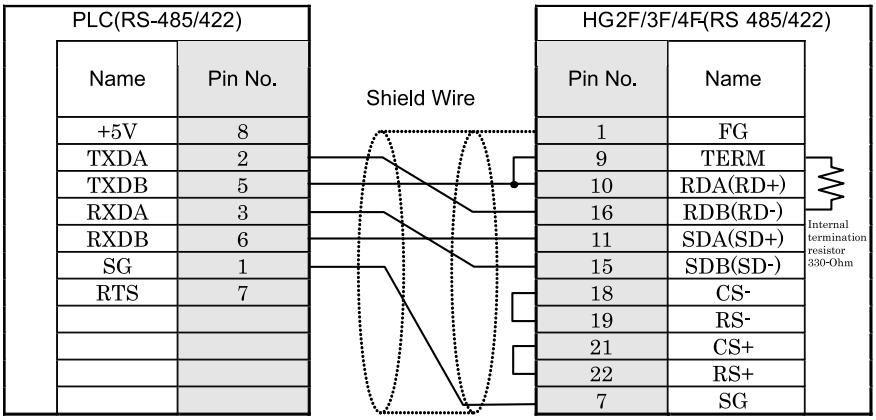
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

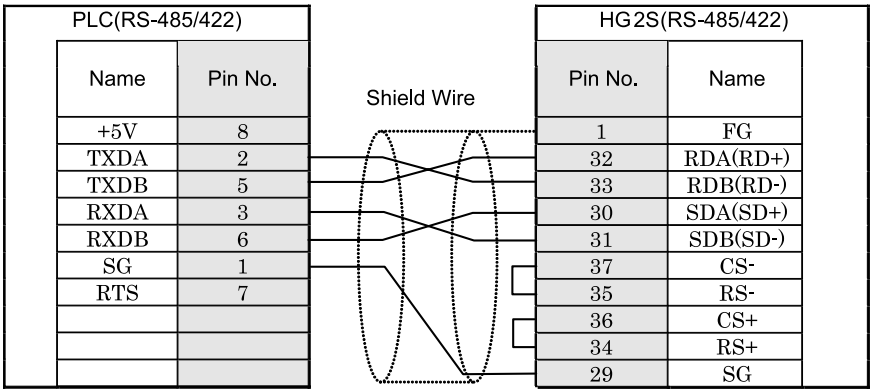
HG2F/3F/4F



Mini Din 8P socket type

D-sub, 25P connector socket type

HG2S



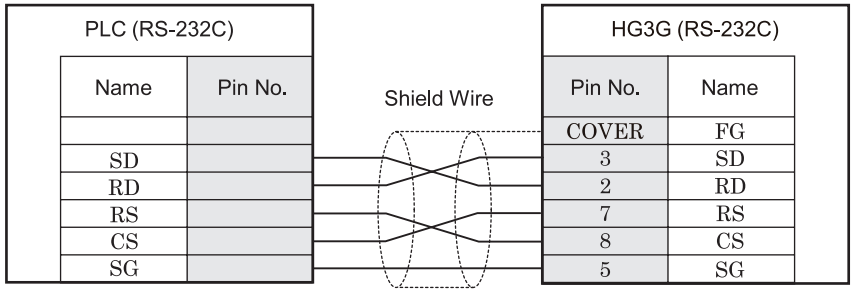
Mini Din 8P socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

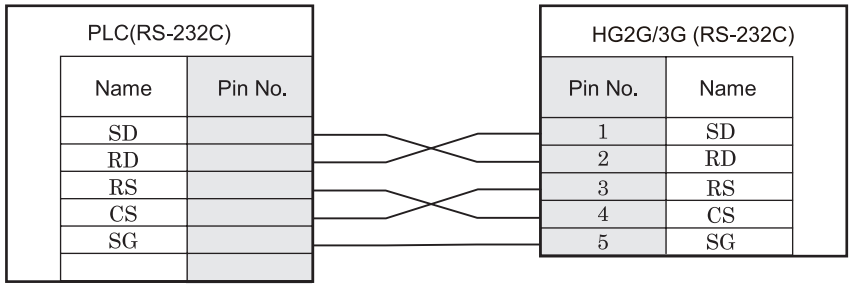
12.3.5 Connection Diagram 5: FPΣ- Communication cassette (AFPG801) - MICRO/I

HG3G (Connector)



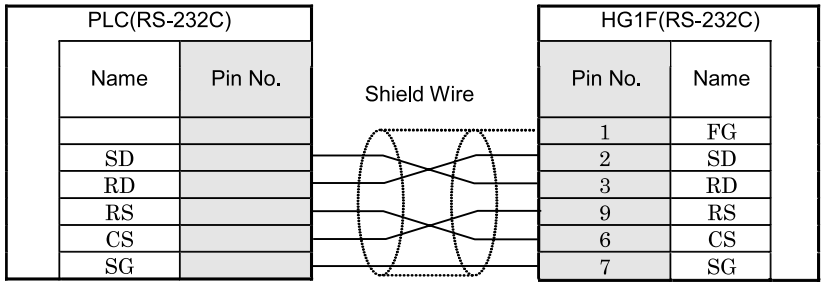
Screw terminal block — D-sub, 9P connector plug type

HG2G/3G (Terminal)



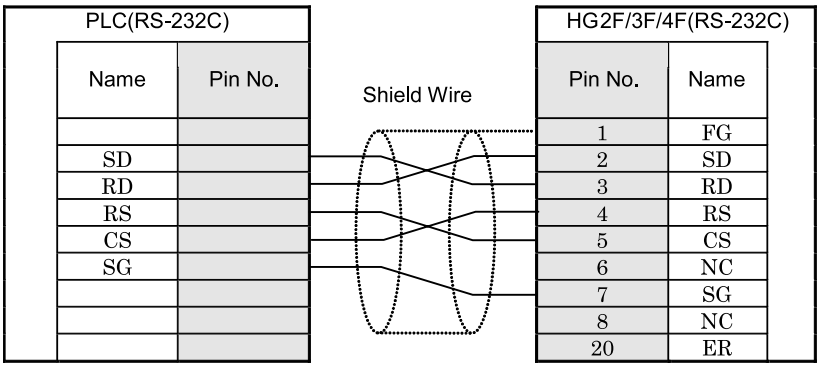
Screw terminal block — Terminal

HG1F (Connector)



Screw terminal block — D-sub, 9P connector socket type

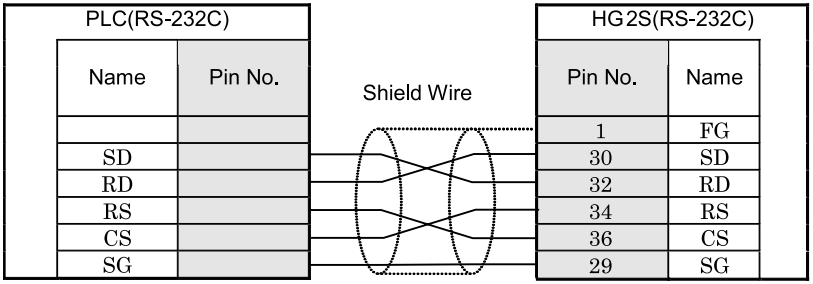
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S

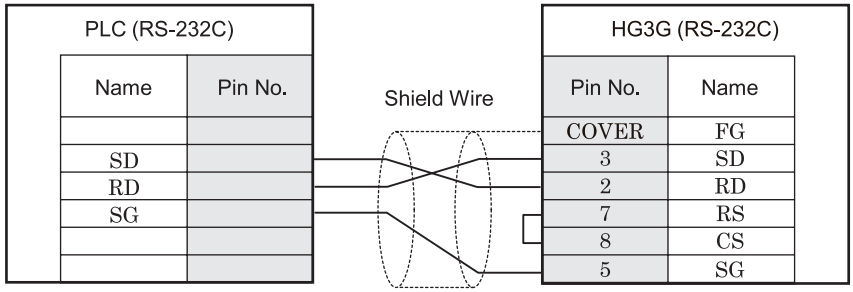


Screw terminal block

D-sub, 37P connector socket type

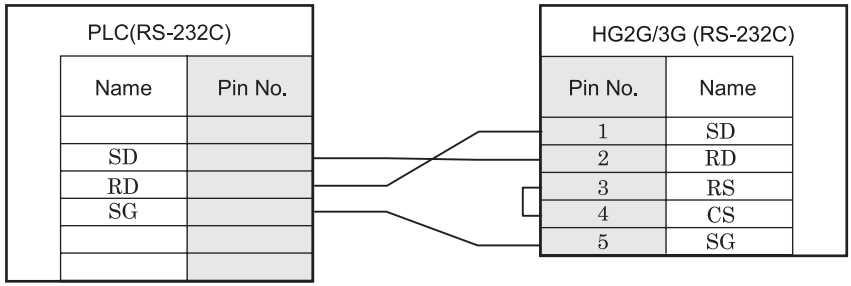
12.3.6 Connection Diagram 6: FPΣ- Communication cassette (AFPG802) - MICRO/I

HG3G (Connector)



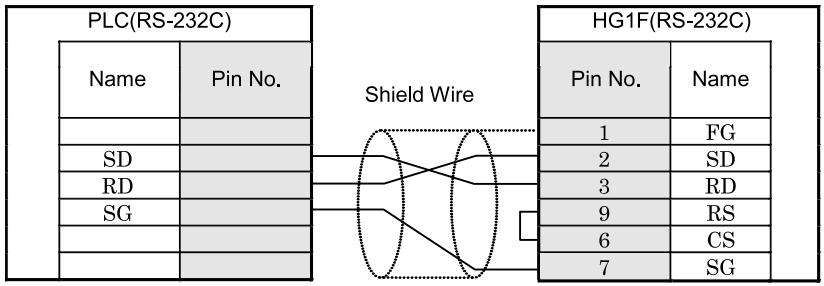
Screw terminal block — D-sub, 9P connector plug type

HG2G/3G (Terminal)



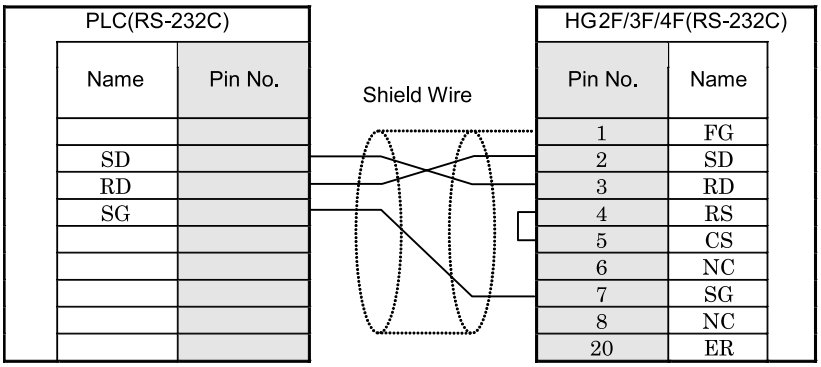
Screw terminal block — Terminal

HG1F (Connector)



Screw terminal block — D-sub, 9P connector socket type

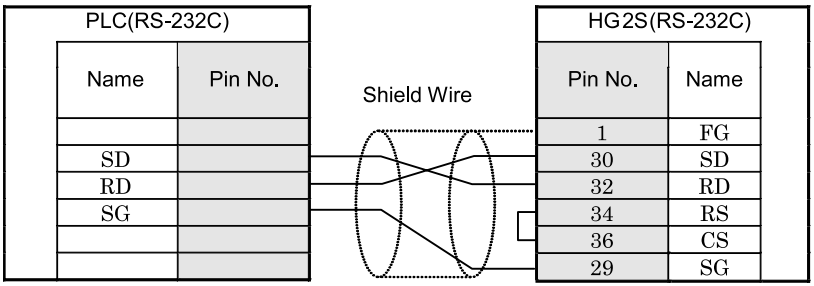
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S

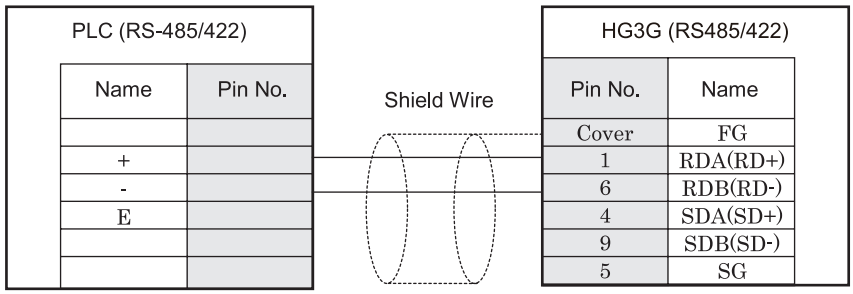


Screw terminal block

D-sub, 37P connector socket type

12.3.7 Connection Diagram 7: FPΣ- Communication cassette (AFPG803) - MICRO/I

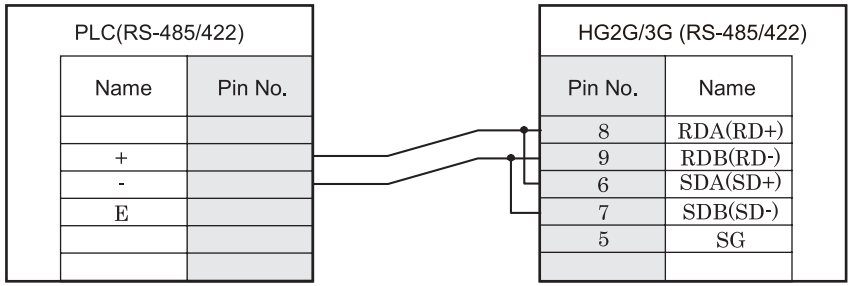
HG3G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)



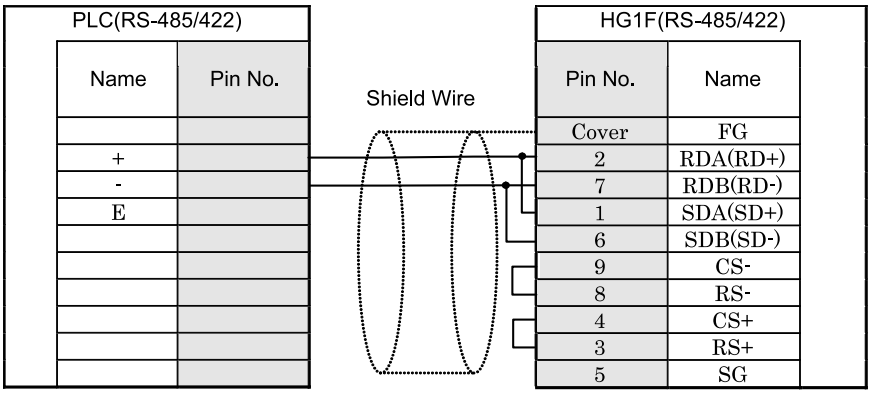
Screw terminal block

Terminal

WARNING When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn't have control lines.

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Important Points Regarding Wiring" on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don't need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

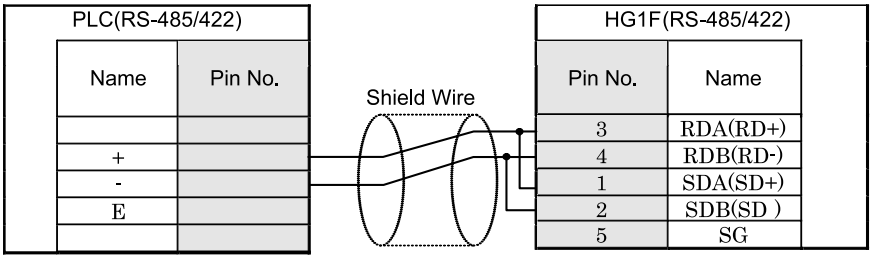
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)



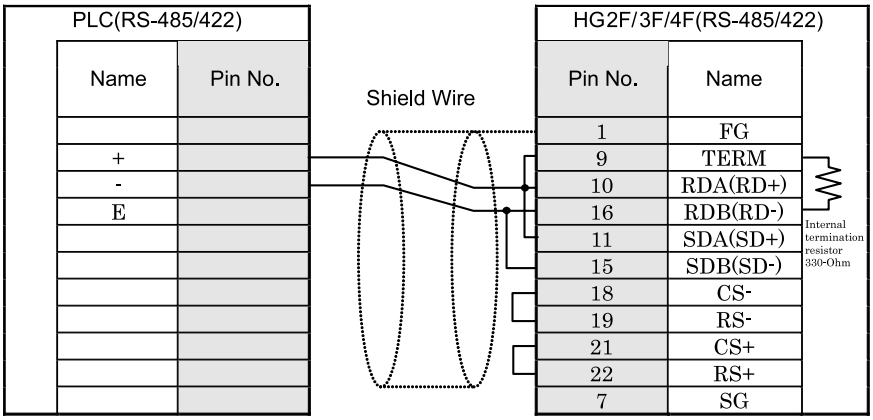
Screw terminal block

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

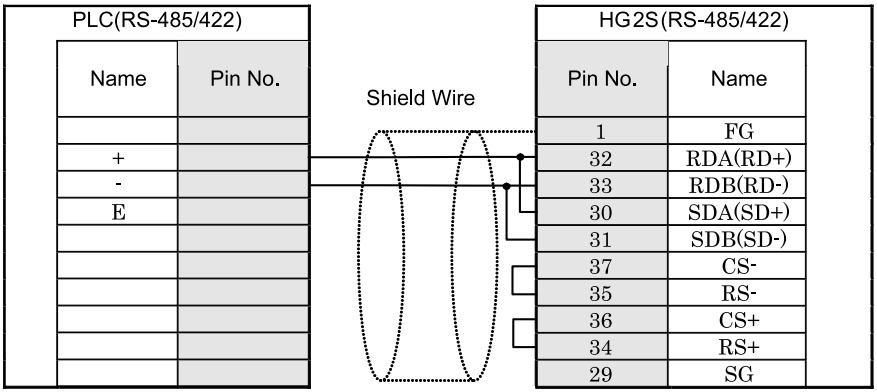
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S



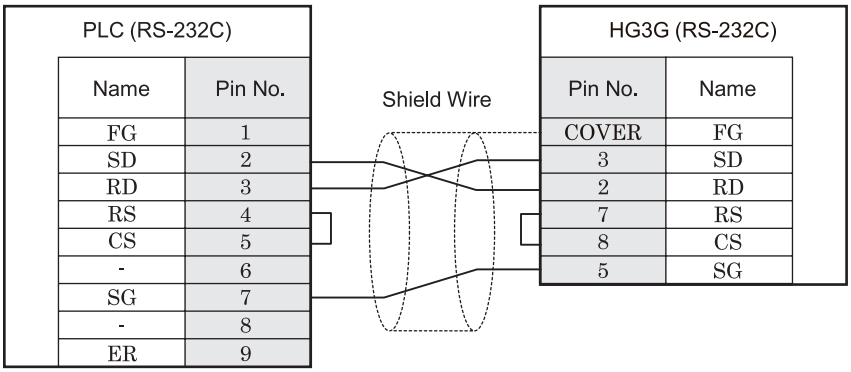
Screw terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

12.3.8 Connection Diagram 8: FP2, FP2SH, FP10, FP10SH - MICRO/I

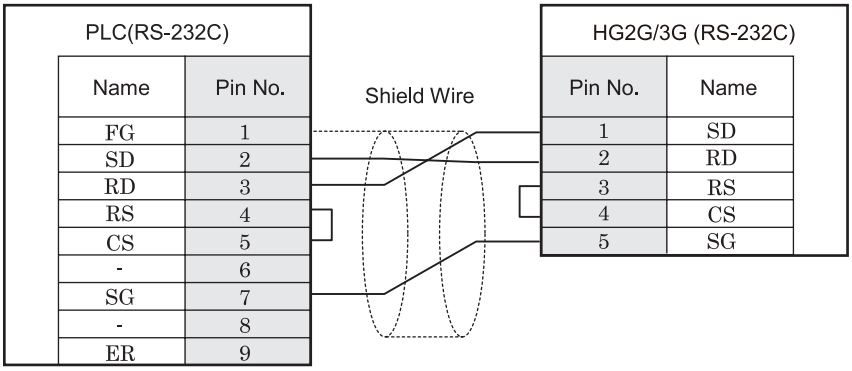
HG3G (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector plug type

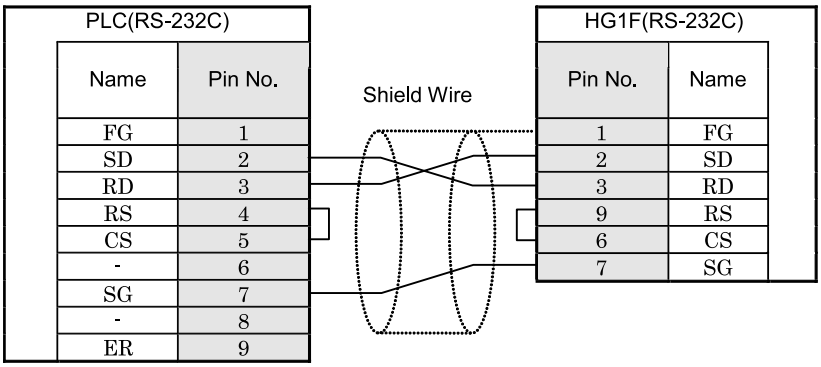
HG2G/3G (Terminal)



D-sub, 9P connector plug type

Terminal

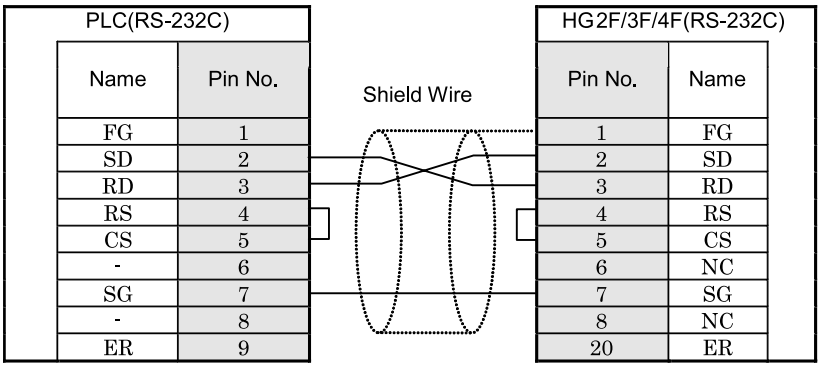
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector socket type

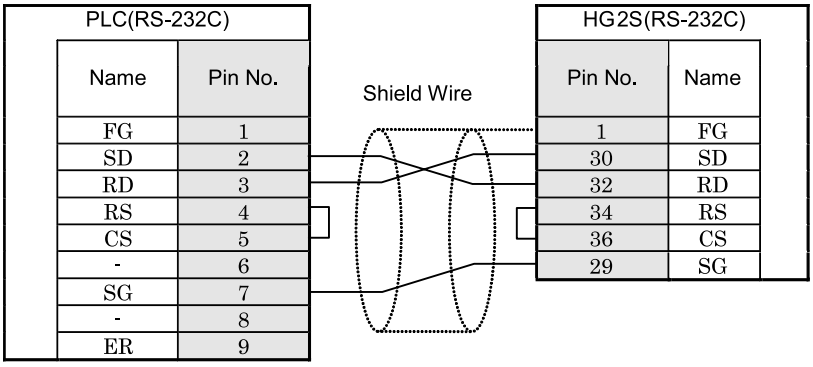
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector socket type

HG2S



D-sub, 9P connector plug type

D-sub, 37P connector socket type

12.4 Environment Settings

12.4.1 FP0 and FP1 (tool port on CPU unit).

Items		Details	
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C	RS-422(4wire)
Slave Address		01 - 99(DEC)*1	
Baud Rate (bps)		9600/19200	
Data Bits (bit)		8	
Parity		Odd	
Stop Bits (bit)		1	
Flow Control		Hardware/None	

*1. There are some models that don't support Slave Address up to 99.

12.4.2 FP1 (RS-232C port on CPU unit)

Items		Details
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C
Slave Address		01 - 99(DEC)
Baud Rate (bps)		1200/2400/4800/9600/19200
Data Bits (bit)		7,8
Parity		None, Even, Odd
Stop Bits (bit)		1 / 2
Flow Control		Hardware/None

12.4.3 FPΣ(Tool port on CPU unit or communication cassette)

Items		Details	
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C	RS-485(2wire)
Slave Address		01 - 99 (DEC)	
Baud Rate (bps)		2400/4800/9600/19200/38400/57600/115200	
Data Bits (bit)		7,8	
Parity		None, Even, Odd	
Stop Bits (bit)		1 / 2	
Flow Control		Hardware/None	

12.4.4 FP10 and FP10SH (tool port on CPU unit).

Items		Details
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C
Slave Address		1 - 32(DEC)
Baud Rate (bps)		9600/19200
Data Bits (bit)		7,8
Parity		Odd
Stop Bits (bit)		1
Flow Control		Hardware/None

12.4.5 FP2, FP2SH, FP10 and FP10SH (Communication port on CPU unit)

Items		Details
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C
Slave Address		1 - 32(DEC)
Baud Rate (bps)		2400/4800/9600/19200/38400/57600/115200
Data Bits (bit)		7,8
Parity		None, Even, Odd
Stop Bits (bit)		1 / 2
Flow Control		Hardware/None

12.4.6 FP10 and FP10SH (Computer Communication Unit)

Items		Details
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C
Slave Address		1 - 32(DEC)
Baud Rate (bps)		2400/4800/9600/19200/38400/57600/115200
Data Bits (bit)		7,8
Parity		None, Even, Odd
Stop Bits (bit)		1 / 2
Flow Control		Hardware/None

12.4.7 PLC FP2 and FP2SH (Computer Communication Unit)

Items		Details
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C
Slave Address		1 - 32(DEC)
Baud Rate (bps)		4800/9600/19200/38400/57600/115200
Data Bits (bit)		7,8
Parity		Odd
Stop Bits (bit)		1
Flow Control		Hardware/None

12.5 Usable Devices

Types of devices supported by the MICRO/I and their ranges are shown below.

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input	X	X	0 - 511F	R	*1
Output	Y	Y	0 - 511F	R/W	*1
Internal Relay	R	R	0 - 886F	R/W	*1
Special Internal relay	RE	R	9000 - 910F	R	*1
Link Relay	L	L	0 - 639F	R/W	*1
Timer	T	T	0 - 3071	R	Dec
Counter	C	C	0 - 3071	R	Dec
Error alarm relay	E	E	0 - 2047	R	Dec

*1. 3 figures of higher ranks are expressed by decimal, and 1 figure of low ranks is expressed by hexadecimal.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input	WX	WX	0 - 00511	R	Dec
Output	WY	WY	0 - 00511	R/W	Dec
Internal Relay	WR	WR	0 - 00886	R/W	Dec
Special Internal relay	WRE	WR	900 - 00910	R	Dec
Link Relay	WL	WL	0 - 00639	R/W	Dec
Timer, Counter (Elapsed value)	EV	EV	0 - 03071	R	Dec
Timer, Counter (Set value)	SV	SV	0 - 03071	R/W	Dec
Data register	DT	DT	0 - 99999	R/W	Dec
Link data register	LD	LD	0 - 08447	R/W	Dec
File register	FL	FL	0 - 32764	R/W	Dec*1

*1. In FP2SH, the contents of a bank 0 are written.

The device ranges may differ depending on the PLC model. Please refer to PLC Manual for supported memory ranges of the PLC.

13 YASKAWA

13.1 Connection Table

13.1.1 Compatible Protocols

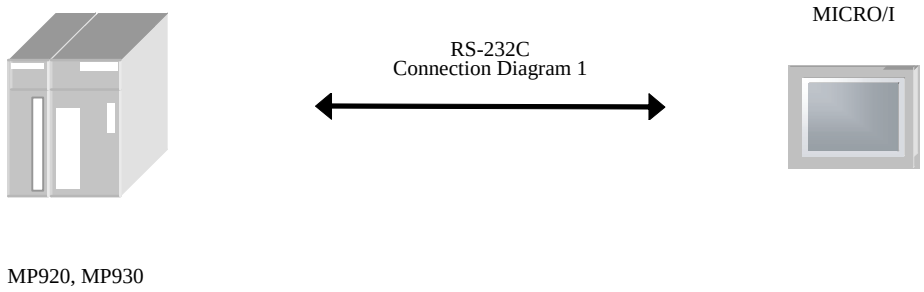
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
Machine Controller	MP920[*1] MP930	Not required[*1] (connects to CPU unit)[*1]	RS-232C Connection Diagram 1 (refer to P349)	ER control	MP920_R
		217IF[*1]	RS-422 Connection Diagram 2 (refer to P351)	None	
			RS-485 Connection Diagram 3 (refer to P354)		
	MP2300[*1]	217IF-01[*1]	RS-232C Connection Diagram 1 (refer to P349)	ER control	
			RS-422 Connection Diagram 4 (refer to P357)	None	
			RS-485 Connection Diagram 5 (refer to P360)		

*1. We tested with the PLC of these parts.

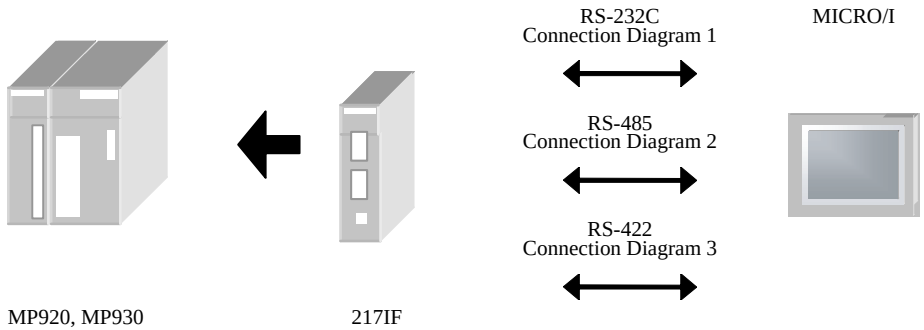
13.2 System Configuration

This is the system configuration for connection of YASKAWA ELECTRIC CORPORATION PLCs to the MICRO/I.

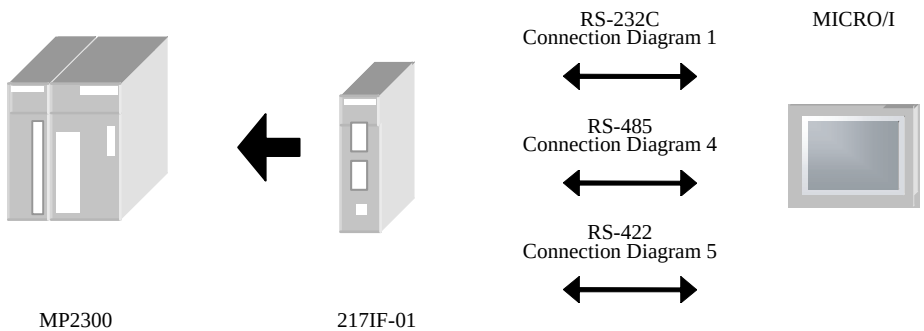
13.2.1 MP920, MP930 (connects to CPU Unit RS-232C port)



13.2.2 MP920,MP930(217IF)



13.2.3 MP2300 (217IF-01)

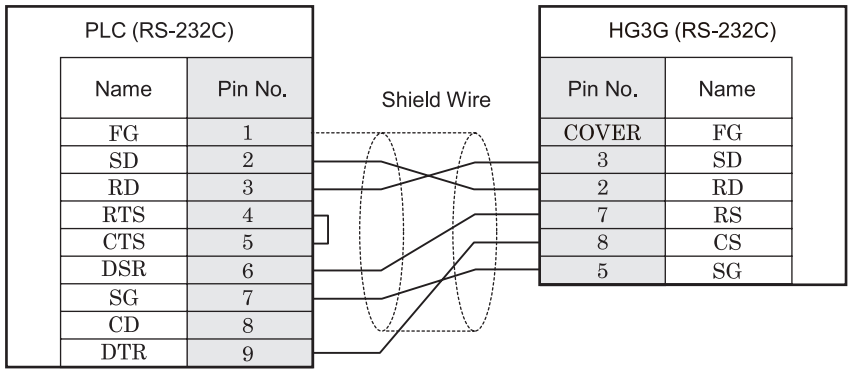


13.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

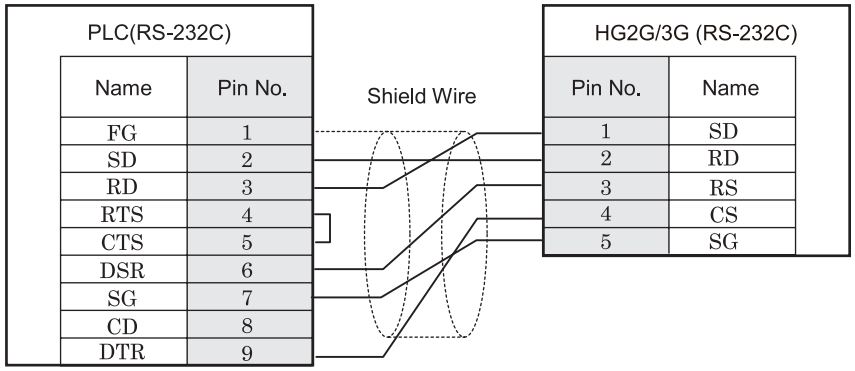
13.3.1 Connection Diagram 1: MP920, MP930, MP2300 to MICRO/I (RS-232C)

HG3G (Connector)



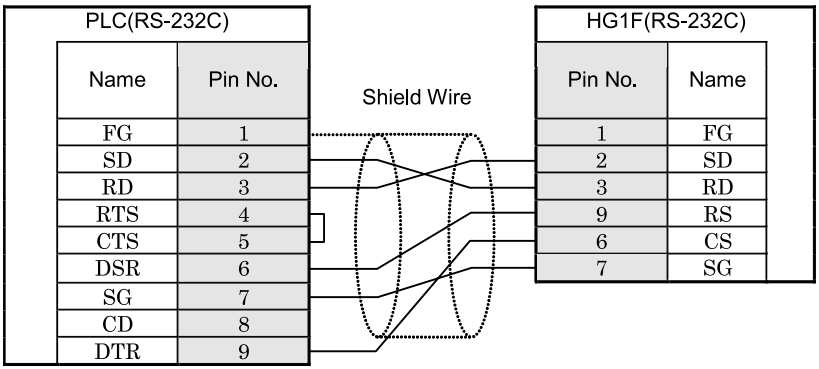
D-sub, 9P connector socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 9P connector socket type — Terminal

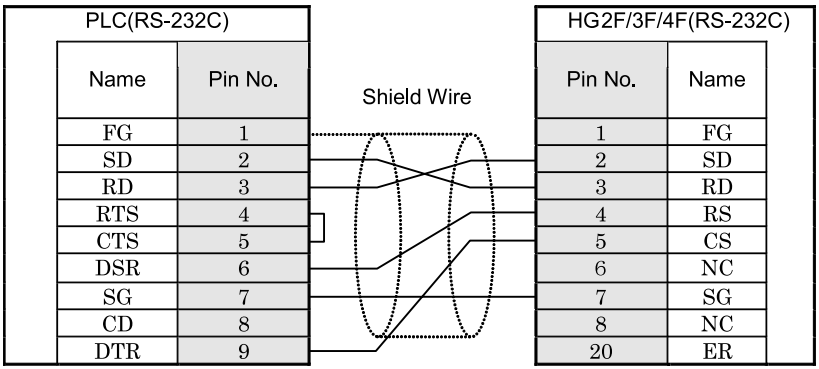
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

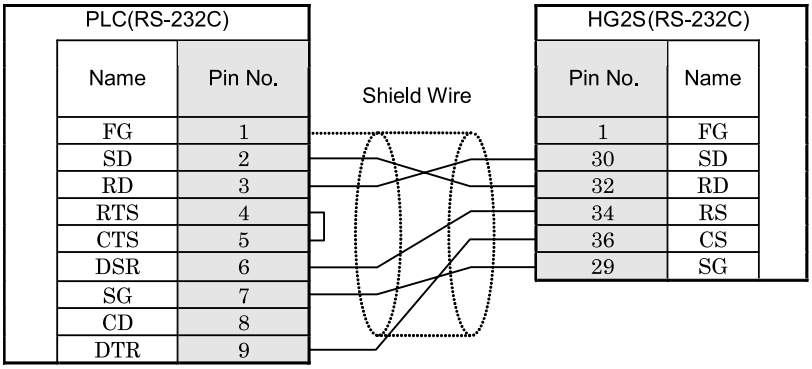
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S

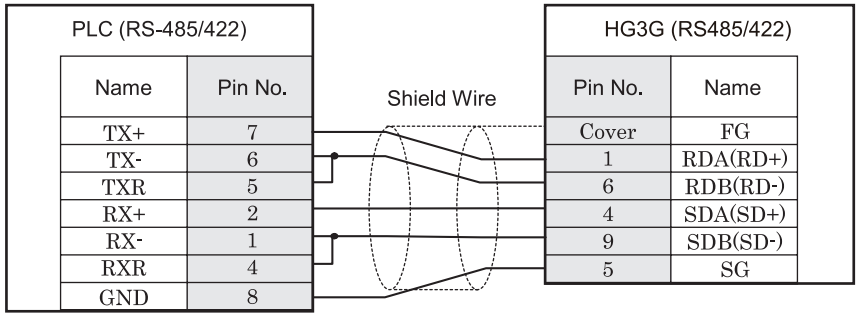


D-sub, 9P connector socket type

D-sub, 37P connector socket type

13.3.2 Connection Diagram 2: MP920, MP930 (217IF) - MICRO/I (RS-422)

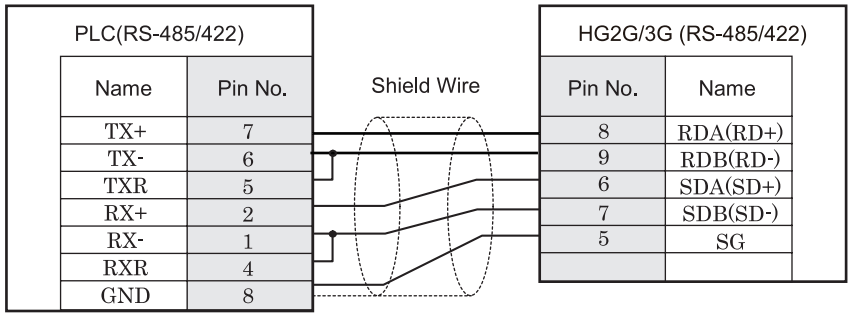
HG3G (Connector)



MR-8M connector

D-sub, 9P connector plug type

HG2G/3G (Terminal)



MR-8M connector

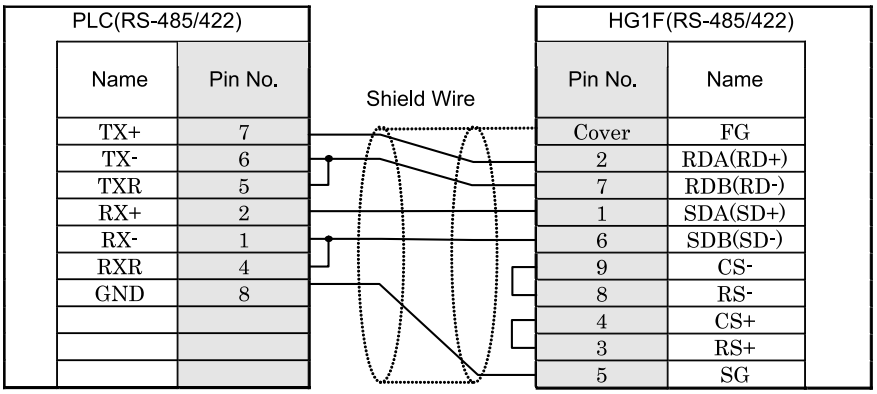
Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

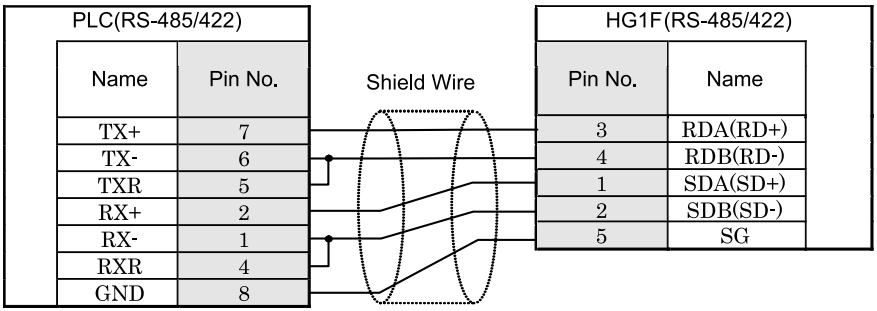
HG1F (Connector)



MR-8M connector

D-sub, 9P connector socket type

HG1F (Terminal)



MR-8M connector

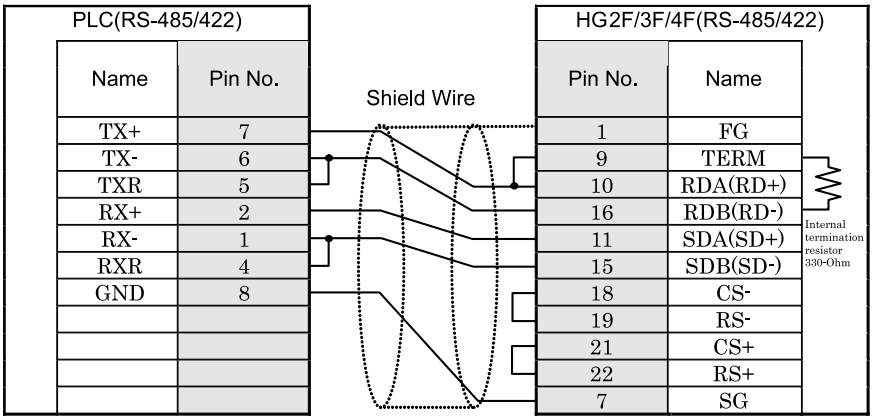
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

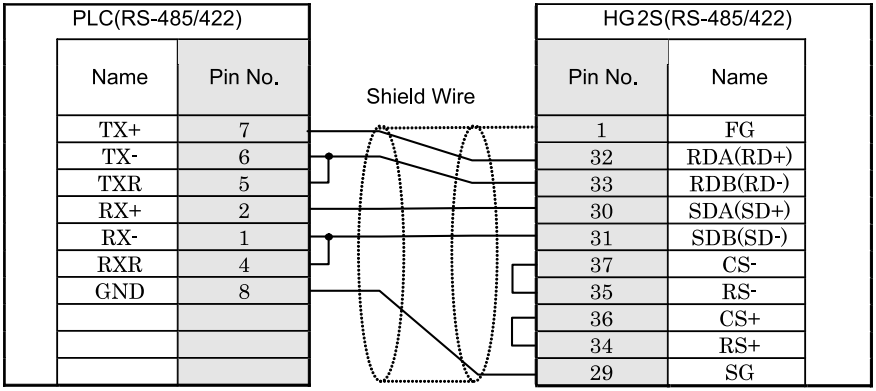
HG2F/3F/4F



MR-8M connector

D-sub, 25P connector socket type

HG2S



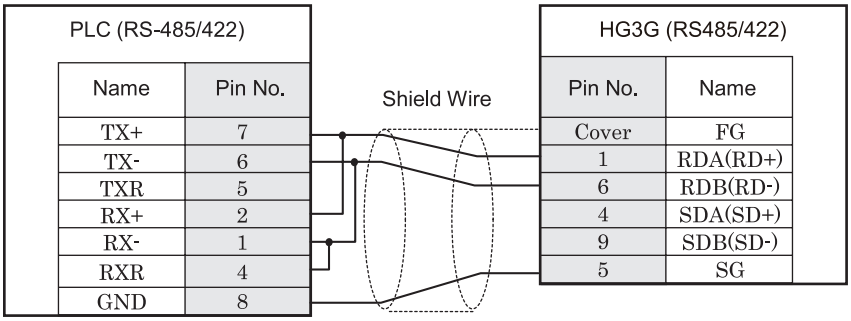
MR-8M connector

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

13.3.3 Connection Diagram 3: MP920, MP930 (217IF) - MICRO/I (RS-485)

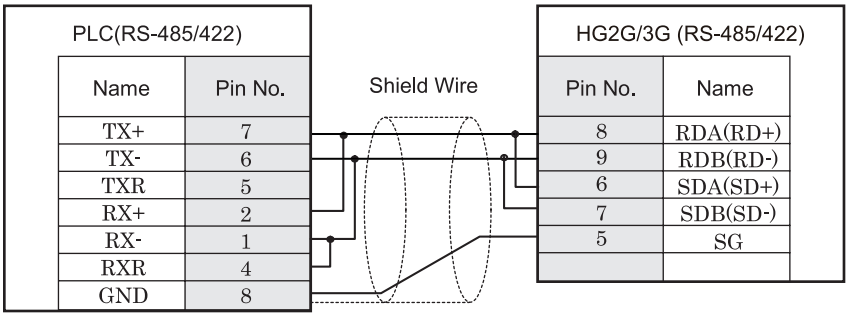
HG3G (Connector)



MR-8M connector

D-sub, 9P connector plug type

HG2G/3G (Terminal)



MR-8M connector

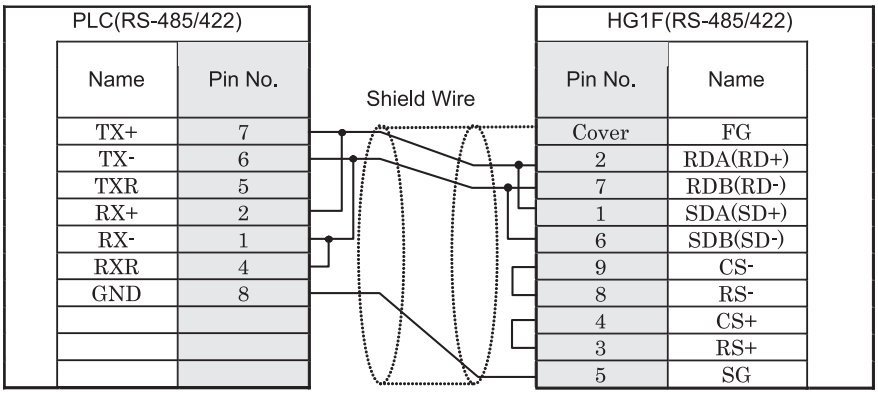
Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

WARNING

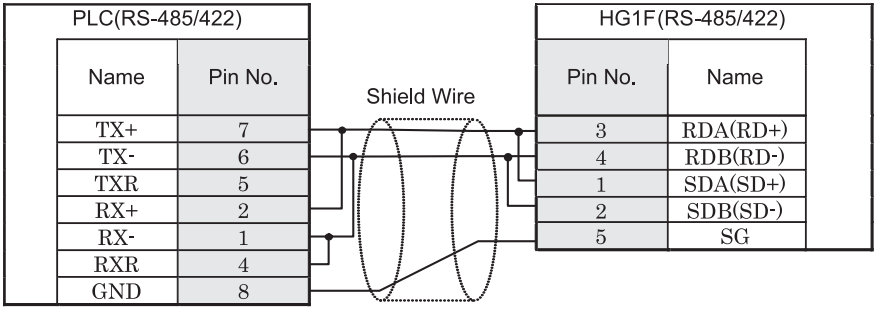
When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG1F (Connector)



MR-8M connector — D-sub, 9P connector socket type

HG1F (Terminal)



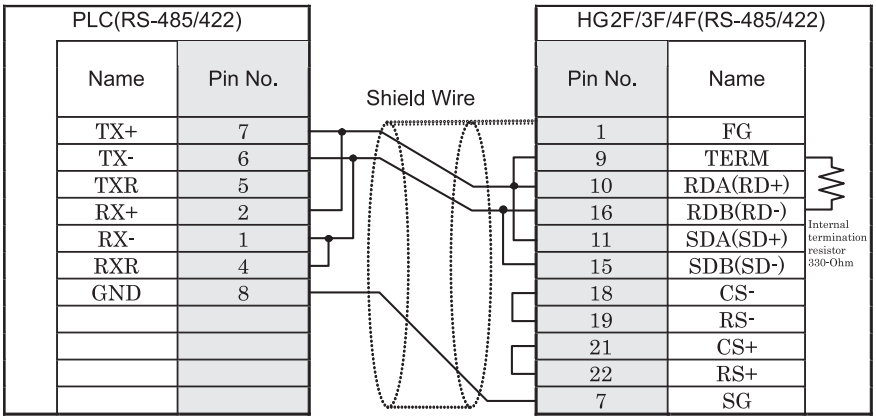
MR-8M connector — Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

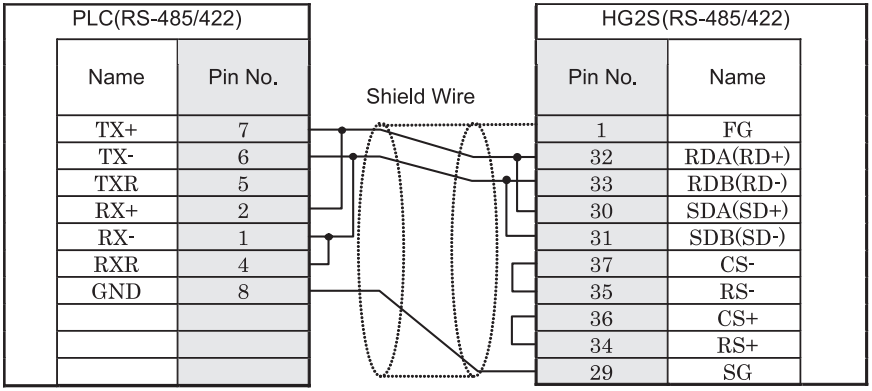
HG2F/3F/4F



MR-8M connector

D-sub, 25P connector socket type

HG2S



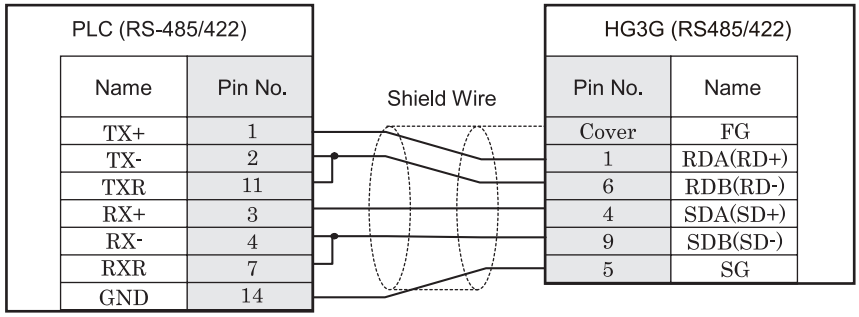
MR-8M connector

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

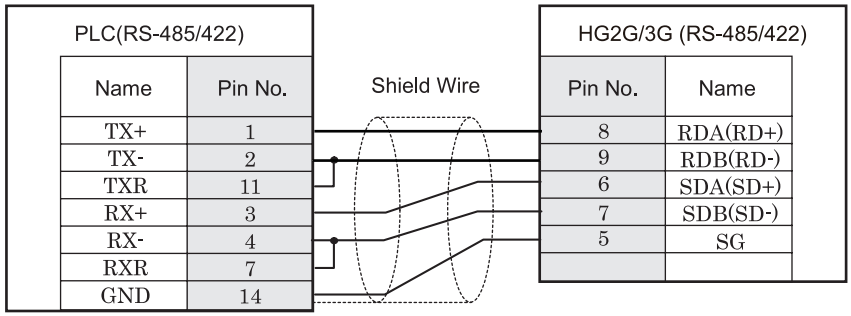
13.3.4 Connection Diagram 4: MP2300 (217IF-01) - MICRO/I (RS-422)

HG3G (Connector)



MDR14P connector — D-sub, 9P connector plug type

HG2G/3G (Terminal)

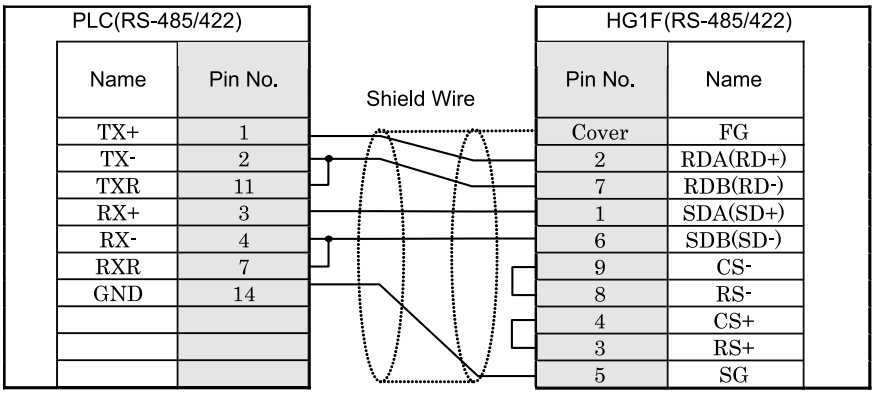


MDR14P connector — Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

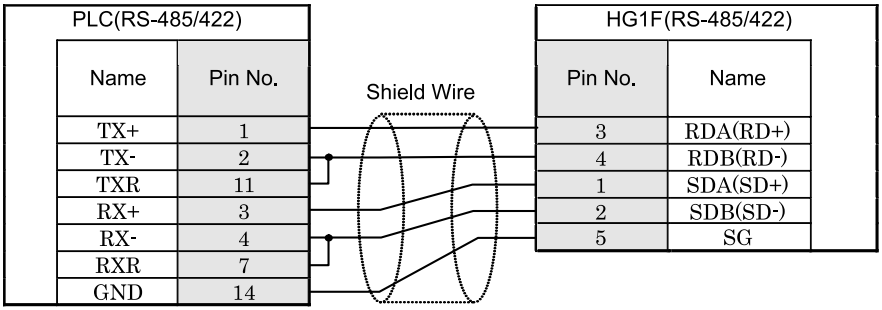
WARNING When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG1F (Connector)



MDR14P connector — D-sub, 9P connector socket type

HG1F (Terminal)



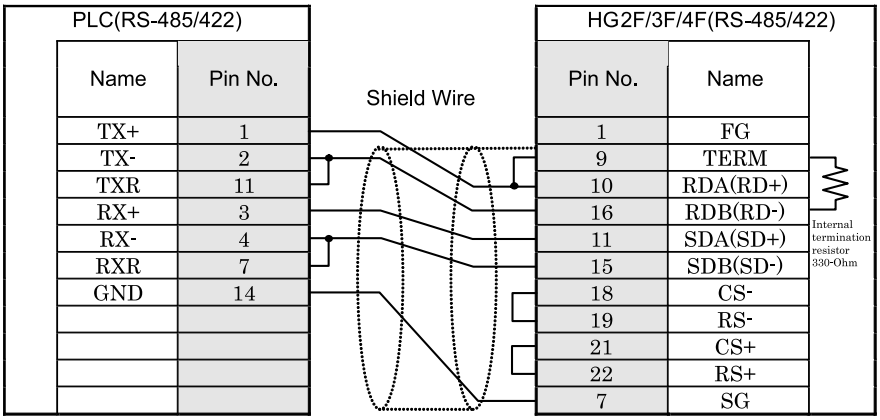
MDR14P connector — Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

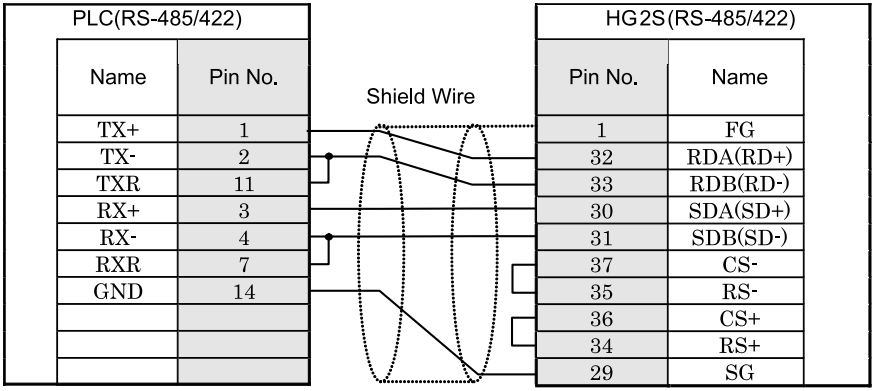
HG2F/3F/4F



MDR14P connector

D-sub, 25P connector socket type

HG2S



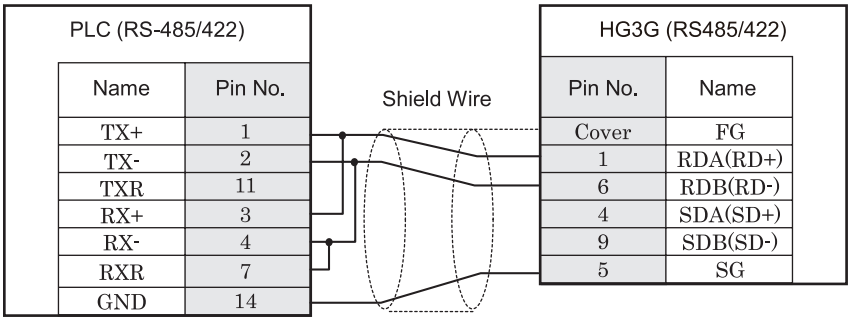
MDR14P connector

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

13.3.5 Connection Diagram 5: MP2300(217IF - 01) - MICRO/I (RS-485)

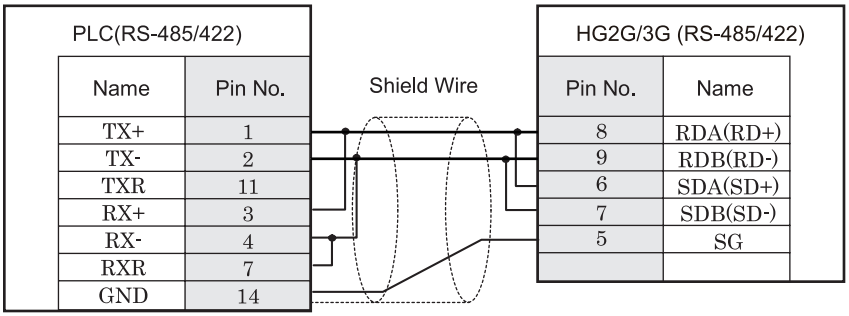
HG3G (Connector)



MDR14P connector

D-sub, 9P connector plug type

HG2G/3G (Terminal)



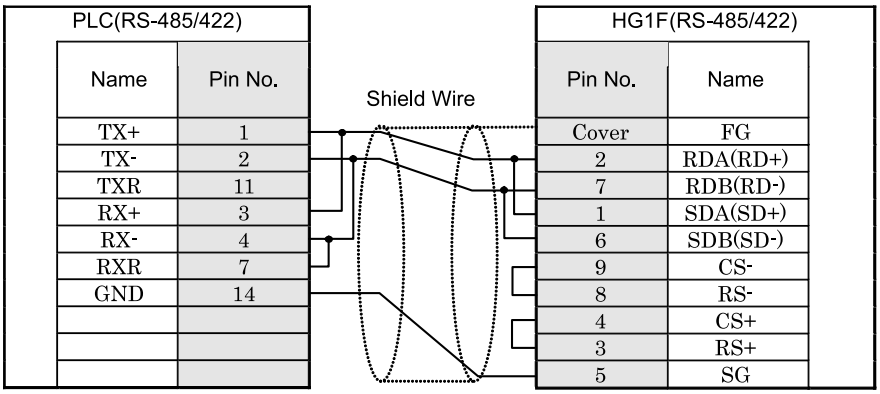
MDR14P connector

Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

WARNING When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

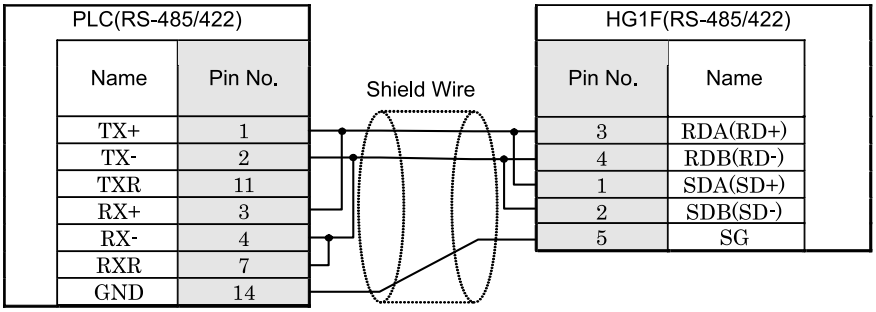
HG1F (Connector)



MDR14P connector

D-sub, 9P connector socket type

HG1F (Terminal)



MDR14P connector

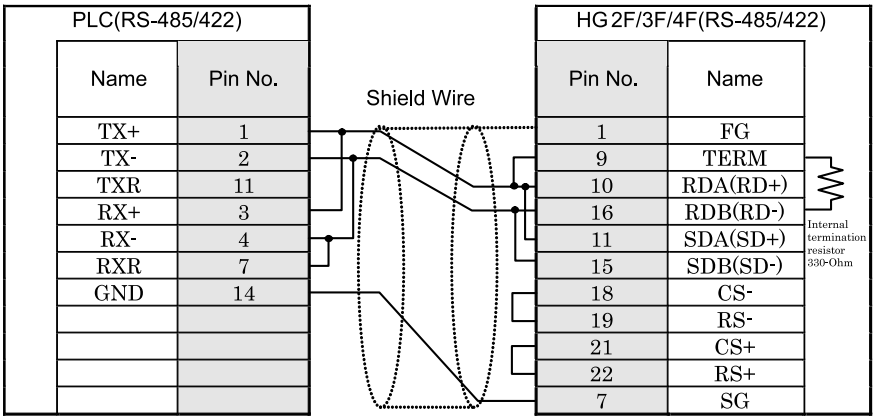
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

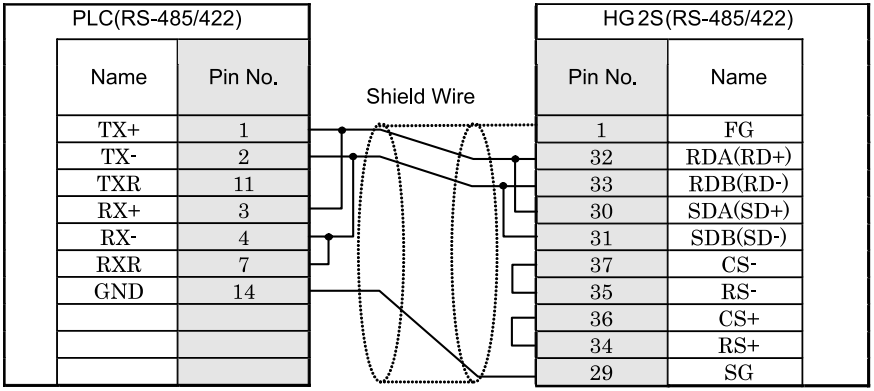
HG2F/3F/4F



MDR14P connector

D-sub, 25P connector socket type

HG2S



MDR14P connector

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

13.4 Environment Settings

13.4.1 MP920, MP930, MP2300

Items	Details
Serial Interface	RS - 232C
Protocol	MEMOBUS RTU
Slave Address	1 - 63 (DEC)
Baud Rate (bps)	9600/19200
Data Bits (bit)	8 (fixed)
Parity	None, Even, Odd
Stop Bits (bit)	1, 2
Flow Control	ER control

- It is necessary to set up transmission form by the rudder program.
- Please set up the head register by the side of PLC as follows. Moreover, please give offset of each register as 0.
  [Module detailed setup]
  "Setup of a slave I/F register" "Head REG"
  "reading of an Inputs Status" IW0000
  "reading of an Inputs Registers" IW0000
  "reading/writing" of a Coil MW00000
  "reading/writing" of a Holding Registers MW00000

13.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Coil	MB	MW	0 - 4095F	R/W	*1
Inputs Status	IB	IW	0 - FFFFF	R	Hexadeci-mal

*1. Upper four digits: Register Number (decimal)
The lowest digit: Bit Number (hexadecimal)
Example: 4095F 4095: Register Number, F: Bit Number

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Holding Registers	MW	MW	0 - 65535	R/W	Decimal
Inputs Registers	IW	IW	0 - FFFF	R	Hexadeci-mal

14 Koyo

Selecting DirectLogic DL205/405 or DirectLogic (Ethernet) for the Host I/F Driver allows the user to use the 1: N Communication function.

- 1: N Communication function (Refer to Chapter 6 “1: N Communication (Multi-drop)” on page 579)

14.1 Connection Table

14.1.1 Compatible Protocols

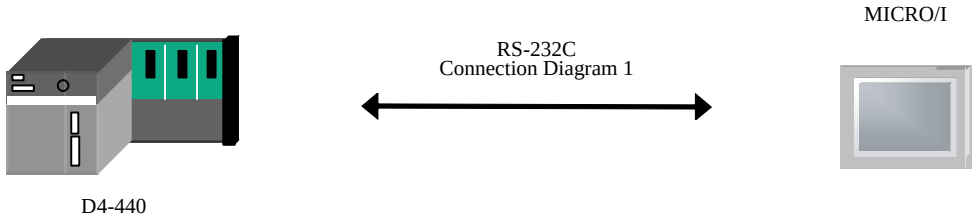
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
DirectLOGIC 05	DL05	D0-ECOM*1 D0-ECOM100*1	Ethernet	-	DirectLOGIC (Ethernet)
DirectLOGIC 06	DL06				
DirectLOGIC	D2-240 D2-250, D2-250-1, D2-260	D2-ECOM*1 D2-ECOM-F*1 D2-ECOM100*1			
DirectLogic DL205	D2-240*1	Not required*1 (connects to CPU unit)*1	RS-232C Connection Diagram 3 (refer to P372)	ER contro	DirectLogic DL205/405
DirectLogic DL405	D4-430 D4-440*1	Not required*1 (connects to CPU unit)*1	RS-232C Connection Diagram 1 (refer to P367)		
			RS-485(422)-4 Connection Diagram 2 (refer to P369)		
	D4-440*1	D4-DCM*1	RS-232C Connection Diagram 1 (refer to P367)		
	DL430 DL440 DL450	D4-ECOM D4-ECOM-F D4-ECOM100	Ethernet	-	DirectLOGIC (Ethernet)

*1. We tested with the PLC of these parts.

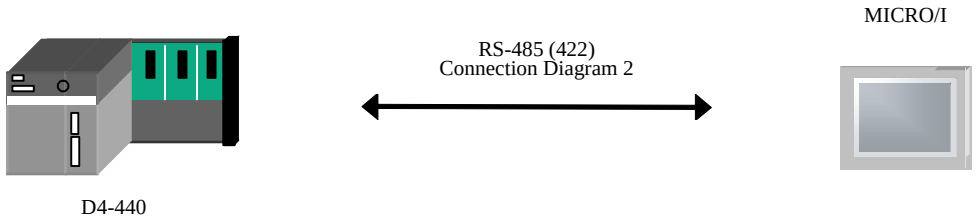
14.2 System Configuration

This is the system configuration for connection of Koyo PLCs to the MICRO/I.

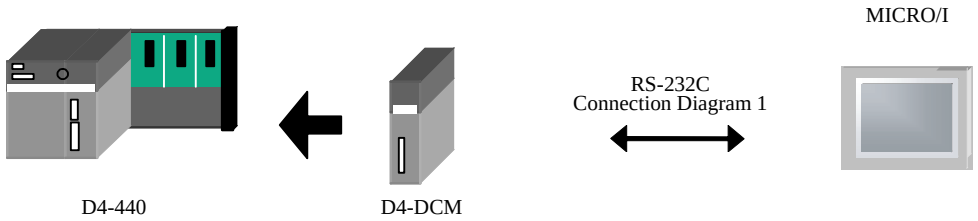
14.2.1 DirectLogic 405 (connects to CPU unit RS-232C port)



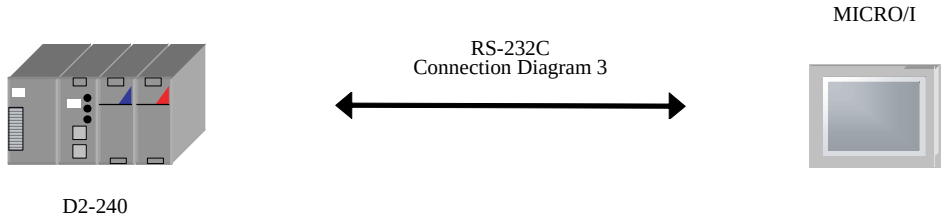
14.2.2 DirectLogic 405 (connects to CPU unit RS-422 port)



14.2.3 DirectLogic 405 (connects to DATA COMMUNICATIONS MODULE RS-232C port)

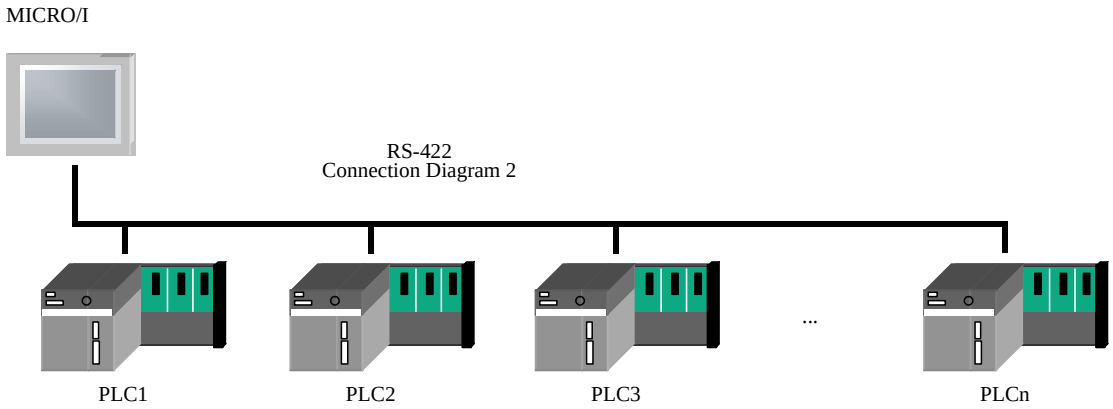


14.2.4 DirectLogic 205 (connects to CPU unit RS-232C port)

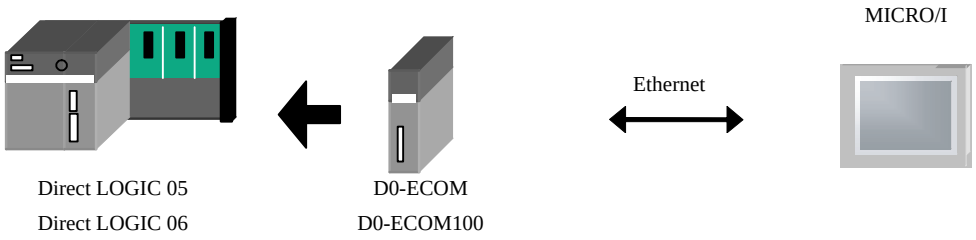


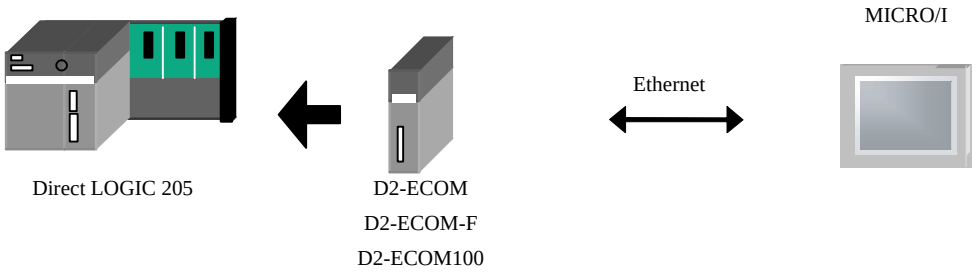
14.2.5 1: N Communication-KOSTAC SU (Connects to the general-purpose RS-422 communication port on the CPU unit)

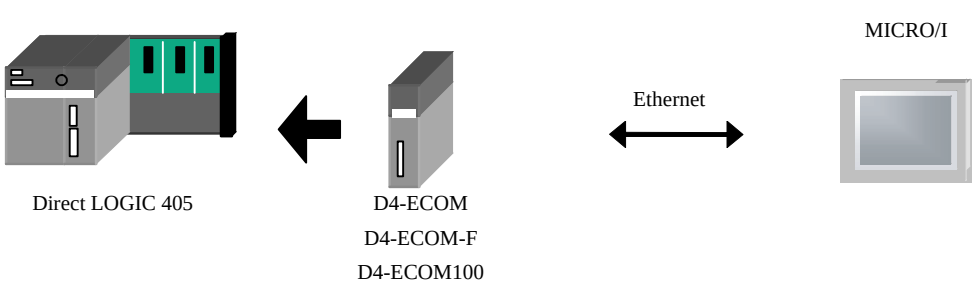
The 1: N communication can be established by using the following connection.



14.2.6 DirectLOGIC Series (Ethernet)





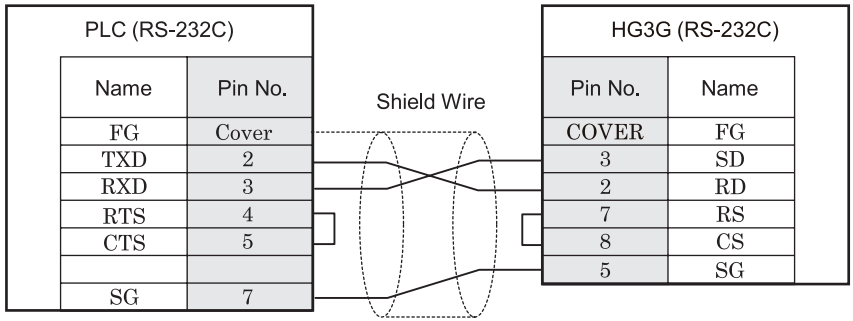


14.3 Connection Diagram

For details regarding wiring and termination resistors, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

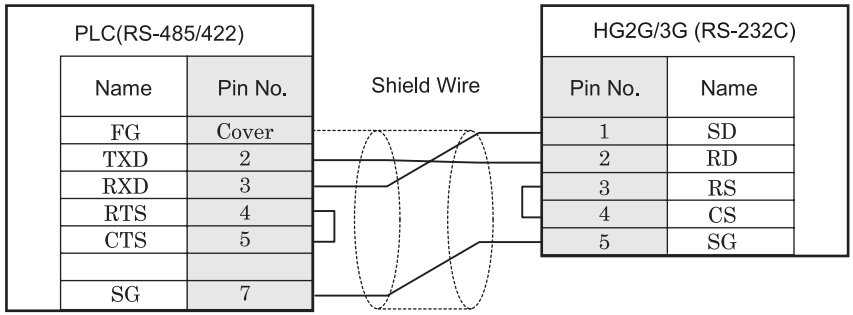
14.3.1 Connection Diagram 1: D4-440, D4-DCM (RS-232C port) to MICRO/I

HG3G (Connector)



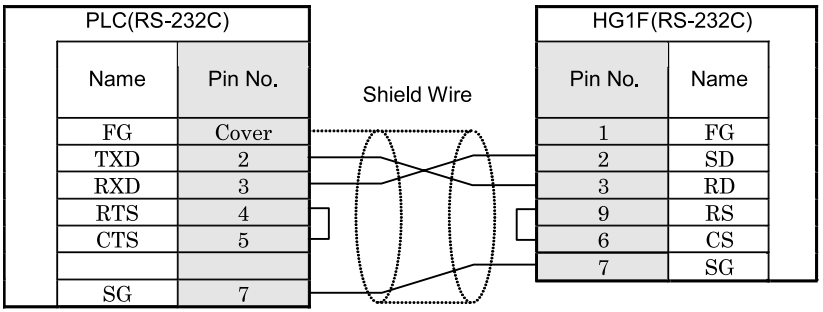
D-sub, 25P socket connector (unit side) D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 25P socket connector (unit side) Terminal

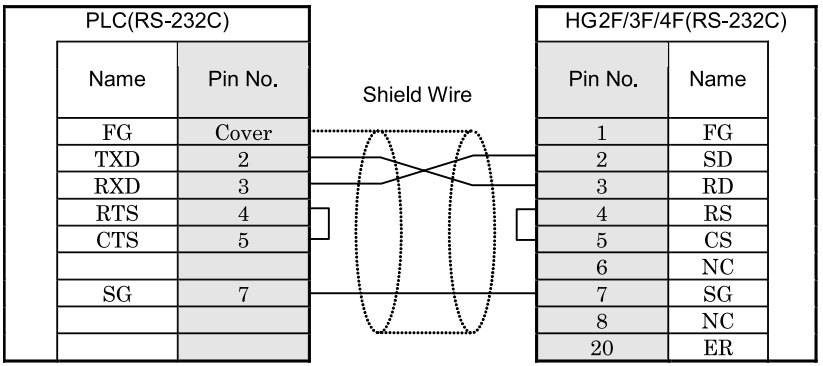
HG1F (Connector)



D-sub, 25P socket connector (unit side)

D-sub, 9P connector socket type

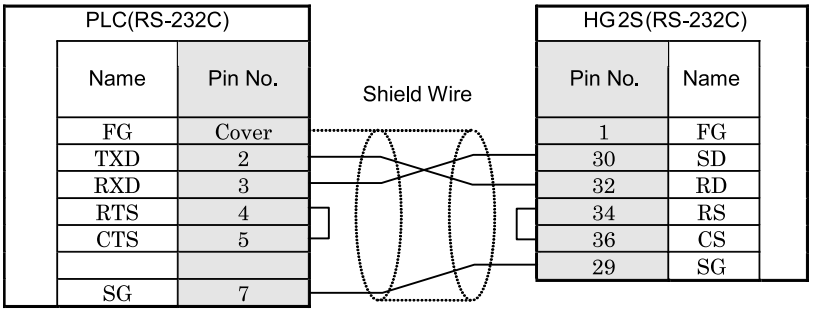
HG2F/3F/4F



D-sub, 25P socket connector (unit side)

D-sub, 25P connector socket type

HG2S

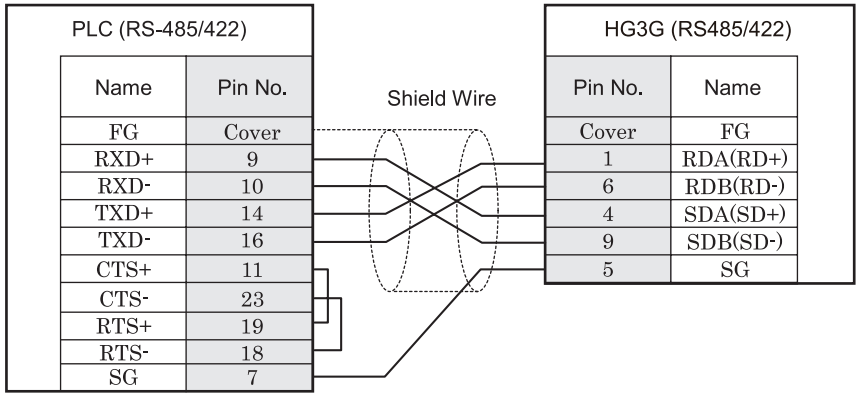


D-sub, 25P socket connector (unit side)

D-sub, 37P connector socket type

14.3.2 Connection Diagram 2: D4-440 (CPU unit RS-422 port) to MICRO/I

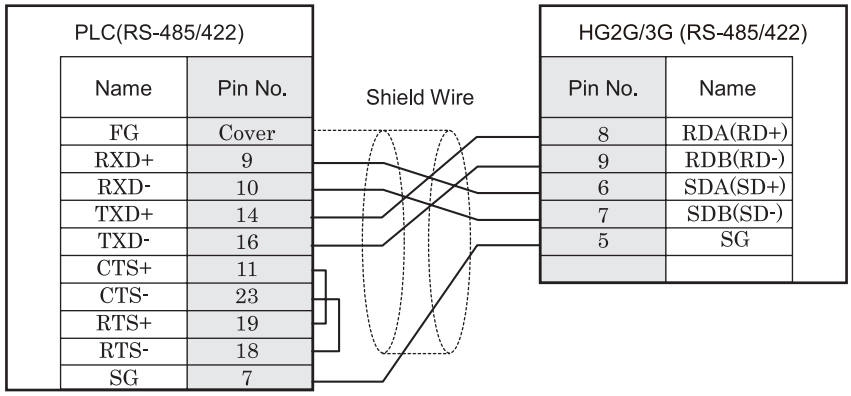
HG3G (Connector)



D-sub, 25P socket connector (unit side)

D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 25P socket connector (unit side)

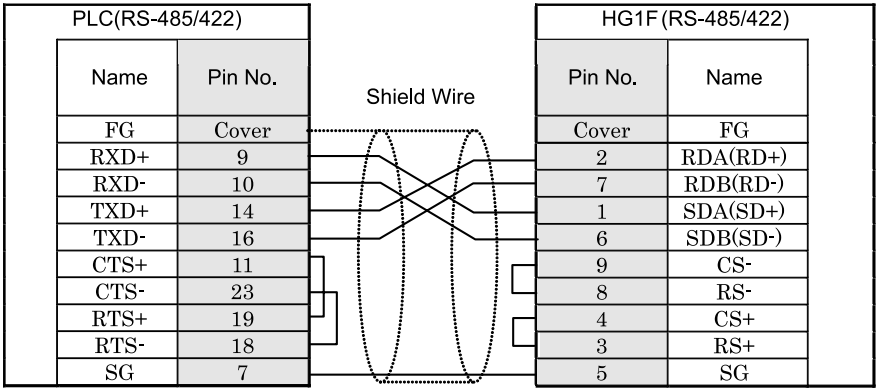
Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

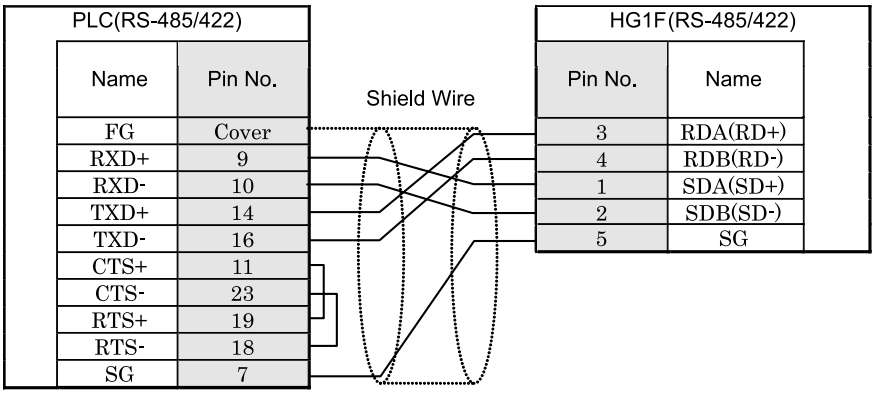
HG1F (Connector)



D-sub, 25P socket connector (unit side)

D-sub, 9P connector socket type

HG1F (Terminal)



D-sub, 25P socket connector (unit side)

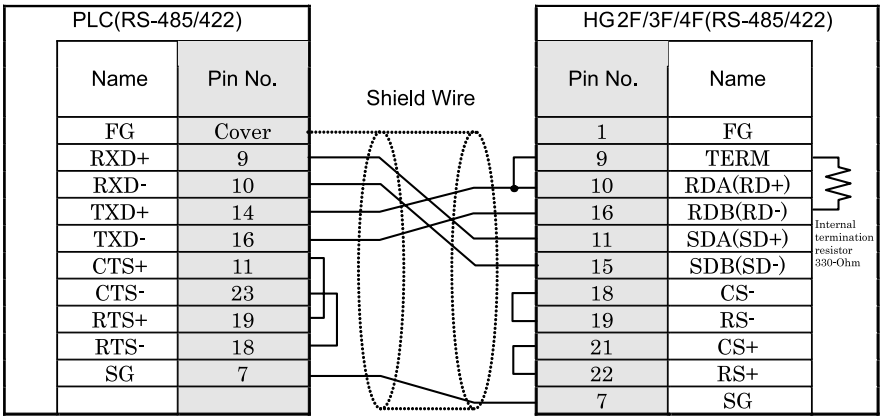
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

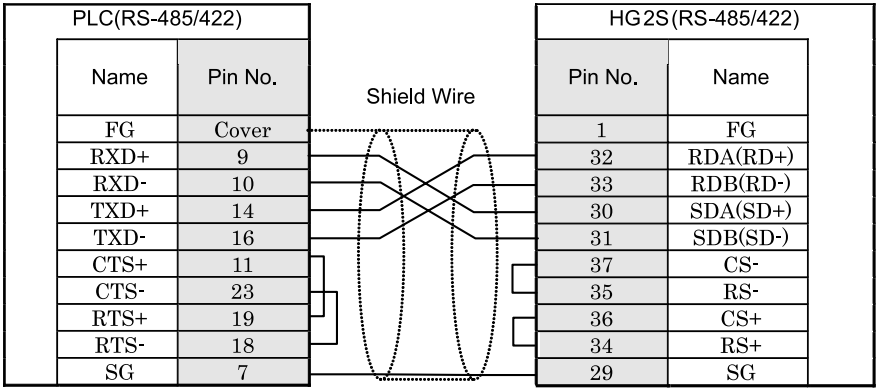
HG2F/3F/4F



D-sub, 25P socket connector (unit side)

D-sub, 25P connector socket type

HG2S



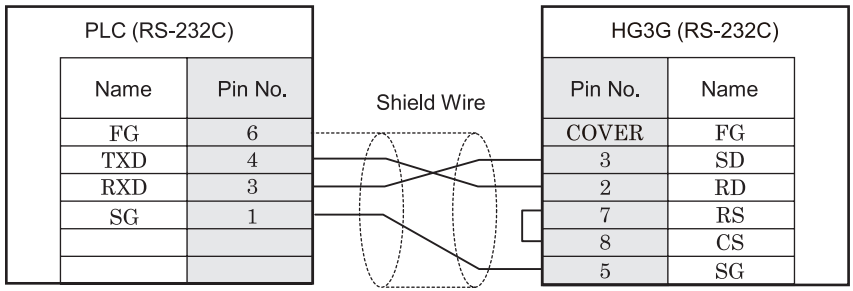
D-sub, 25P socket connector (unit side)

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

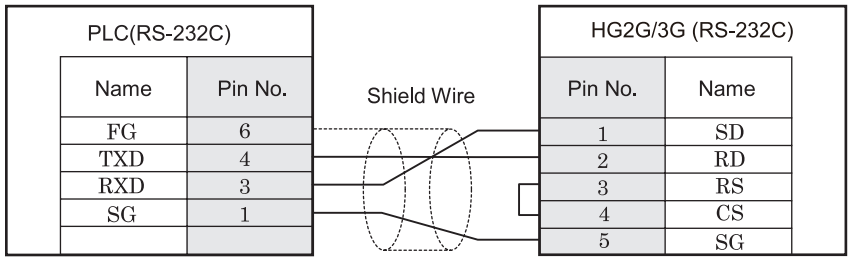
14.3.3 Connection Diagram 3: D2-240 (CPU unit RS-232C port) to MICRO/I

HG3G (Connector)



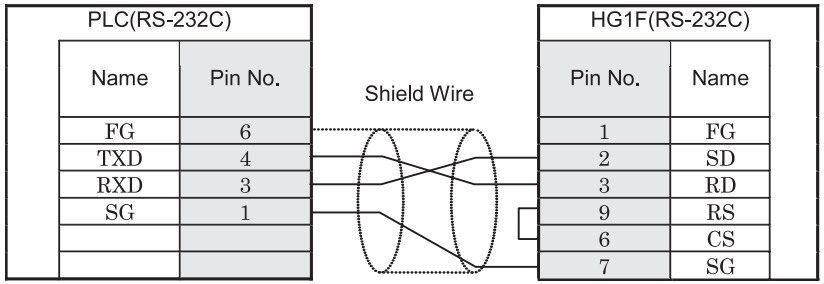
6P modular connector socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



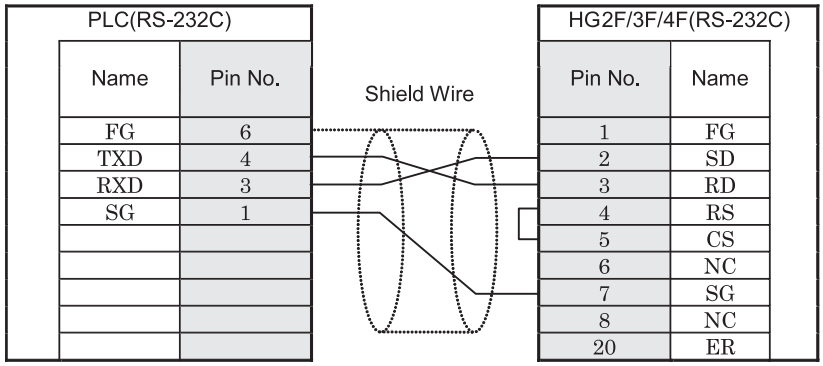
6P modular connector socket type — Terminal

HG1F (Connector)



6P modular connector socket type — D-sub, 9P connector socket type

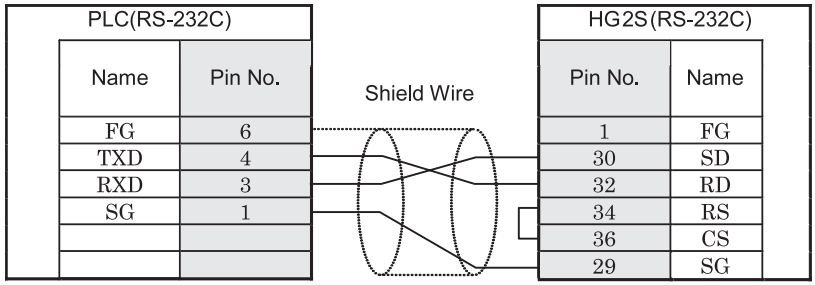
HG2F/3F/4F



6P modular connector socket type

D-sub, 25P connector socket type

HG2S



6P modular connector socket type

D-sub, 37P connector socket type

14.4 Environment Settings

14.4.1 D4-440 CPU Unit Communication port

Items	Details
Serial Interface	RS-232C / RS-422
Data representation	HEX mode
Slave Address	1 - 90(DEC).
Baud Rate (bps)	9600/19200
Data Bits (bit)	8 (fixed)
Parity	None, Odd
Stop Bits (bit)	1 (fixed)
Flow Control	ER control

14.4.2 D4-DCMt

Items	Details
Serial Interface	RS-232C
Data representation	HEX mode
Slave Address	1 – 90(DEC)
Baud Rate (bps)	9600/19200
Data Bits (bit)	8 (fixed)
Parity	None, Odd
Stop Bits (bit)	1 (fixed)
Flow Control	ER control

14.4.3 D2-240 CPU Unit Communication port

Items	Details
Serial Interface	RS-232C
Data representation	HEX mode
Slave Address	1 – 90(DEC)
Baud Rate (bps)	9600
Data Bits (bit)	8 (fixed)
Parity	None, Odd
Stop Bits (bit)	1 (fixed)
Flow Control	ER control

14.4.4 Ethernet Unit on DirectLOGIC

Set following Items in [Configuration]-[System Setup]-[Project] dialog.

Item	Setting
IP Address (for MICRO/I)	Set the IP Address for MICRO/I. (Set the Item in Communication Interface tab.)
Subnet Mask	Set the Subnet Mask for MICRO/I. (Set the Item in Communication Interface tab.)
Default Gateway	Set the Default Gateway for MICRO/I. (Set the Item in Communication Interface tab.)
IP Address (Ethernet Unit)	Set the IP Address for Ethernet Unit. (Set the Item in Host I/F network tab.)
Port Number (Ethernet Unit)	Set the Port Number for Ethernet Unit. (Set the Item in Host I/F network tab.)

14.5 Usable Devices

14.5.1 DL405

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Points (Bit)	X	X	0 - 1777	R	8 (octal)
Output Points (Bit)	Y	Y	0 - 1777	R/W	8 (octal)
Control Relays (Bit)	C	C	0 - 3777	R/W	8 (octal)
Stages (Bit)	S	S	0 - 1777	R/W	8 (octal)
Timer Status (Bit)	TS	T	0 - 377	R	8 (octal)
Counter Status (Bit)	CS	CT	0 - 377	R	8 (octal)
Remote In (Bit)	GX	GX	0 - 3777	R/W	8 (octal)
Remote Out (Bit)	GY	GY	0 - 3777	R/W	8 (octal)
Special Relays (Bit)	SP	SP	0 - 777	R	8 (octal)

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Points (Word)	XW	V	40400 - 40477	R	8 (octal)
Output Points (Word)	YW	V	40500 - 40577	R/W	8 (octal)
Control Relays (Word)	CW	V	40600 - 40777	R/W	8 (octal)
Stages (Word)	SW	V	41000 - 41077	R/W	8 (octal)
Remote In (Word)	GXW	V	40000 - 40177	R/W	8 (octal)
Remote Out (Word)	GYW	V	40200 - 40377	R/W	8 (octal)
Special Relays (Word)	SPW	V	41200 - 41237	R	8 (octal)
Timer Values	TV	V	0 - 377	R/W	8 (octal)
Counter Values	CV	V	1000 - 1377	R/W	8 (octal)
Data Registers	D	V	1400 - 7377	R/W	8 (octal)
System Parameters1	SR1	V	700 - 777	R	8 (octal)
System Parameters2	SR2	V	7400 - 7777	R	8 (octal)
Ext Registers	ER	V	10000 - 37777	R/W	8 (octal)

- We confirm only D4-440 address range. Depending on the type of PLC that you will be using, the there are limits to the areas that can be used within the device ranges given above. Refer to the PLC manual for details.

- When selecting Bit Write, operation depends on the [Configuration]-[System Setup]-[Project]-[Host I/F Driver] which have an option to turn off all other bits in the byte or leave all other bits without change. Check or unchecked the check box for “Bit Write operation will write to a byte.” (Byte refers to 8 bits.)
  Check: When executing Bit Write, all other bits in the byte are turned off.
  Unchecked: When executing Bit Write, all other bits are not changed.
  During Bit Write operation, the MICRO/I reads the byte data including the designated bit from the PLC, performs logical AND or OR operation with the designated bit, and writes the result into the PLC, therefore all other bits in the byte are not changed.

14.5.2 DL205

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Points (Bit)	X	X	0 - 1777	R	8 (octal)
Output Points (Bit)	Y	Y	0 - 1777	R/W	8 (octal)
Control Relays (Bit)	C	C	0 - 3777	R/W	8 (octal)
Stages (Bit)	S	S	0 - 1777	R/W	8 (octal)
Timer Status (Bit)	TS	T	0 - 377	R	8 (octal)
Counter Status (Bit)	CS	CT	0 - 377	R	8 (octal)
Remote In (Bit)	GX	GX	0 - 3777	R/W	8 (octal)
Remote Out (Bit)	GY	GY	0 - 3777	R/W	8 (octal)
Special Relays (Bit)	SP	SP	0 - 777	R	8 (octal)

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Points (Word)	XW	V	40400 - 40477	R	8 (octal)
Output Points (Word)	YW	V	40500 - 40577	R/W	8 (octal)
Control Relays (Word)	CW	V	40600 - 40777	R/W	8 (octal)
Stages (Word)	SW	V	41000 - 41077	R/W	8 (octal)
Remote In (Word)	GXW	V	40000 - 40177	R/W	8 (octal)
Remote Out (Word)	GYW	V	40200 - 40377	R/W	8 (octal)
Special Relays (Word)	SPW	V	41200 - 41237	R	8 (octal)
Timer Values	TV	V	0 - 377	R/W	8 (octal)
Counter Values	CV	V	1000 - 1377	R/W	8 (octal)
Data Registers	D	V	1400 - 7377	R/W	8 (octal)
System Parameters1	SR1	V	400 - 777	R	8 (octal)
System Parameters2	SR2	V	7400 - 7777	R	8 (octal)

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Ext Registers	ER	V	10000 – 35777	R/W	8 (octal)

We confirm only D2-240 address range. Depending on the type of PLC that you will be using, the there are limits to the areas that can be used within the device ranges given above. Refer to the PLC manual for details.

- We confirm only D2-240 address range. Depending on the type of PLC that you will be using, the there are limits to the areas that can be used within the device ranges given above. Refer to the PLC manual for details.

- When selecting Bit Write, operation depends on the [Configuration]-[System Setup]-[Project]-[Host I/F Driver] which have an option to turn off all other bits in the byte or leave all other bits without change. Check or unchecked the check box for “Bit Write operation will write to a byte.” (Byte refers to 8 bits.)
  Check: When executing Bit Write, all other bits in the byte are turned off.
  Unchecked: When executing Bit Write, all other bits are not changed.
  During Bit Write operation, the MICRO/I reads the byte data including the designated bit from the PLC, performs logical AND or OR operation with the designated bit, and writes the result into the PLC, therefore all other bits in the byte are not changed.

14.5.3 DirectLOGIC, KOSTAC-SU (Ethernet)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Points (Bit)	X	X	0 - 1777	R	8
Output Points (Bit)	Y	Y	0 - 1777	R/W	8
Control Relays (Bit)	C	C	0 - 3777	R/W	8
Special Relays (Bit)	SP	SP	0 - 777	R	8
Timers (Bit)	T	T	0 - 377	R	8
Counters (Bit)	CT	CT	0 - 377	R	8
Stages (Bit)	S	S	0 - 1777	R/W	8
Remote Input (Bit)	GX	GX	0 - 3777	R/W	8
Remote Output (Bit)	GY	GY	0 - 3777	R/W	8

Important points to note regarding setting performing Bit Write operations

With a Bit Write operation, the word data is first read from the PLC, and a logic operation (AND or OR) is performed on the relevant bit before writing it to the PLC to ensure that the values of other bits in the same channel are preserved. However, be certain that the PLC does not modify the data in the channel during the time that the MICRO/I is writing the data.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Points (Word)	VX	V	40400 - 40477	R	8
Output Points (Word)	VY	V	40500 - 40577	R/W	8
Control Relays (Word)	VC	V	40600 - 40777	R/W	8
Special Relays (Word)	VSP	V	41200 - 41237	R	8
Timers (Word)	VT	V	41100 - 41117	R	8
Counters (Word)	VCT	V	41140 - 41157	R	8
Stages (Word)	VS	V	41000 - 41077	R/W	8
Timer Current Values	TA	V	0 - 377	R/W	8
Counter Current Values	CTA	V	1000 - 1377	R/W	8
Data Words	V	V	400 - 777 1200 - 7577 10000 - 35777	R/W	8
System parameters	VSYS	V	700 - 777 7400 - 7777 36000 - 37777	R	8
Remote Input (Word)	VGI	V	40000 - 40177	R/W	8
Remote Output (Word)	VGY	V	40200 - 40377	R/W	8

15 FANUC

15.1 Connection Table

15.1.1 Compatible PLCs

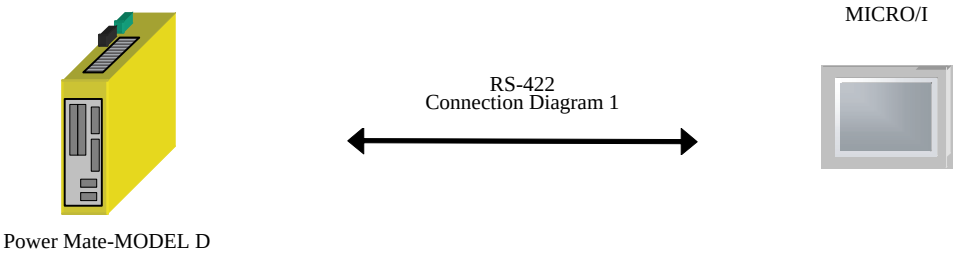
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
Power Mate	Power Mate-MODEL D*1	Not required	RS-422 Connection Diagram 1 (refer to P382)	ER control	Power Mate-MODEL D /Series 16i
Series	16i, 160i*1 18i, 180i, 30i, 31i*1, 32i	Not required	RS-232C Connection Diagram 2 (refer to P387)	ER control	

*1. We tested with the PLC of these parts.

15.2 System Configuration

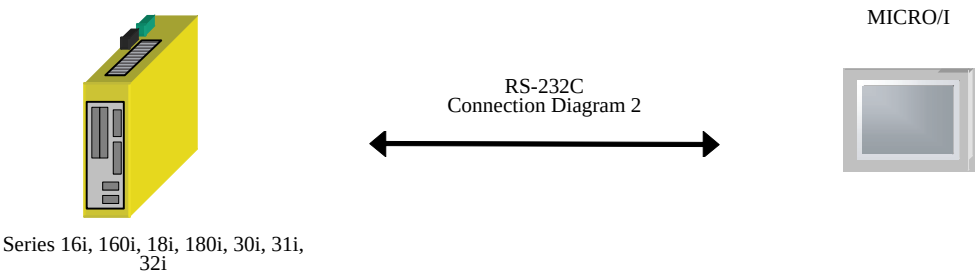
This is the system configuration for connection of FANUC PLCs to the MICRO/I.

15.2.1 Power Mate-MODEL D



WARNING A touch-panel connection module (FANUC A20B-2902-0470) is needed for Power Mate-MODEL D.

15.2.2 Series 16i, 160i, 18i, 180i, 30i, 31i, 32i

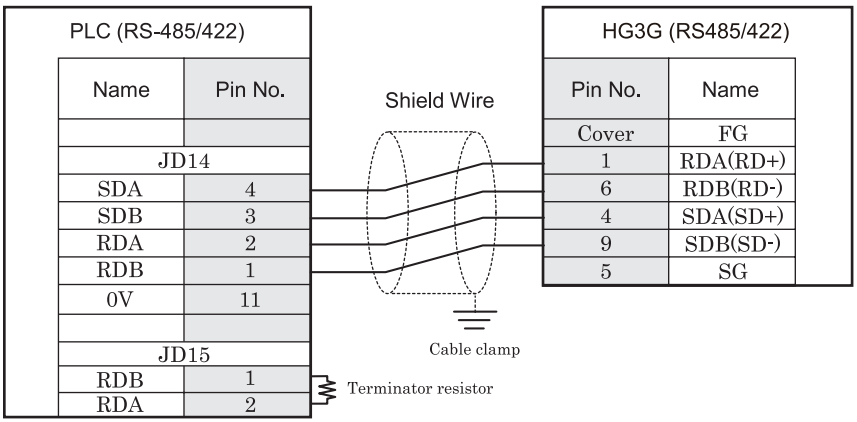


15.3 Connection Diagram

For details regarding wiring and termination resistors, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

15.3.1 Connection Diagram 1: Power Mate-MODEL D to MICRO/I

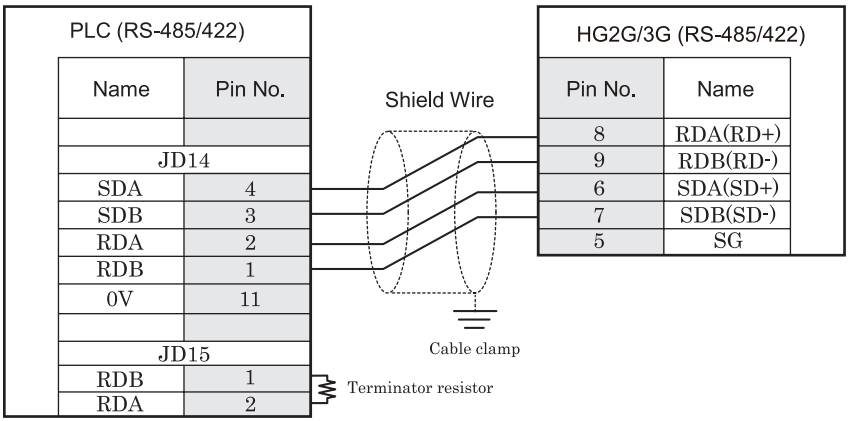
HG3G (Connector)



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 9P connector plug type

HG2G/3G (Terminal)



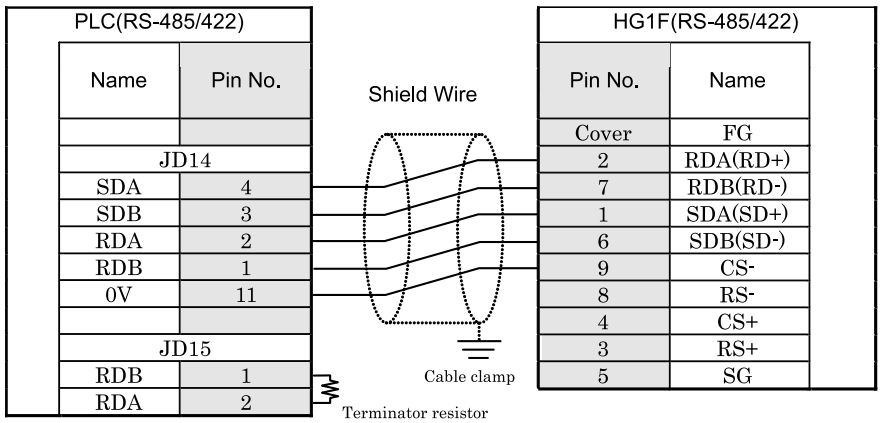
PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

Terminal

- Connect a terminus unit to JD15 by the side of PowerMate. Refer to the manual of PowerMate-MODEL D for the details about a terminus unit.
- FG terminal of the main part of a motion controller should perform the 3rd-sort grounding.
- Ground a shield by the cable clamp.
- When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn't have control lines.

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Important Points Regarding Wiring" on page 18.

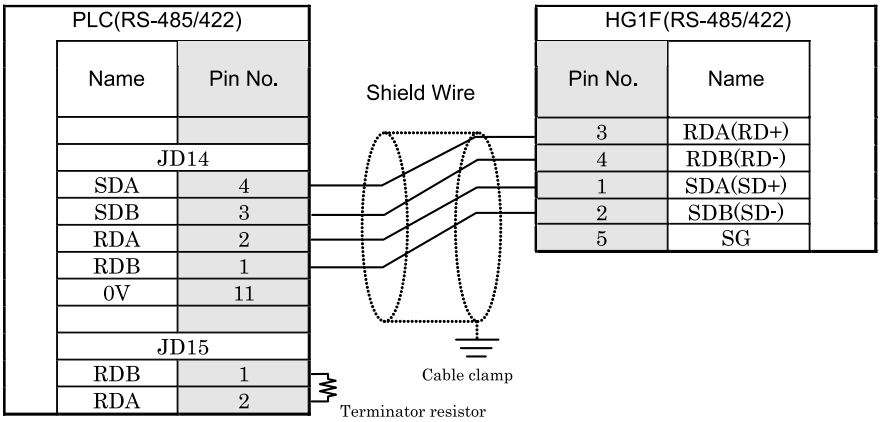
HG1F (Connector)



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 9P connector socket type

HG1F (Terminal)



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

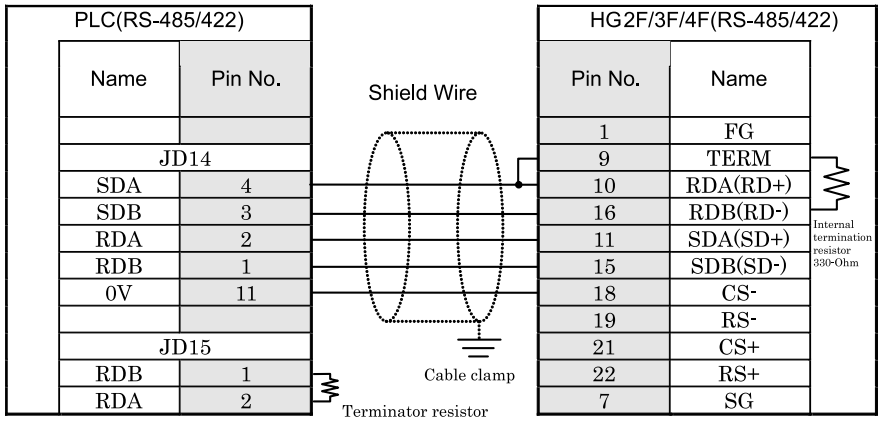
Terminal

WARNING

- Connect a terminus unit to JD15 by the side of PowerMate. Refer to the manual of PowerMate-MODEL D for the details about a terminus unit.
- FG terminal of the main part of a motion controller should perform the 3rd-sort grounding.
- Ground a shield by the cable clamp.
- When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn't have control lines.

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Important Points Regarding Wiring" on page 18.

HG2F/3F/4F



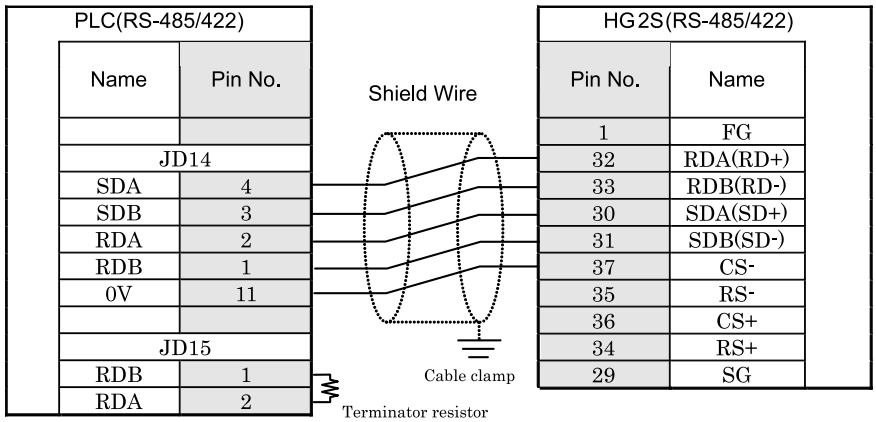
PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 25P connector socket type

WARNING

- Connect a terminus unit to JD15 by the side of PowerMate. Refer to the manual of PowerMate-MODEL D for the details about a terminus unit.
- FG terminal of the main part of a motion controller should perform the 3rd-sort grounding.
- Ground a shield by the cable clamp.

HG2S



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

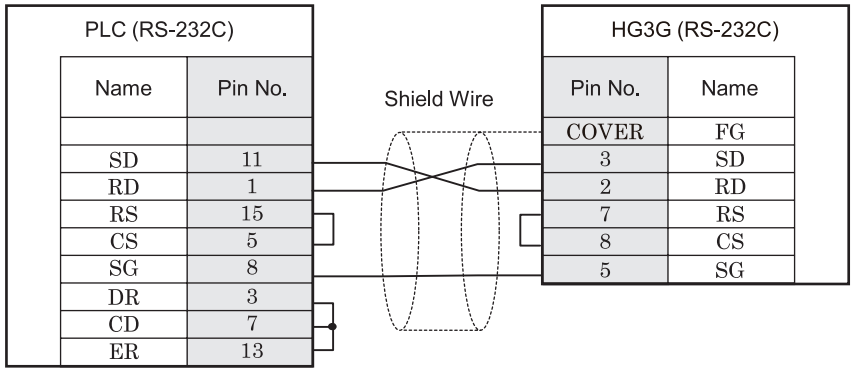
D-sub, 37P connector socket type

- Connect a terminus unit to JD15 by the side of PowerMate. Refer to the manual of PowerMate-MODEL D for the details about a terminus unit.
- FG terminal of the main part of a motion controller should perform the 3rd-sort grounding.
- Ground a shield by the cable clamp.

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

15.3.2 Connection Diagram 2: Series 16i, 160i, 18i, 180i, 30i, 31i, 32i to MICRO/I

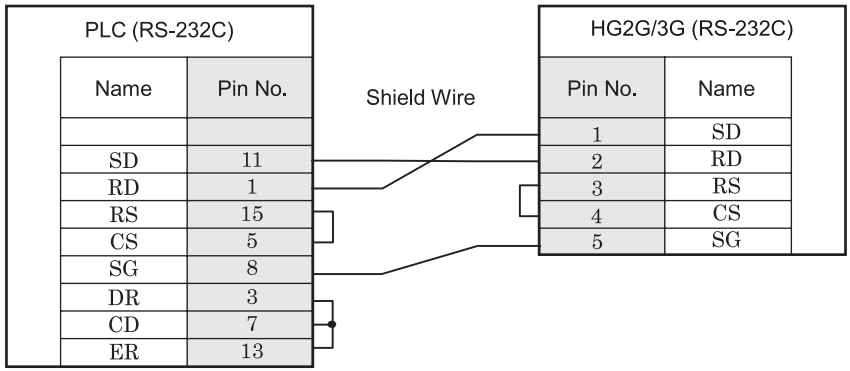
HG3G (Connector)



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 9P connector plug type

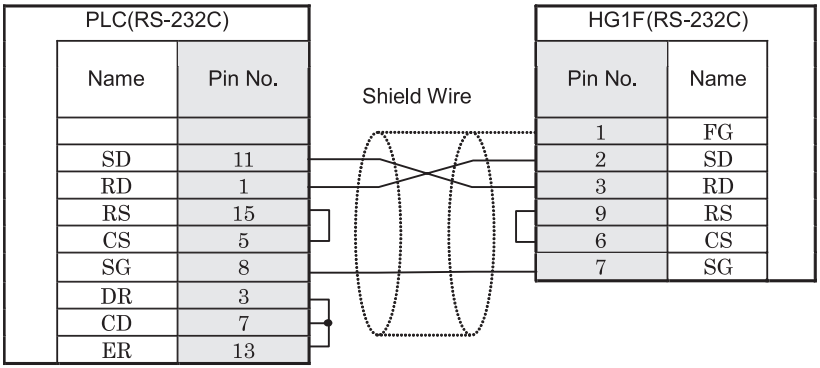
HG2G/3G (Terminal)



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

Terminal

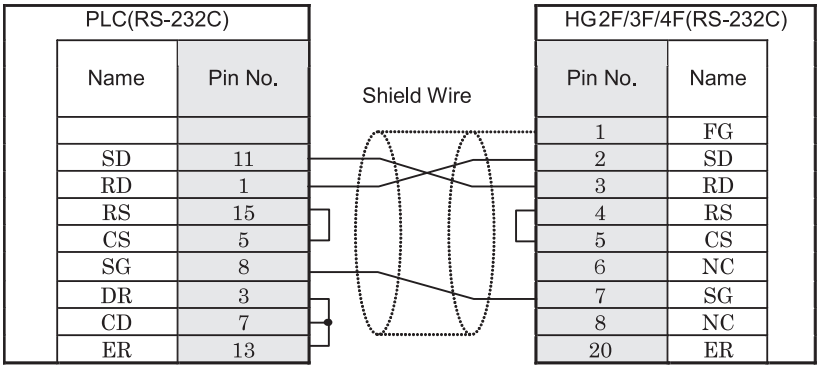
HG1F (Connector)



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 9P connector socket type

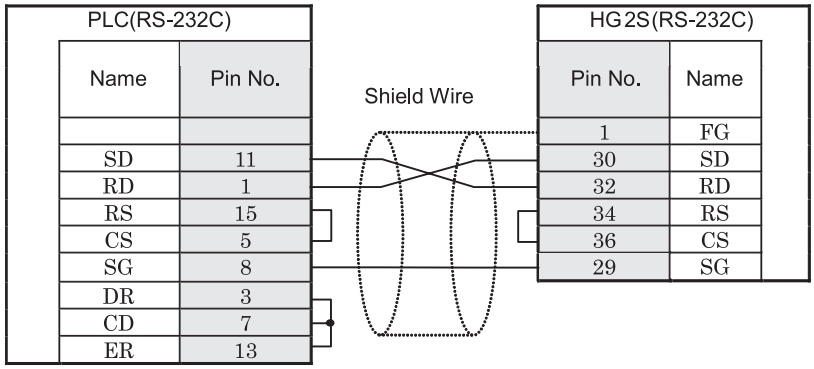
HG2F/3F/4F



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 25P connector socket type

HG2S



PCR-E20FS
(HONDA TSUSHIN KOGYO CO., LTD)

D-sub, 37P connector socket type

15.4 Environment Settings

15.4.1 Power Mate-MODEL D

Items	Details
Serial Interface	RS422-4wire
Slave Address	0(Fixed)
Baud Rate (bps)	19200(Fixed)
Data Bits (bit)	8(Fixed)
Parity	Even (Fixed)
Stop Bits (bit)	1(Fixed)

15.4.2 Series 16i, 160i, 18i, 180i, 30i, 31i, 32i

Items	Details
Serial Interface	RS-232C
Slave Address	0(Fixed)
Baud Rate (bps)	19200(Fixed)
Data Bits (bit)	8(Fixed)
Parity	Even (Fixed)
Stop Bits (bit)	1(Fixed)

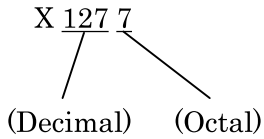
15.5 Usable Devices

15.5.1 Power Mate-MODEL D, Series 16i, 160i, 18i, 180i, 30i, 31i, 32i

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	0 - 99997	R/W	*1
Output Relay	Y	Y	0 - 99997	R/W	*1
Int. Relay	R	R	0 - 99997	R/W	*1
Keep Relay	K	K	0 - 99997	R/W	*1
Expansion Relay	E	E	0 - 99997	R/W	*1

*1. Please specify following ranges.



Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	XW	X	0 - 9998	R/W	Dec *1
Output Relay	YW	Y	0 - 9998	R/W	Dec*1
Int. Relay	RW	R	0 - 9998	R/W	Dec *1
Keep Relay	KW	K	0 - 9998	R/W	Dec*1
Timer	T	T	0 - 9998	R/W	Dec *1
Counter	C	C	0 - 9998	R/W	Dec*1
Data Table	D	D	0 - 9998	R/W	Dec *1
Expansion Relay	EW	E	0 - 9998	R/W	Dec*1

*1. Word device address increase +2.

The devices and the device ranges may differ depending on the PLC model. Please refer to the PLC manual for details.

16 YOKOGAWA

16.1 Connection Table

16.1.1 Compatible PLCs

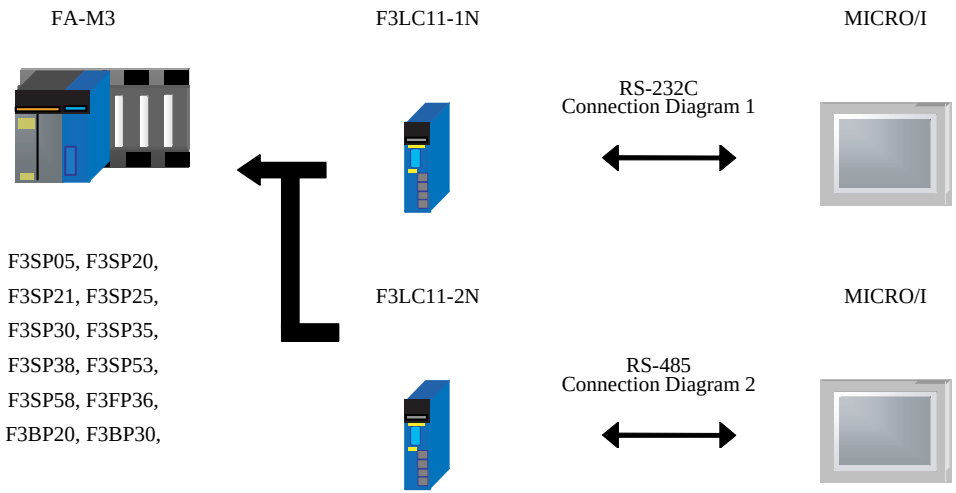
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Contro	Host I/F Driver
FA-M3	FA-M3 (F3SP05, F3SP20, F3SP21*1, F3SP25, F3SP30, F3SP35, F3SP38,F3SP53, F3SP58,F3FP36, F3BP20, F3BP30)	F3LC11-1N*1	RS-232C Connection Diagram 1 (refer to P394)	Hardware	FA-M3
		F3LC11-2N*1	RS-485 Connection Diagram 2 (refer to P396)	None	
	FA-M3 (F3SP05,F3SP21*1, F3SP25, F3SP28, F3SP35,F3SP38, F3SP53, F3SP58)	Not required	RS-232C Connection Diagram 3 (refer to P399)	Hardware	

*1. We tested with the PLC of these parts.

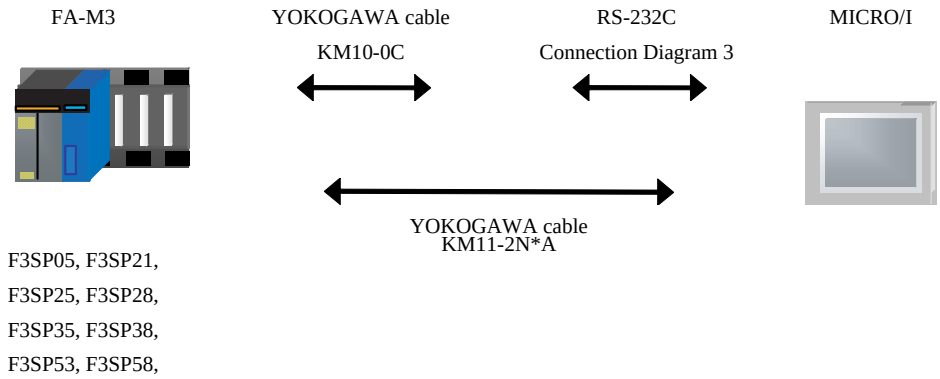
16.2 System Configuration

This is the system configuration for connection of YOKOGAWA PLCs to the MICRO/I.

16.2.1 YOKOGAWA



We recommend F3LC11-2N side to carry a “4-WIRE” setup of the terminus resistance (TERMINATOR) in long-distance transmission.



It connects with the port for programming tools of a CPU unit.

WARNING

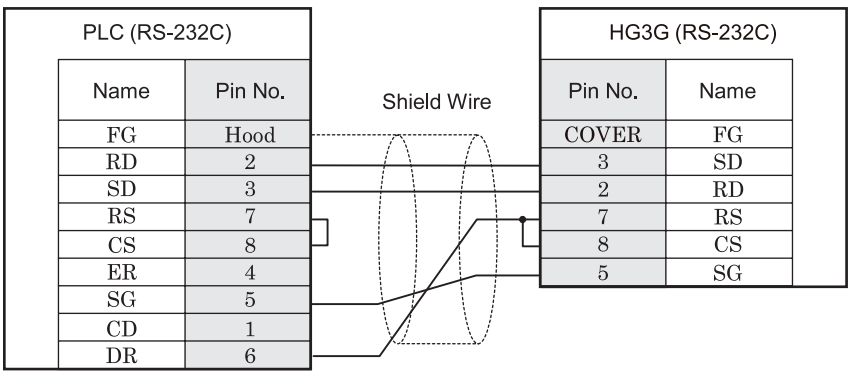
It does not correspond to “CPU direct connection system” of F3SP20 and F3SP30.

16.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

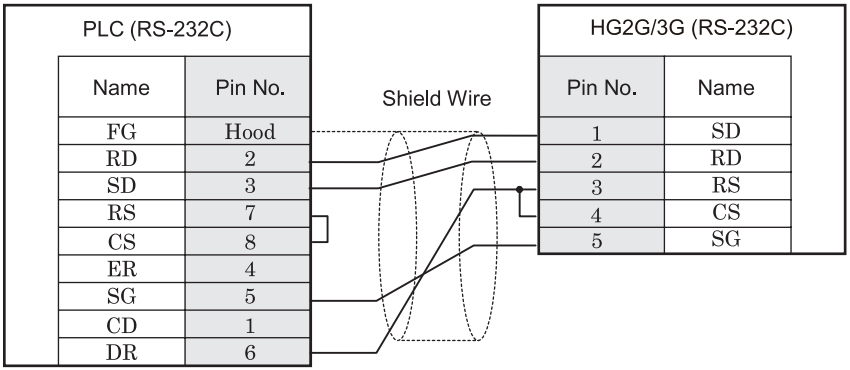
16.3.1 Connection Diagram 1: FA-M3 F3LC11-1N - MICRO/I

HG3G (Connector)



D-sub, 9P connector socket type D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 9P connector socket type Terminal

HG1F (Connector)

PLC(RS-232C)	
Name	Pin No.
FG	Hood
RD	2
SD	3
RS	7
CS	8
ER	4
SG	5
CD	1
DR	6

Shield Wire

HG1F(RS-232C)	
Pin No.	Name
1	FG
2	SD
3	RD
9	RS
6	CS
7	SG

D-sub, 9P connector socket type

D-sub, 9P connector socket type

HG2F/3F/4F

PLC(RS-232C)	
Name	Pin No.
FG	Hood
RD	2
SD	3
RS	7
CS	8
ER	4
SG	5
CD	1
DR	6

Shield Wire

HG2F/3F/4F(RS-232C)	
Pin No.	Name
1	FG
2	SD
3	RD
4	RS
5	CS
6	NC
7	SG
8	NC
20	ER

D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S

PLC(RS-232C)	
Name	Pin No.
FG	Hood
RD	2
SD	3
RS	7
CS	8
ER	4
SG	5
CD	1
DR	6

Shield Wire

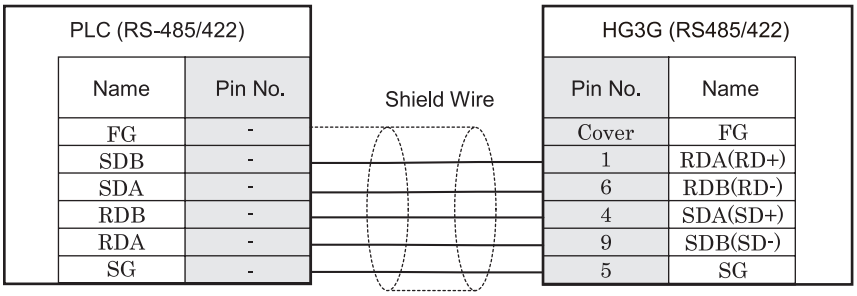
HG2S(RS-232C)	
Pin No.	Name
1	FG
30	SD
32	RD
34	RS
36	CS
29	SG

D-sub, 9P connector socket type

D-sub, 37P connector socket type

16.3.2 Connection Diagram 2: FA-M3 F3LC11-2N - MICRO/I

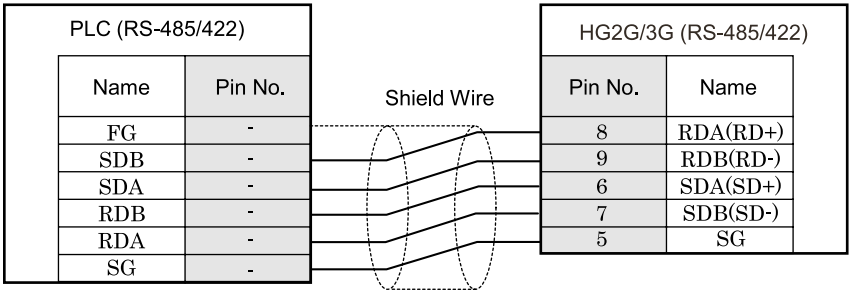
HG3G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)



Screw terminal block

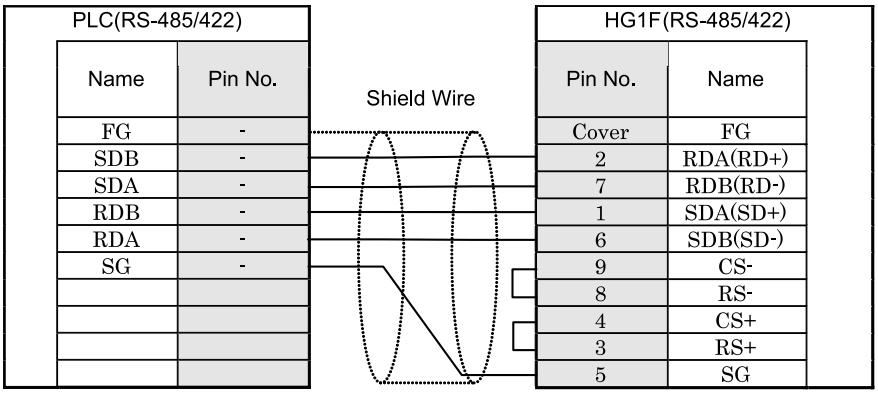
Terminal

WARNING

- In MICRO/I and PLC, the name of A pole and B pole is reverse.
- When you use the Terminal Block type of HG2G/3G, make sure to configure the Hardware Flow control to NONE because the HG1F doesn't have control lines.

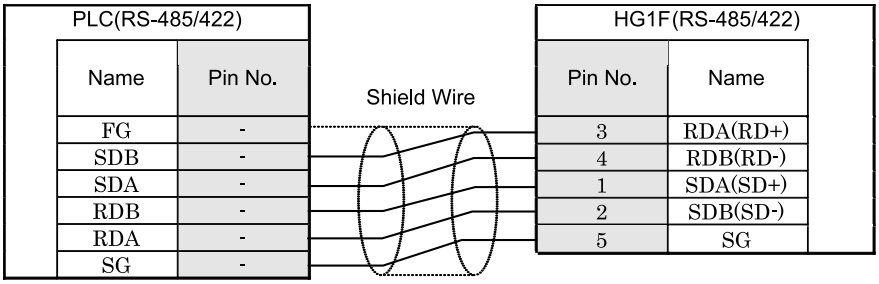
There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Important Points Regarding Wiring" on page 18.

HG1F (Connector)



Screw terminal block — D-sub, 9P connector socket type

HG1F (Terminal)



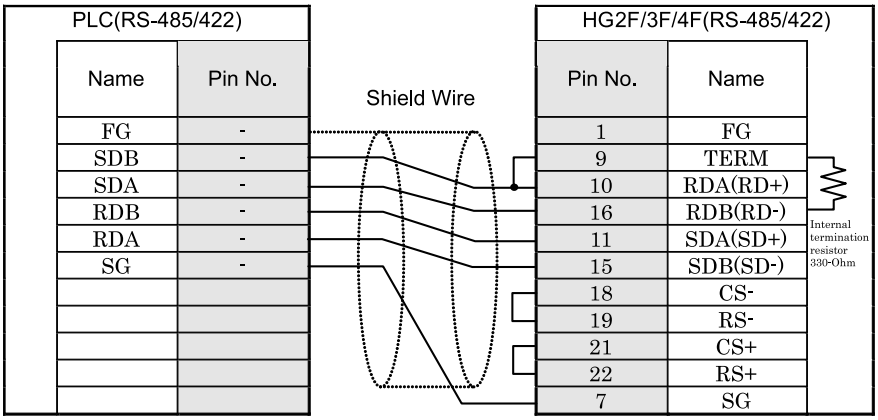
Screw terminal block — Terminal

WARNING

- In MICRO/I and PLC, the name of A pole and B pole is reverse.
- When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn't have control lines.

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 "3 Important Points Regarding Wiring" on page 18.

HG2F/3F/4F

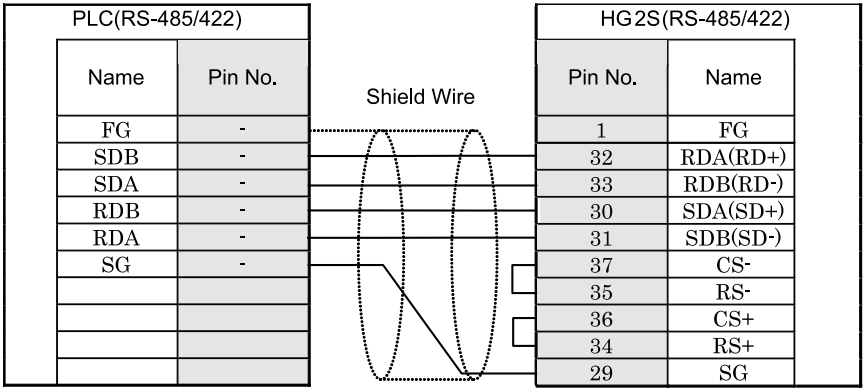


Screw terminal block

D-sub, 25P connector socket type

WARNING In MICRO/I and PLC, the name of A pole and B pole is reverse.

HG2S



Screw terminal block

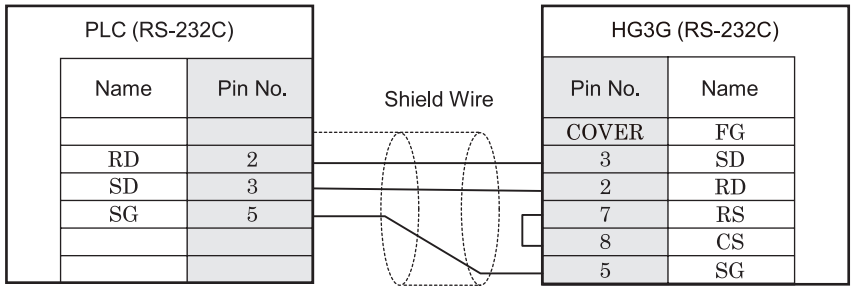
D-sub, 37P connector socket type

WARNING In MICRO/I and PLC, the name of A pole and B pole is reverse.

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

16.3.3 Connection Diagram 3: FA-M3 - MICRO/I

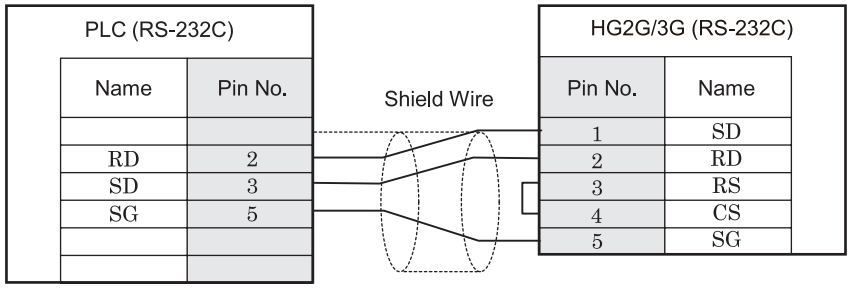
HG3G (Connector)



D-sub, 9P connector socket type — D-sub, 9P connector plug type

This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

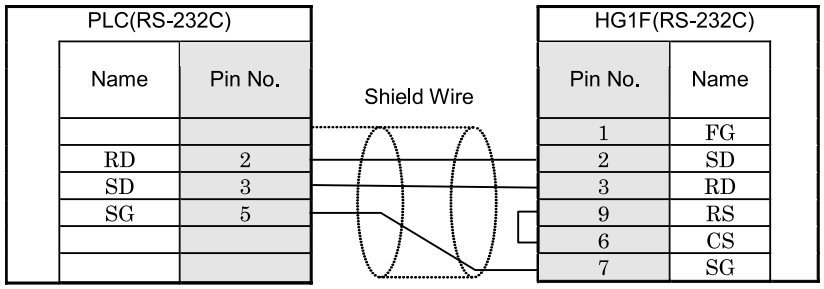
HG2G/3G (Terminal)



D-sub, 9P connector socket type — Terminal

This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

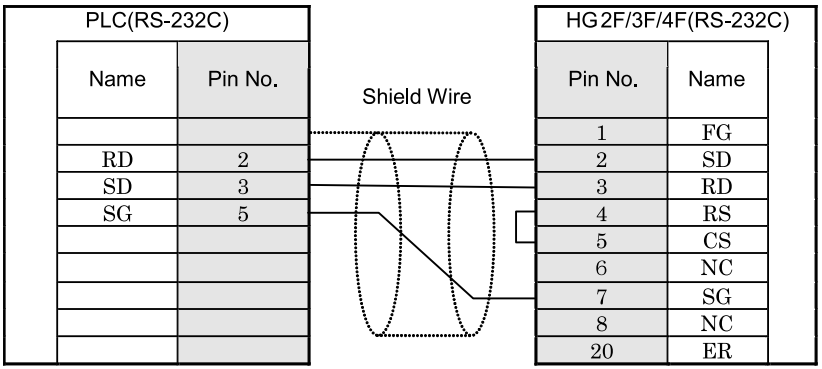
HG1F (Connector)



D-sub, 9P connector socket type — D-sub, 9P connector socket type

This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

HG2F/3F/4F

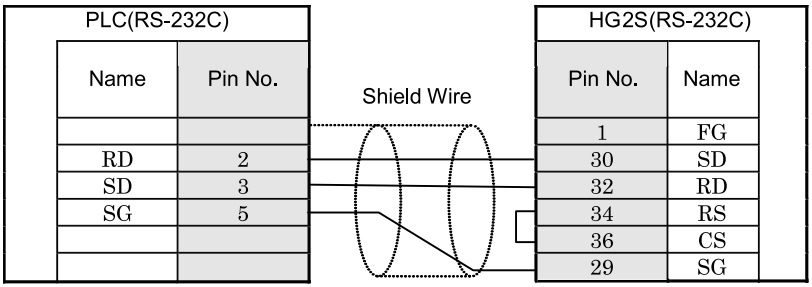


D-sub, 9P connector socket type

D-sub, 25P connector socket type

This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

HG2S



D-sub, 9P connector socket type

D-sub, 37P connector socket type

This figure shows the connection diagram when using the cable (KM10-0C) from YOKOGAWA.

16.4 Environment Settings

16.4.1 YOKOGAWA FA-M3

YOKOGAWA FA-M3 - Link Unit (F3LC11-1N, F3LC112N) to MICRO/I Setting

Items		Details	
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C	RS-485 (4wire)
CPU Number		01(0x01 -4(0x04)	
Station Number		01(DEC)	
Baud Rate (bps)		9600/19200	
Data Bits (bit)		7,8	
Parity		Odd/Even/None	
Stop Bits (bit)		1 / 2	
Sum check		Enable	
Terminus character specification		Enable	
Protection function		Disable	

YOKOGAWA FA-M3 CPU (Programming tool port) to MICRO/I Setting

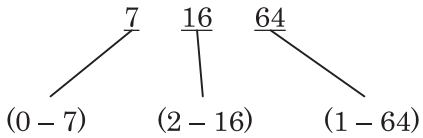
Items		Details
Serial Interface	Use the same settings as for the MICRO/I.	RS-232C
Station Number		01(DEC)(Fixed)
Baud Rate (bps)		9600/19200
Data Bits (bit)		8 (Fixed)
Parity		Even/None
Stop Bits (bit)		1 (Fixed)
Sum check		Enable
Terminus character specification		Enable

16.5 Usable Devices

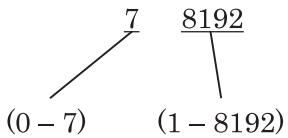
Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	X	X	201 - 71664	R	*1
Output Relay	Y	Y	201 - 71664	R/W	*1
Int. Relay	I	I	1 - 65536	R/W	Dec
Comm. Relay	E	E	1 - 4096	R/W	Dec
Link Relay	L	L	1 - 78192	R/W	*2
Spec. Relay	M	M	1 - 9984	R/W	Dec
Timer Relay	TU	T	1 - 3072	R	Dec
Counter Relay	CU	C	1 - 3072	R	Dec

*1. Please specify in the following ranges.



*2. Please specify in the following ranges.



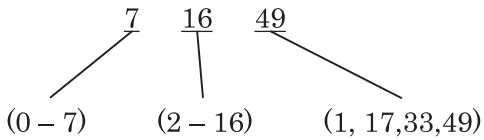
Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay	XW	X	201 - 71649	R	*1
Output Relay	YW	Y	201 - 71649	R/W	*1
Int. Relay	IW	I	1 - 65521	R/W	Dec
Comm. Relay	EW	E	1 - 4081	R/W	Dec
Link Relay	LW	L	1 - 78177	R/W	*2
Spec. Relay	MW	M	1 - 9969	R/W	Dec
Timer (Current Value)	TP	T	1 - 3072	R/W	Dec
Timer (Preset Value)	TS	T	1 - 3072	R	Dec
Counter (Current Value)	CP	C	1 - 3072	R/W	Dec
Counter (Preset Value)	CS	C	1 - 3072	R	Dec
Data Register	D	D	1 - 65536	R/W	Dec

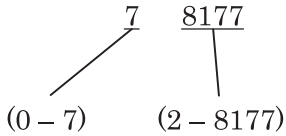
Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Comm. Register	R	R	1 - 4096	R/W	Dec
File Register	B	B	1 - 99999	R/W	Dec
Link Register	W	W	1 - 74096	R/W	*3
Spec. Register	Z	Z	1 - 1024	R/W	Dec

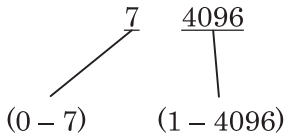
*1. Please specify in the following ranges.



*2. Please specify in the following ranges.



*3. Please specify in the following ranges.



17 INVERTER

17.1 Connection Table

17.1.1 Compatible Mitsubishi Inverters

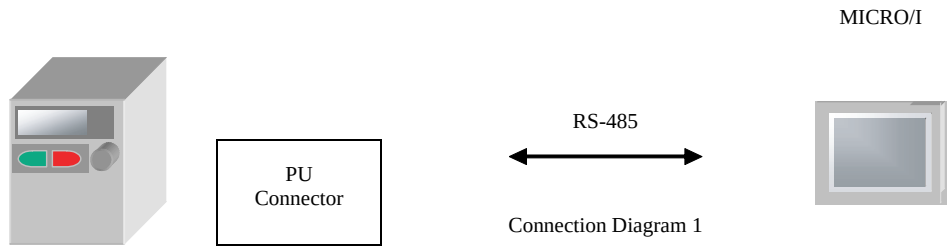
Series Name	System	WindO/I-NV2 Setting Name		
		Interface	Flow Control	Host I/F Driver
FREQROL	FREQROL-E500*1 FREQROL-S500*1	RS-485 (422)-4 Connection Diagram 1 (refer to P405)	None	FREQROL

*1. We tested with the PLC of these parts.

17.2 System Configuration

The following is the system configuration for connecting a Mitsubishi inverter with the MICRO/I.

17.2.1 Mitsubishi



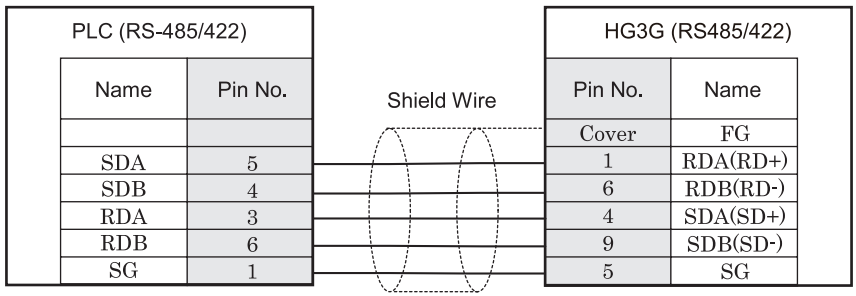
For details including the connection procedures, refer to the instruction manual provided with the Mitsubishi inverter.

17.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable.

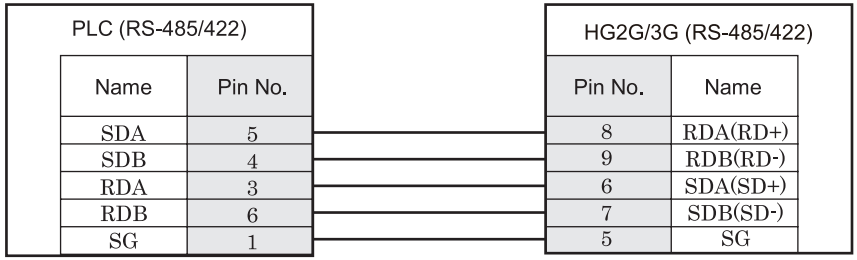
17.3.1 Connection diagram 1: Mitsubishi inverter PU connector to MICRO/I

HG3G (Connector)



PU connector — D-sub, 9P connector plug type

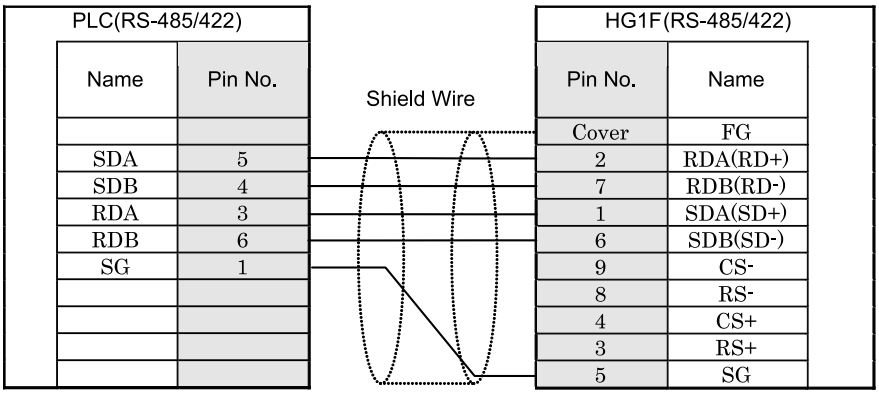
HG2G/3G (Terminal)



PU connector — Terminal

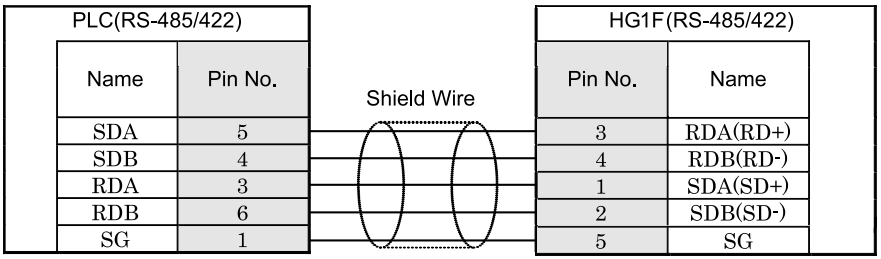
There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG1F (Connector)



PU connector — D-sub, 9P connector socket type

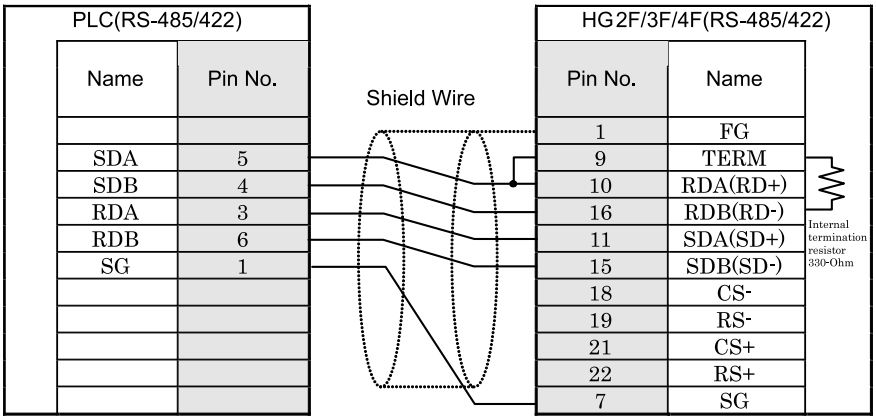
HG1F (Terminal)



PU connector — Terminal

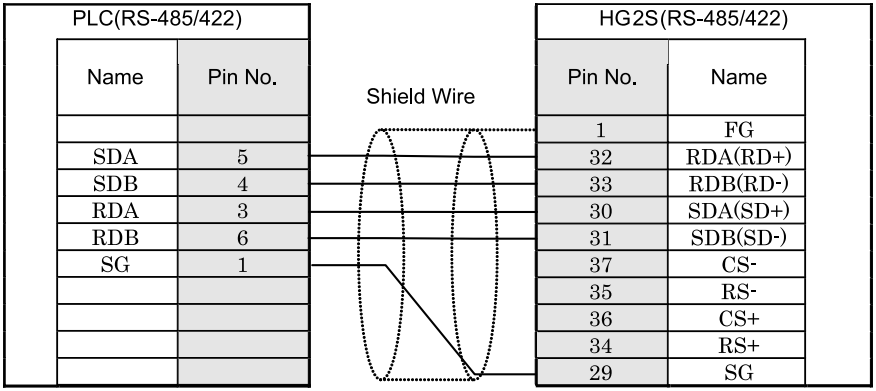
There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG2F/3F/4F



PU connector — D-sub, 25P connector socket type

HG2S



PU connector — D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

17.4 Environment Settings

The following shows the settings of the communication port for performing communications between the Mitsubishi inverter FREQROL series and MICRO/I.

17.4.1 Environment settings for connecting the device to a Mitsubishi inverter

Items		Details
Serial Interface	Use the same settings as for the MICRO/I.	RS - 485 (4wire)
Inverter No.		01 - 31
Baud Rate (bps)		4800/ 9600/ 19200
Data Bits (bit)		7, 8
Stop Bits (bit)		1 / 2
Parity		Odd / Even / None
Ignore Write Error		Enable/ Disable *1
Terminator		CR only
Communication check time interval		Set to a value other than “0”.

*1. When you check “Ignore Write Error.” MICRO/I don’t display “Host communication Error” even if the Inverter returns NAK Error response.

MICRO/I set the error code from the inverter to LSD 112.

17.5 Usable Devices

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Parameter	P	P	0 - 999	R/W	
Parameter 37	P37	P	0 - 1	R/W	*1*2
Operation mode	OP	OP	0	R/W	
Output frequency	OF	OF	0	R	*3
Output current	OC	OC	0	R	
Output voltage	OV	OV	0	R	
Alarm description (1, 2)	E12	E12	0	R	
Alarm description (3, 4)	E34	E34	0	R	
Alarm description (5, 6)	E56	E56	0	R	
Alarm description (7, 8)	E78	E78	0	R	
Run command	RC	RC	0	R/W	*4
Inverter status monitor	ISM	ISM	0	R	
Set frequency read (RAM)	SFRR	SFRR	0	R	*3
Set frequency read (E2PROM)	SFRE	SFRE	0	R	*3
Set frequency write (RAM)	SFWR	SFWR	0	R/W	*3 *4
Set frequency write (E2PROM)	SFWE	SFWE	0	R/W	*3 *4
Inverter reset	IR	IR	0	R/W	*4
Alarm definition batch clear	EC	EC	0	R/W	*4
All parameter clear	PACL	PACL	0	R/W	*4
Link parameter expansion setting	LPES	LPES	0	R/W	*5
Second parameter changing	SPC	SPC	0	R/W	

*1. Use this device for parameter 37.
*2. This device is handled as a 32-bit device by combining addresses 0 and 1.
*3. This Device is only available for 4 digits data.
*4. Only the write data becomes valid on this device. When used for display, the device always becomes “0”.
*5. The Link parameter expansion setting may be changed from the MICRO/I for reading and writing parameters.

For details regarding parameters and write data, refer to the instruction manual provided with the Mitsubishi inverter.

18 FUJI

18.1 Connection Table

18.1.1 Compatible PLCs

Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
FLEX-PC	NB1, NB2, NB3, NJ-CPU-E4, NJ-CPU-A8[*1], NJ-CPU-B16, NS	Not required (Connects to CPU unit)	RS-232C Connection Diagram 2 (refer to P418)	None	FLEX-PC (CPU)
			RS-485 Connection Diagram 1 (refer to P415)		
	NB1, NB2, NB3	NB-RS1-AC/DC	RS-232C Connection Diagram 3 (refer to P420)	None/ Hardware	FLEX-PC (LINK)
			RS-485 Connection Diagram 4 (refer to P422)		
	NJ-CPU-E4 NJ-CPU-A8[*1] NJ-CPU-B16	NJ-RS2[*1] NJ-RS4[*1]	RS-232C Connection Diagram 3 (refer to P420)		
			RS-485 Connection Diagram 4 (refer to P422)		
	NS	NS-RS1	RS-232C Connection Diagram 3 (refer to P420)		
			RS-485 Connection Diagram 4 (refer to P422)		

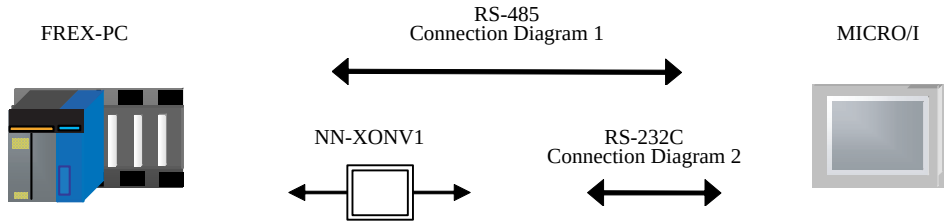
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
MICREX-F	F55	NV1L-RS2	RS-232C Connection Diagram 5 (refer to P425)	None	MICREX-F
	F70	NC1L-RS2	RS-232C Connection Diagram 5 (refer to P425)		
		NC1L-RS4	RS-485 Connection Diagram 6 (refer to P428)		
	F80H, F120H, F120S, F140S, F150S	FFU120B	RS-232C Connection Diagram 5 (refer to P425)		
			RS-485 Connection Diagram 6 (refer to P428)		
	F30, F50, F50H F55, F60, F70 F70S, F80H*1, F81 F120H, F120S F140S, F150S F250	FFK120A-C10*1	RS-232C Connection Diagram 5 (refer to P425)		
			RS-485 Connection Diagram 6 (refer to P428)		

*1. We tested with the PLC of these parts.

18.2 System Configuration

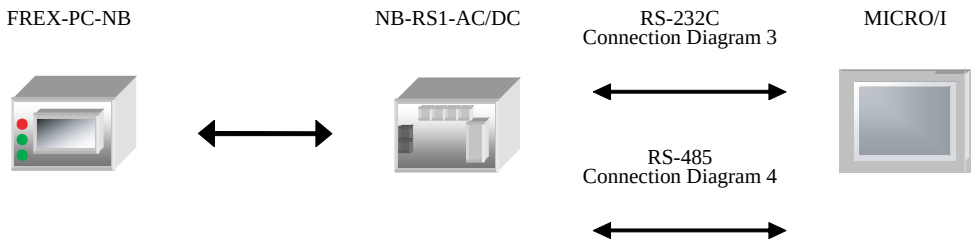
This is the system configuration for connection of FUJI PLCs to the MICRO/I.

18.2.1 FLEX-PC Series (Loader Port)

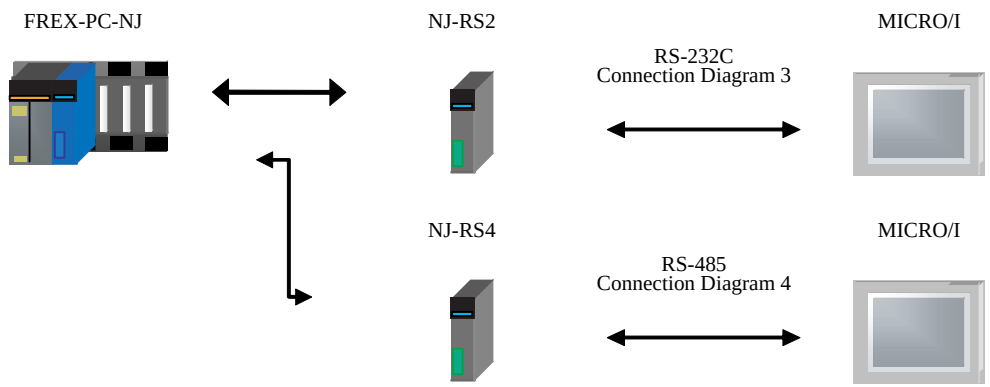


18.2.2 FLEX-PC Series (Interface Module)

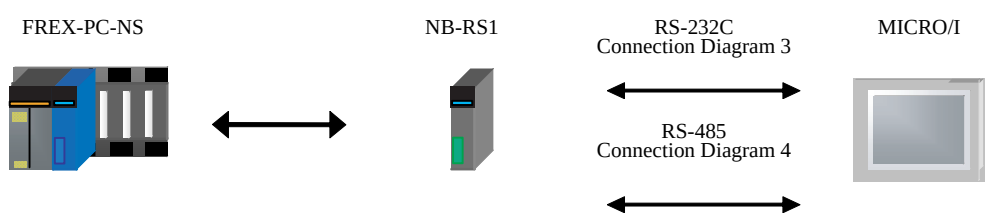
- NB Series



- NJ Series

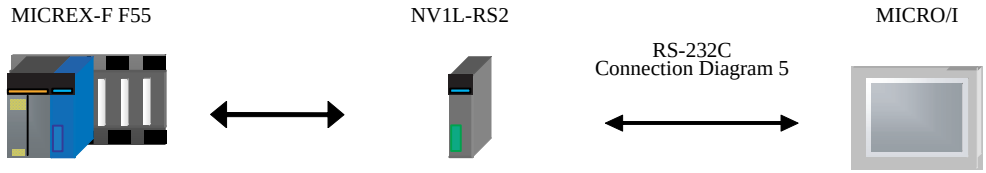


- NS Series

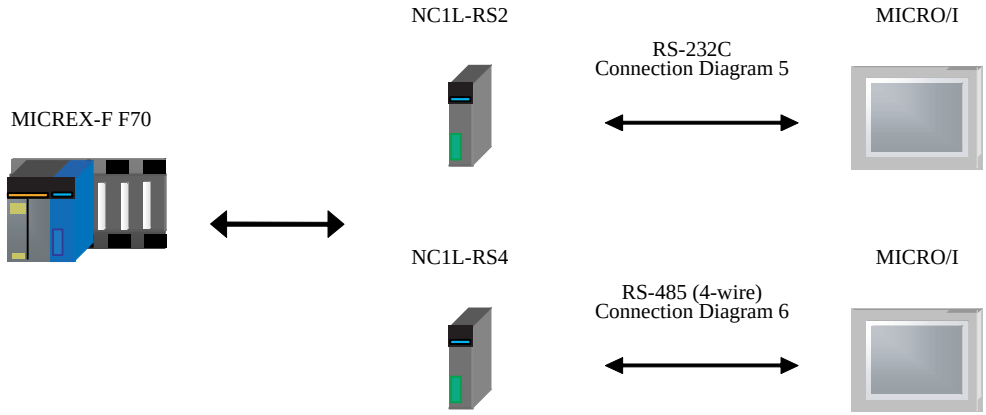


18.2.3 MICREX-F Series (Interface Card)

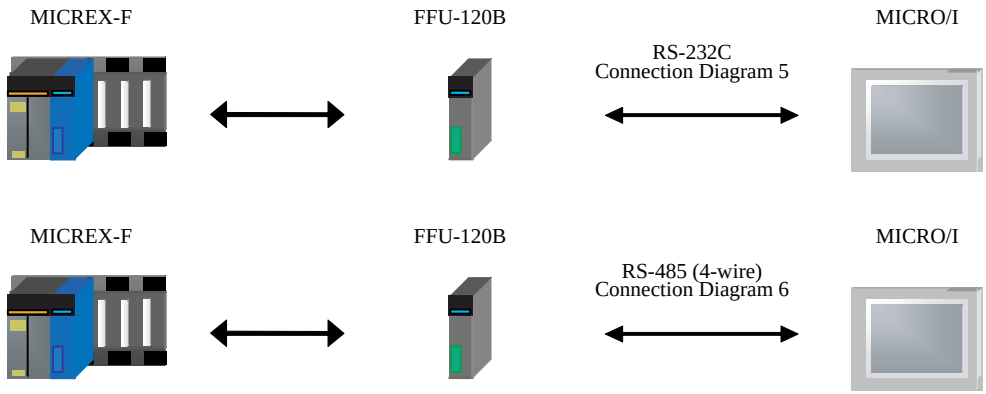
- F55



- F70

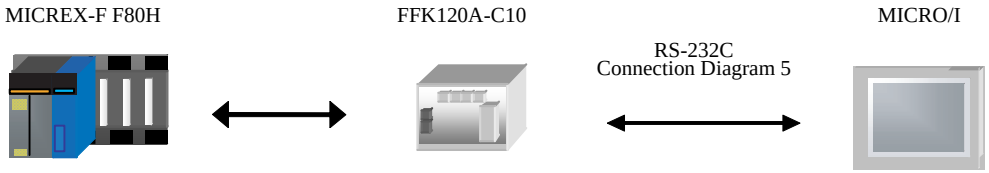


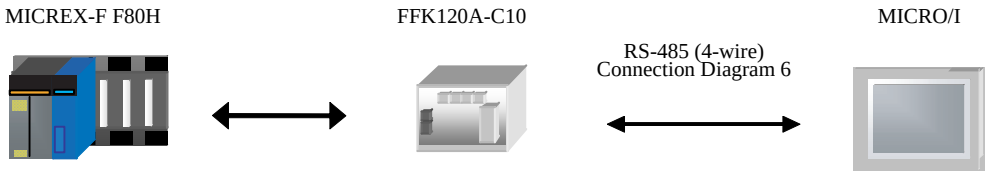
- F80H/F120H/F120S/F140S/F150S



18.2.4 MICREX-F Series (Interface Module)

- F30/F50/F50H/F55/F60/F70/F70S/F80H/F81/F120H/F120S/F140S/F150S



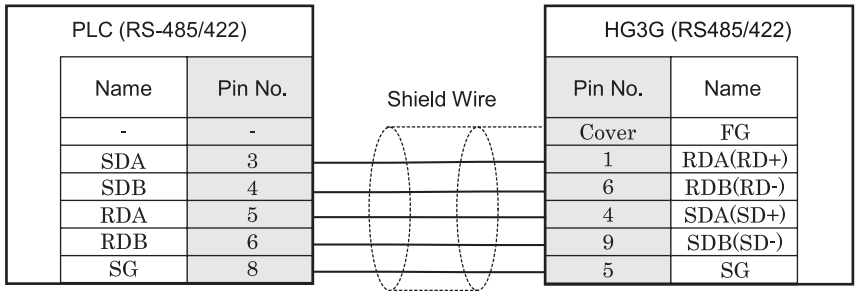


18.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

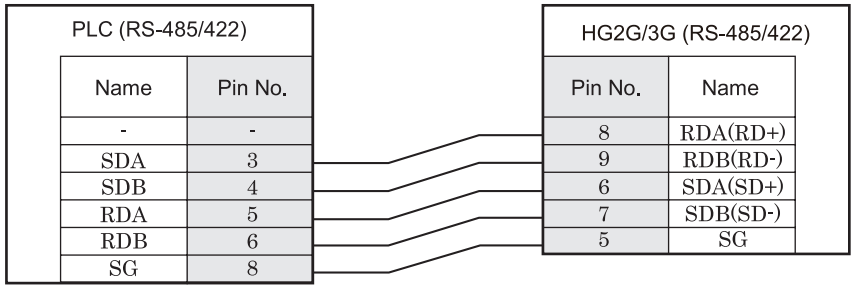
18.3.1 Connection Diagram 1: FLEX-PC series (Loader Port) - MICRO/I

HG3G (Connector)



Modular jack 8 Pin — D-sub, 9P connector plug type

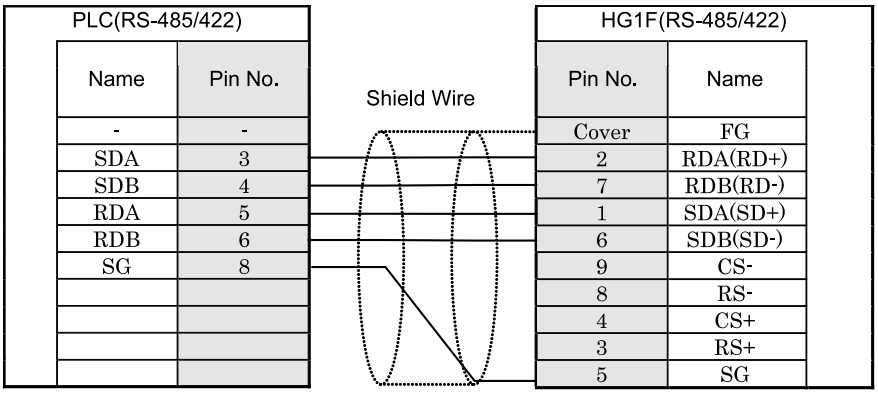
HG2G/3G (Terminal)



Modular jack 8 Pin — Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

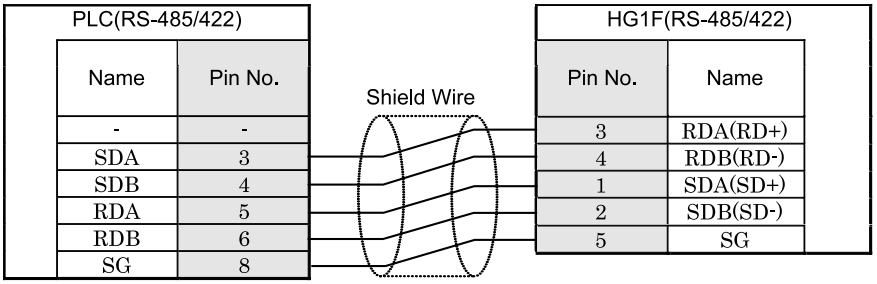
HG1F (Connector)



Modular jack 8 Pin

D-sub, 9P connector socket type

HG1F (Terminal)

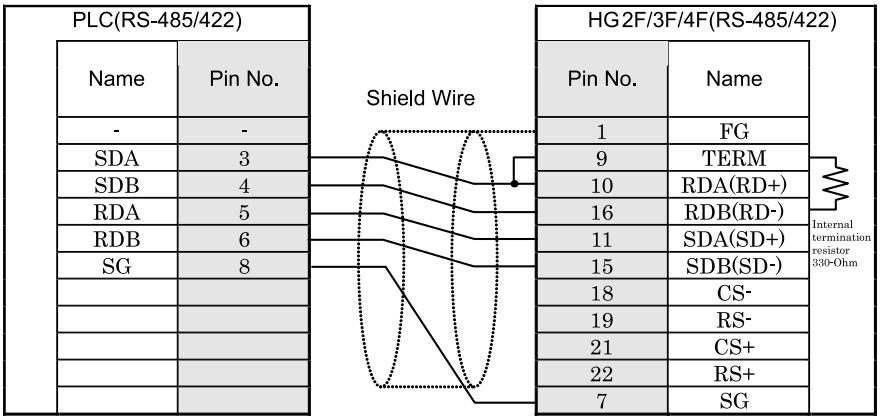


Modular jack 8 Pin

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

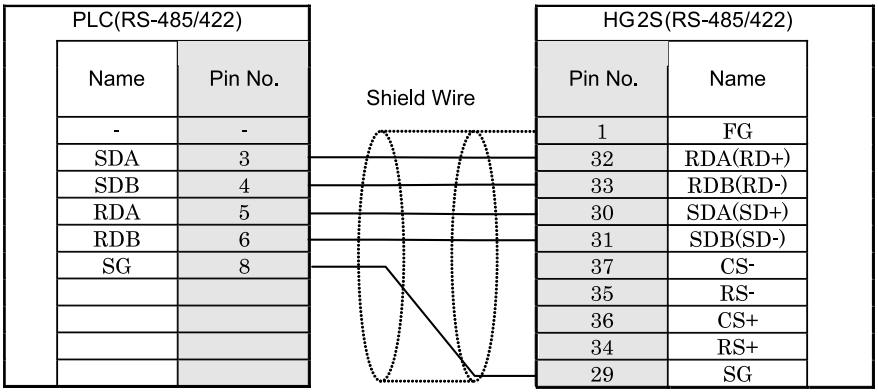
HG2F/3F/4F



Modular jack 8 Pin

D-sub, 25P connector socket type

HG2S

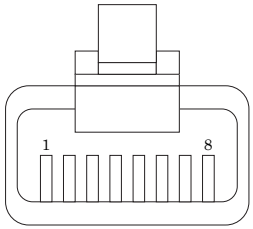


Modular jack 8 Pin

D-sub, 37P connector socket type

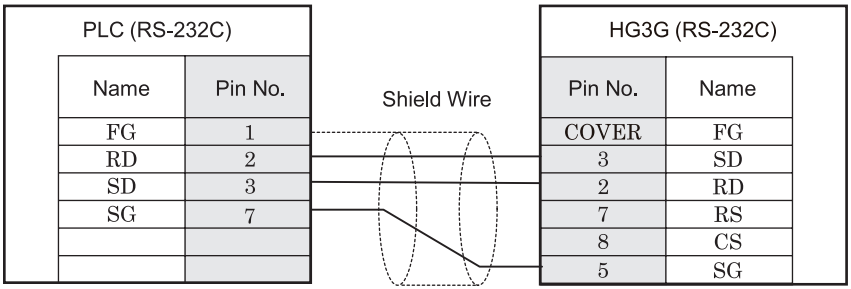
There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

Connector Pin Layout for PLC side Modular jack



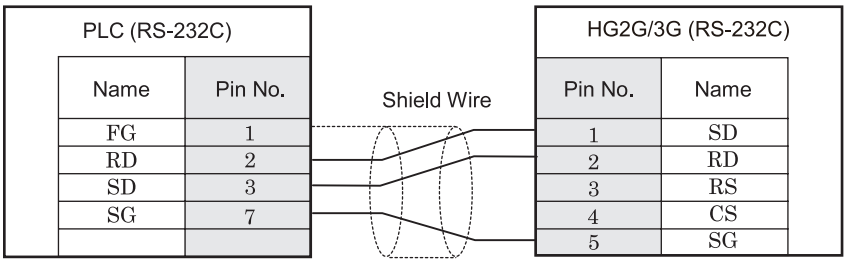
18.3.2 Connection Diagram 2: FLEX-PC series (Loader Port) + NN-CONV1 - MICRO/I

HG3G (Connector)



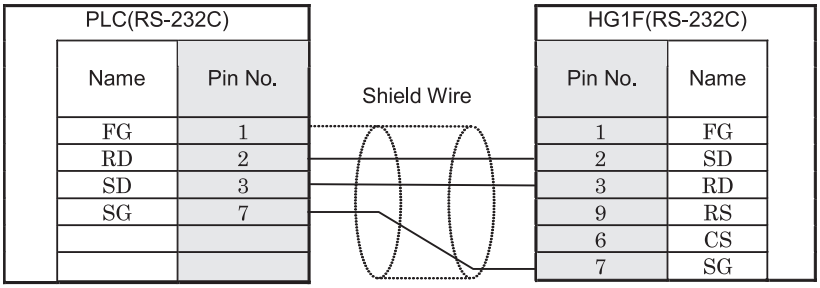
D-sub, 25P connector plug type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



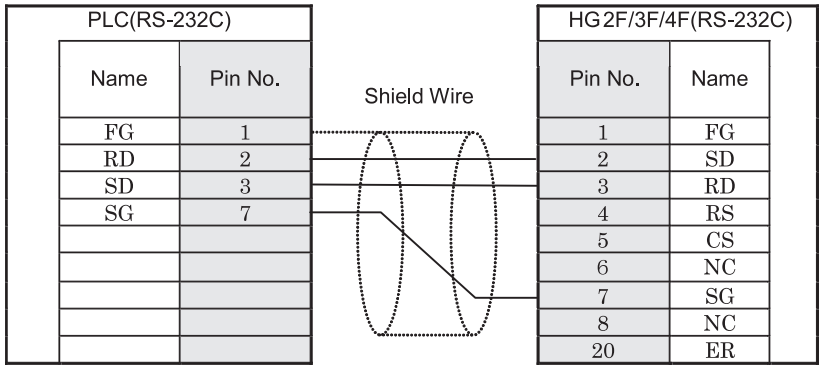
D-sub, 25P connector plug type — Terminal

HG1F (Connector)



D-sub, 25P connector plug type — D-sub, 9P connector socket type

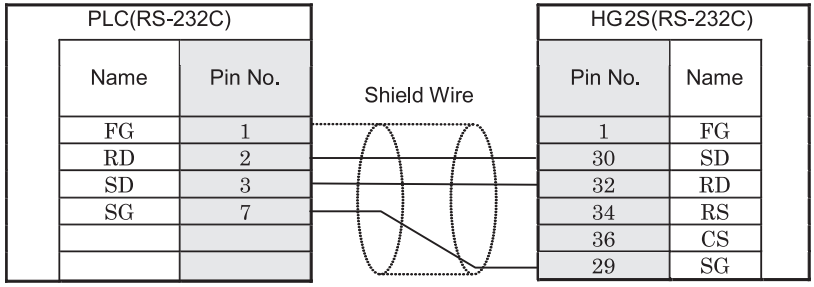
HG2F/3F/4F



D-sub, 25P connector plug type

D-sub, 25P connector socket type

HG2S

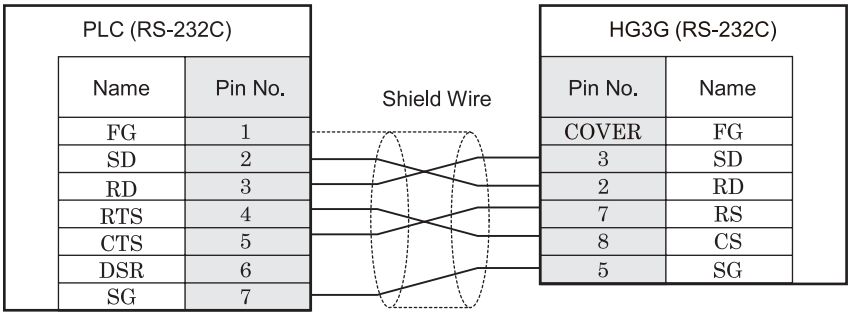


D-sub, 25P connector plug type

D-sub, 37P connector socket type

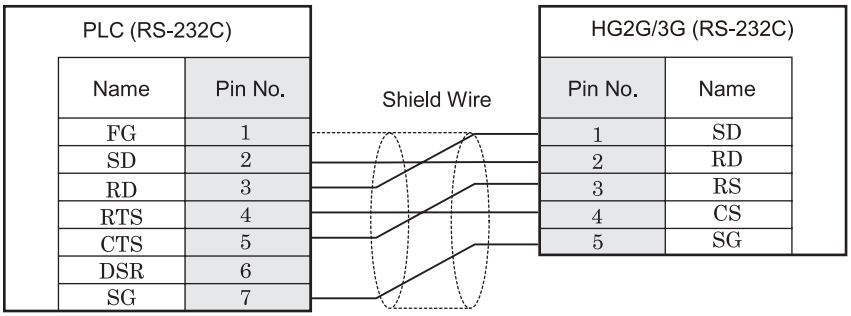
18.3.3 Connection Diagram 3: FLEX-PC Series (Link Module RS-232C Port) - MICRO/I

HG3G (Connector)



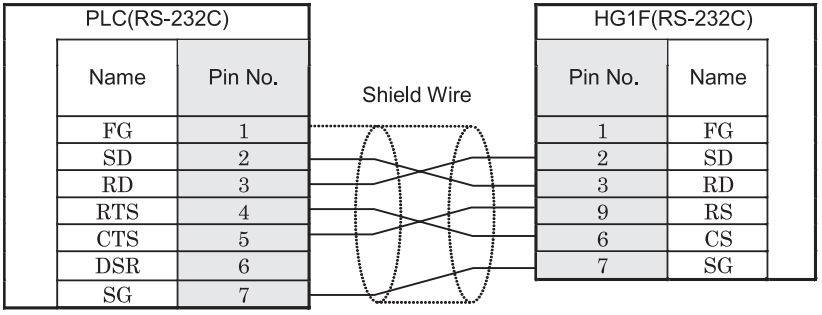
D-sub, 25P connector socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



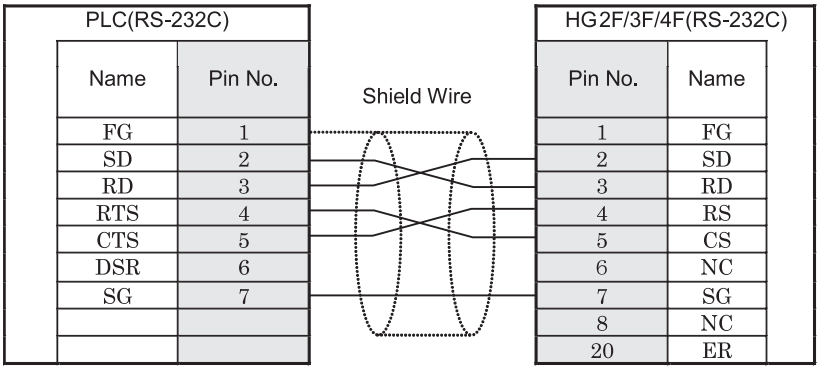
D-sub, 25P connector socket type — Terminal

HG1F (Connector)



D-sub, 25P connector socket type — D-sub, 9P connector socket type

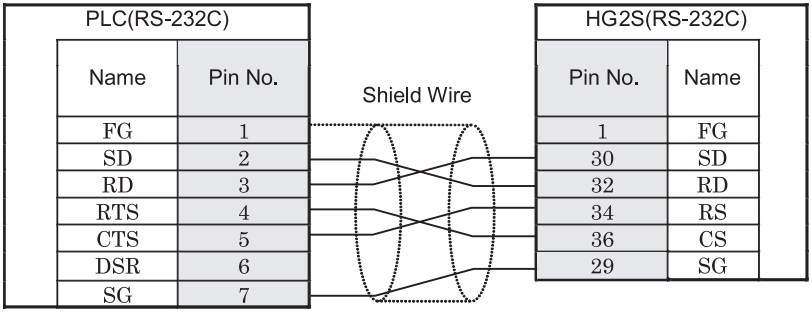
HG2F/3F/4F



D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S

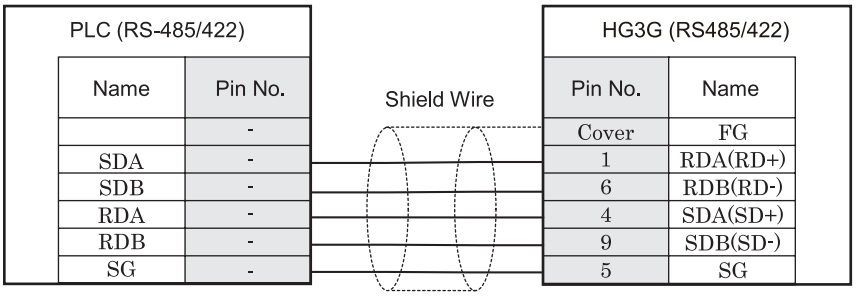


D-sub, 25P connector socket type

D-sub, 37P connector socket type

18.3.4 Connection Diagram 4: FLEX-PC Series (Link Module RS-458 Port) - MICRO/I

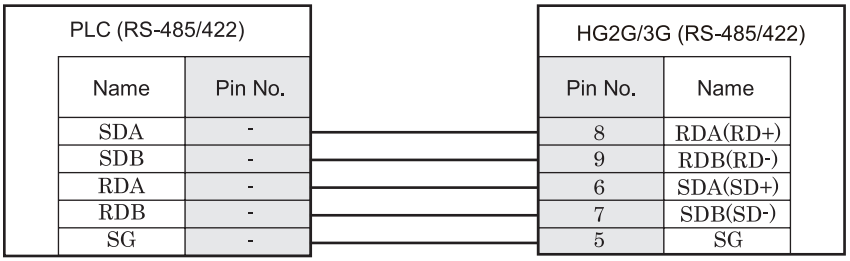
HG3G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)

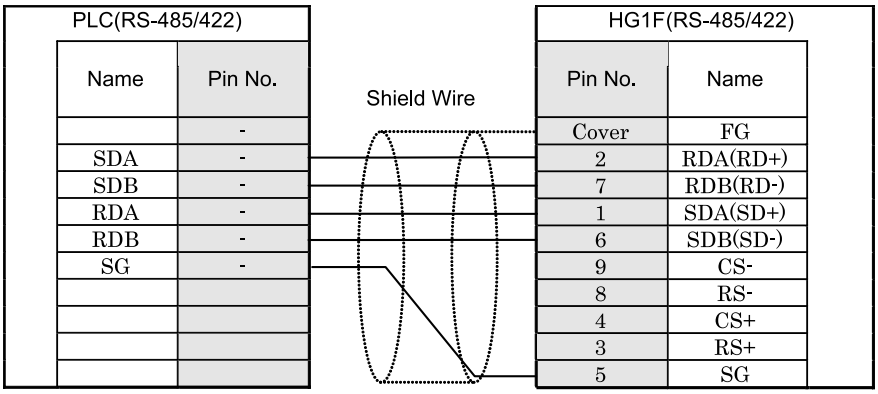


Screw terminal block

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

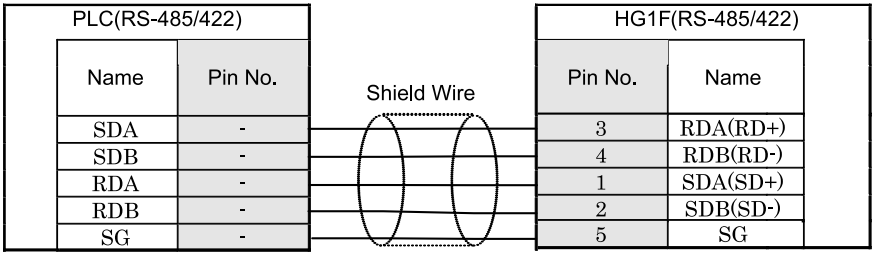
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

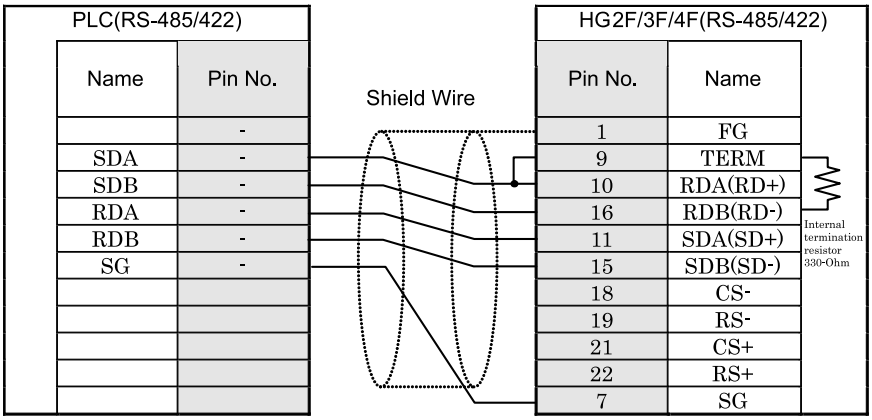


Screw terminal block

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

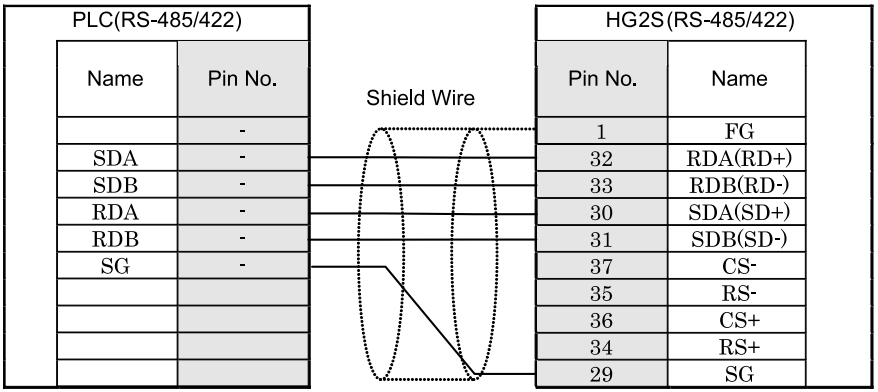
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S



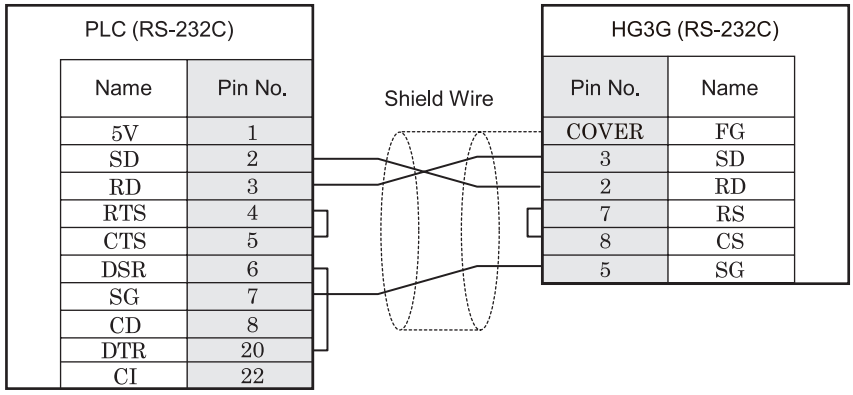
Screw terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

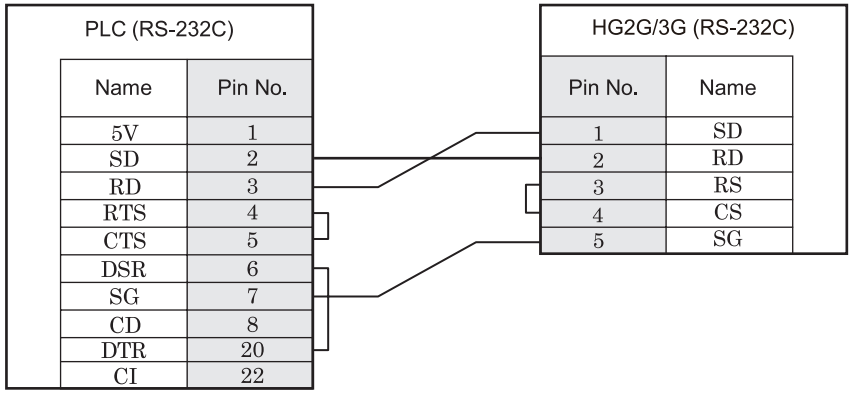
18.3.5 Connection Diagram 5: MICREX - F Series (RS232C Port) - MICRO/I

HG3G (Connector)



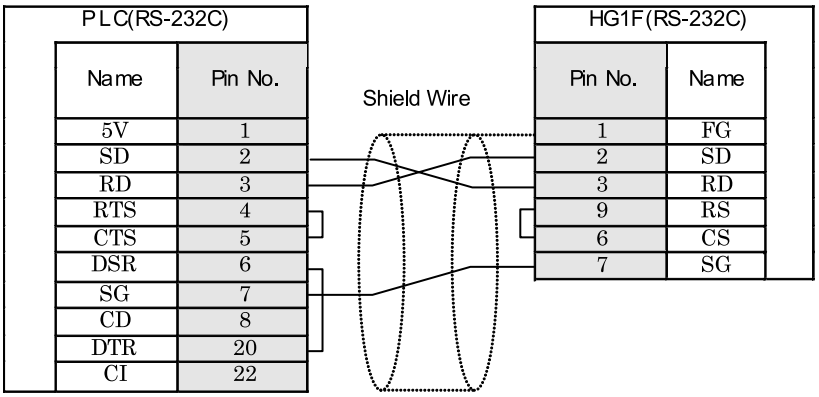
D-sub, 25P connector socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 25P connector socket type — Terminal

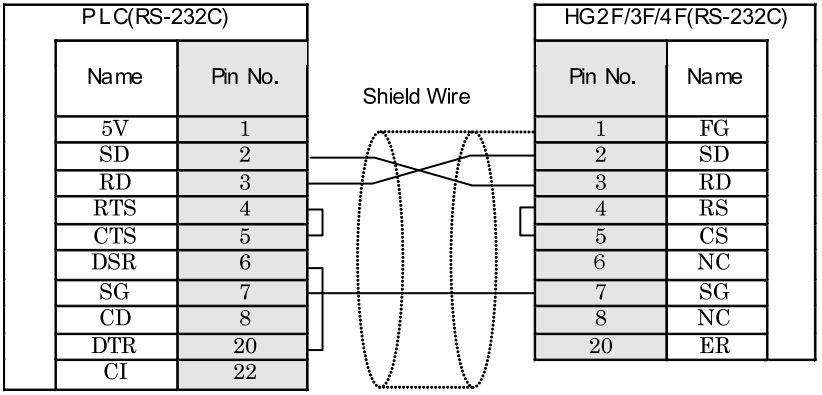
HG1F (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector socket type

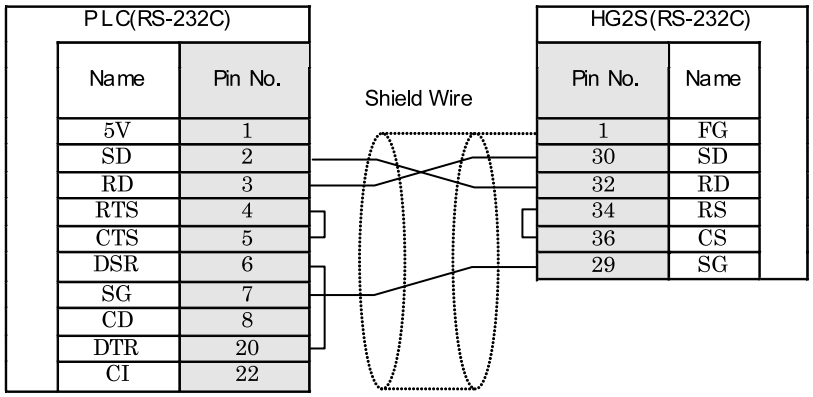
HG2F/3F/4F



D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S

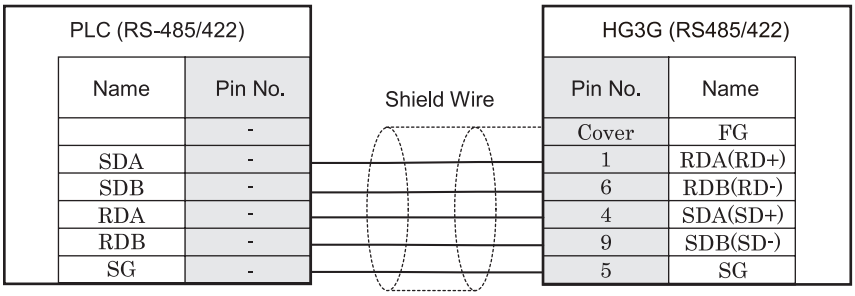


D-sub, 25P connector socket type

D-sub, 37P connector socket type

18.3.6 Connection Diagram 6: MICREX-F Series (RS-458 Port) - MICRO/I

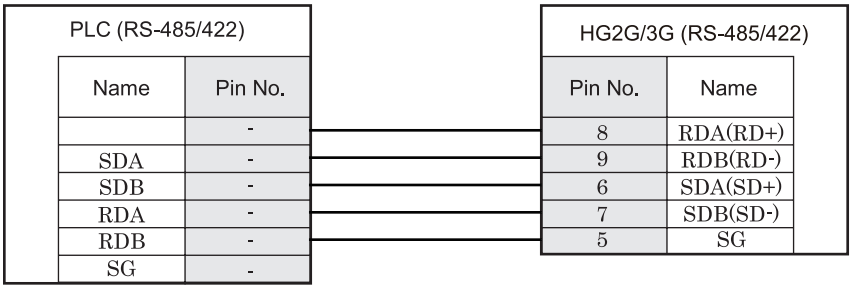
HG3G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)

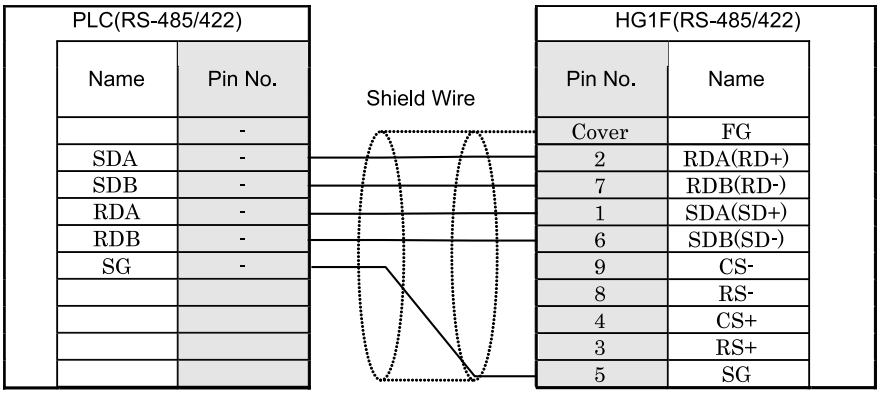


Screw terminal block

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

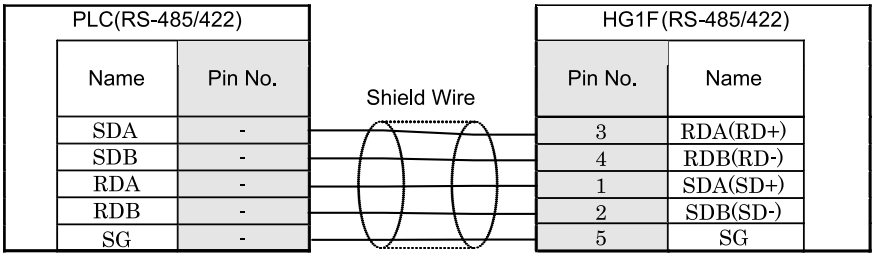
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

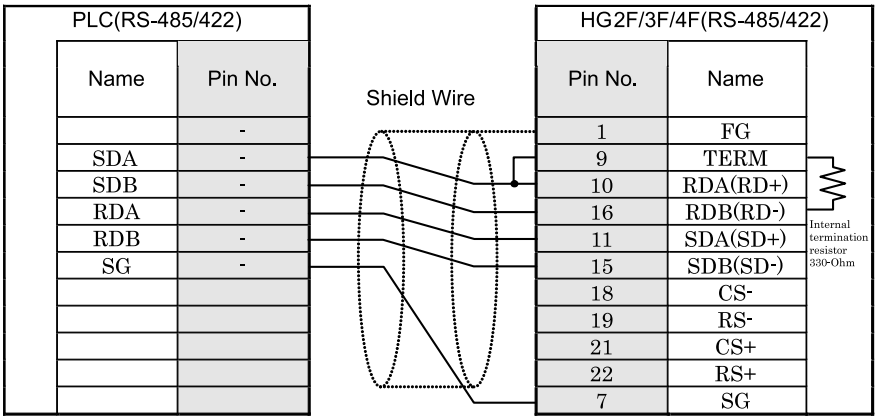


Screw terminal block

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

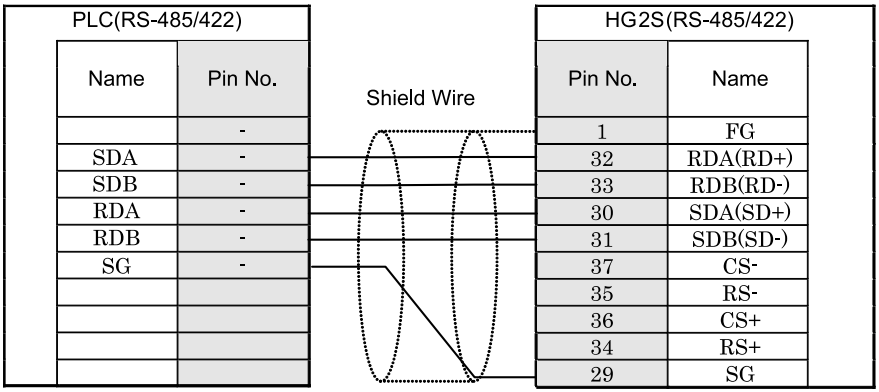
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S



Screw terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

18.4 Environment Settings

18.4.1 FUJI FLEX-PC (CPU)

FUJI FLEX-PC (CPU) to MICRO/I Setting

Items		Details	
Serial Interface		RS-232C	RS-485 (4wire)
Baud Rate (bps)	Use the same settings as for the MICRO/I.	19200	
Data Bits (bit)		8	
Stop Bits (bit)		1	
Parity		Odd	
Flow Control		None	

18.4.2 FUJI FLEX-PC (Link)

FUJI FLEX-PC (Link Module) to MICRO/I Setting

Items		Details	
Serial Interface		RS-232C	RS-485 (4wire)
Operation Modes *1		Command-setting-type start-stop synchronization non sequenced format	
Baud Rate (bps)	Use the same settings as for the MICRO/I.	1200/ 2400/ 4800/ 9600/ 19200	
Data Bits (bit)		7/ 8	
Stop Bits (bit)		1/ 2	
Parity		None/ Odd/ Even	
Flow Control		None/ Hardware	
Station Number		-	0-99(DEC)

*1. Set up the mode switch of Interface Module as below.
RS-232C: Mode switch is No.1.
RS-485:Mode switch is No.3.

Refer to the FLEX-PC user's manual for the details of communication setting.

- FLEX-PC Communication Setting

  When you would like to set up the communication setting with the initialization file, refer to the following setup.
  Set up item of 4, 5, 6, and 7 as well as MICRO/I settings.

No.	Item	0	1	2	3	4	5	6	7
1	Transmission type	Non sequenced format							
2	Mode		Setting						
3	Received Message No.	0							
4	Baud rate			1200	2400	4800	9600	19200	
5	Data bit size	7	8						
6	Parity bit	None	Odd	Even					
7	Stop bit size	1		2					
8	DCE/DTE mode		DTE						
9	CTS/RTS control		Constantly ON						
10	DSR/DTR control	Constantly ON							
11	Transmission conditions			None					
13	Transmission code	JIS							
14	Code conversion		Yes						
15	Received data byte size	0							
16	Start code		STX						
17	End code			CR					
18	Start code 1,2	0							
19	End code 1,2	0							
20	BCC		Setting1						
21	Position (range)	TEXT							
22	Calculation formula			EOR					
23	Code	Transmission code							
24	Timer								

18.4.3 FUJI MICREX-F Interface Card/ Module

Items		Details	
Serial Interface		RS-232C	RS-485 (4wire)
Operation Modes *1		Command-setting-type start-stop synchronization non sequenced format	
Baud Rate (bps)	Use the same settings as for the MICRO/I.	1200/2400/4800/9600/19200/38400/57600/115200	
Data Bits (bit)		7/8*2	
Stop Bits (bit)		1/2*2	
Parity		None/Odd/Even*2	
Flow Control		None/Hardware	
Station Number		0	0 – 99(DEC)

*1. Set up the mode switch of Interface Module as below.
RS-232C:Mode switch is No.1.
RS-485: Mode switch is No.3.
*2. Set Character configuration switch to the following.

Switch Number		Configuration
8	Clear method	By switch
7	Parity bit ON/OFF	Same as MICRO/I
6	Parity bit Odd/Even	Same as MICRO/I
5	Data bit	Same as MICRO/I
4	Stop bit	Same as MICRO/I

Refer to the MICREX-F user's manual for the details of communication setting

18.5 Usable Devices

18.5.1 FREX-PC

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Int. Relay (bit)	M	M	0 - 3FF	R/W	Hex
Input Relay (bit)	X	X	0 - 7FF	R	Hex
Output Relay (bit)	Y	Y	0 - 7FF	R/W	Hex
Exp. Int. Relay (bit)	EM	M	400 - 1FFF	R/W	Hex
Latch Relay (bit)	L	L	0 - 3FF	R/W	Hex
Exp. Latch Relay (bit)	EL	L	400 - 1FFF	R/W	Hex
Step Relay (bit)	S	S	0 - 3FF	R/W	Hex
Spec. Relay (bit)	SM	SM	8000 - 81FF	R/W	Hex
Timer (Relay)	T	T	0 - 3FF	R	Hex
Counter (Relay)	C	C	0 - 1FF	R	Hex

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Data Register	D	D	0 - 2FFF	R/W	Hex
Input Relay (word)	WX	X	0 - 7F	R	Hex
Output Relay (word)	WY	Y	0 - 7F	R/W	Hex
Int. Relay (word)	WM	M	0 - 3F	R/W	Hex
Exp. Int. Relay (word)	WEM	M	40 - 1FF	R/W	Hex
Latch Relay (word)	WL	L	0 - 3F	R/W	Hex
Exp. Latch Relay (word)	WEL	L	40 - 1FF	R/W	Hex
Step Relay (word)	WS	S	0 - 3F	R/W	Hex
Spec. Relay (word)	WSM	M	800 - 81F	R/W	Hex
Timer (Current Value)	TN	T	0 - 3FF	R	Hex
Counter (Current Value)	CN	C	0 - 1FF	R	Hex
Spec. Register	SD	D	8000 - 837F	R/W	Hex
Link Register	W	W	0 - 3FFF	R/W	Hex
File Register	R	R	0 - 7FFF	R/W	Hex

18.5.2 MICREX-F

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
In.Output Relay (bit)	B	B	0 - 511F	R/W	Hex
Int.Relay (bit)	M	M	0 - 511F	R/W	Hex
Keep Relay (bit)	K	K	0 - 63F	R/W	Hex
Edge Relay (bit)	D	D	0 - 63F	R/W	Hex
Spec.Relay (bit)	F	F	0 - 125F	R	Hex
Link Relay (bit)	L	L	0 - 511F	R/W	Hex
Ann.Relay (bit)	A	A	0 - 45F	R/W	Hex

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
InOut Relay (word)	WB	WB	0 - 511	R/W	Dec
Di.InOut Relay (word)	W24	W24	0 - 159	R/W	Dec
Int.Relay (word)	WM	WM	0 - 511	R/W	Dec
Keep Relay (word)	WK	WK	0 - 63	R/W	Dec
Edge Relay (word)	WD	WD	0 - 63	R/W	Dec
Link Relay (word)	WL	WL	0 - 511	R/W	Dec
Spec.Relay (word)	WF	WF	0 - 125	R	Dec
Ann.Relay (word)	WA	WA	0 - 45	R/W	Dec
FileMemo.0 (word)	W30	W30	0 - 4095	R/W	Dec
FileMemo.1 (word)	W31	W31	0 - 4095	R/W	Dec
FileMemo.2 (word)	W32	W32	0 - 4095	R/W	Dec
FileMemo.3 (word)	W33	W33	0 - 4095	R/W	Dec
FileMemo.4 (word)	W34	W34	0 - 4095	R/W	Dec
FileMemo.5 (word)	W35	W35	0 - 4095	R/W	Dec
FileMemo.6 (word)	W36	W36	0 - 4095	R/W	Dec
FileMemo.7 (word)	W37	W37	0 - 4095	R/W	Dec
DataMemo (16bit)	BD	WBD	0 - 4095	R/W	Dec
DataMemo (32bit)	BD	BD	0 - 4095	R/W	Dec
Timer0.01S(Curr.Value)	TR	TR	0 - 511	R/W	Dec
Timer0.1S(Curr.Value)	W9	W9	0 - 511	R/W	Dec
Timer0.01S(Set.Value)	TS	TS	0 - 511	R/W	Dec
Counter(Curr.Value)	CR	CR	0 - 255	R/W	Dec
Counter(Set.Value)	CS	CS	0 - 255	R/W	Dec
FileMemo.0(32bit)	W30	DW30	0 - 4095	R/W	Dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
FileMemo.1(32bit)	W31	DW31	0 - 4095	R/W	Dec
FileMemo.2(32bit)	W32	DW32	0 - 4095	R/W	Dec
FileMemo.3(32bit)	W33	DW33	0 - 4095	R/W	Dec
FileMemo.4(32bit)	W34	DW34	0 - 4095	R/W	Dec
FileMemo.5(32bit)	W35	DW35	0 - 4095	R/W	Dec
FileMemo.6(32bit)	W36	DW36	0 - 4095	R/W	Dec
FileMemo.7(32bit)	W37	DW37	0 - 4095	R/W	Dec

19 Toshiba

19.1 Connection Table

19.1.1 Compatible Protocols

Series Name	System (CPU unit)		Link Unit	WindO/I-NV2 Setting Name		
				Interface	Flow Contro	Host I/F Driver
PROSEC T	T1	T1-16 T1-28 T1-40	Not required (Connects to CPU unit)	RS-232C Connection Diagram 4 (refer to P450)	None/ Hardware	PROSEC T
			CU111	RS-485 Connection Diagram 5 (refer to P452)		
	T1S	T1-40S	Not required (Connects to CPU unit)	RS-232C Connection Diagram 4 (refer to P450)		
				RS-485 Connection Diagram 3 (refer to P447)		
			CU111	RS-485 Connection Diagram 5 (refer to P452)		
	T2*1	PU224*1	Not required (Connects to CPU unit)	RS-485 Connection Diagram 1 (refer to P442)		
	T2E*1	PU234E*1	Not required*1 (Connects to CPU unit)*1	RS-232C Connection Diagram 2 (refer to P445)		
			CM231E	RS-485*1 Connection Diagram 5 (refer to P452)		
			CM232E*1	RS-232C Connection Diagram 2 (refer to P445)		
	T2N	PU215N PU235N PU245N	Not required (Connects to CPU unit)	RS-232C Connection Diagram 2 (refer to P445)		
				RS-485/ Connection Diagram 7 (refer to P457) RS-232C*1 Connection Diagram 6 (refer to P455)		

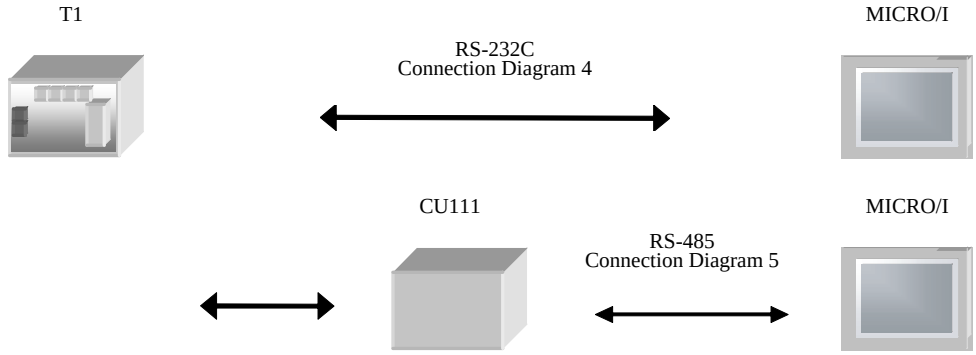
Series Name	System (CPU unit)		Link Unit	WindO/I-NV2 Setting Name		
				Interface	Flow Contro	Host I/F Driver
PROSEC T	T3 T3H	PU315 PU325 PU325H PU326H	Not required (Connects to CPU unit)	RS-485 Connection Diagram 1 (refer to P442)	None/ Hardware	PROSEC T
V	S2T S2E L1 S2 S3*1	PU672T PU662T PU612E L1PU11H L1PU12H S2PU82 S2PU72 S2PU32 S2PU22 S3PU65 S3PU55*1 S3PU45 S3PU21	Not required*1 (Connects to CPU unit)*1	RS-485*1 Connection Diagram 1 (refer to P442)		

*1. We tested with the PLC of these parts.

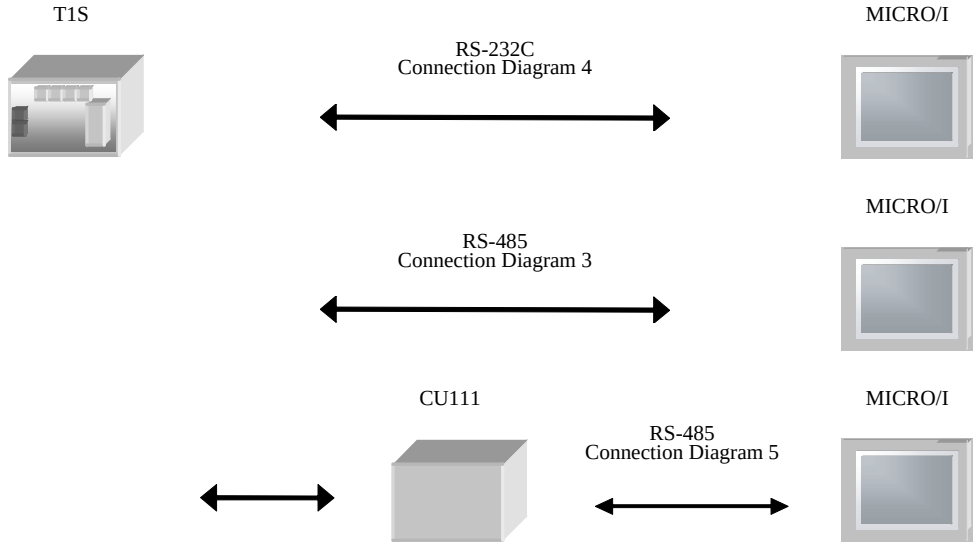
19.2 System Configuration

This is the system configuration for connection of Toshiba PLCs to the MICRO/I.

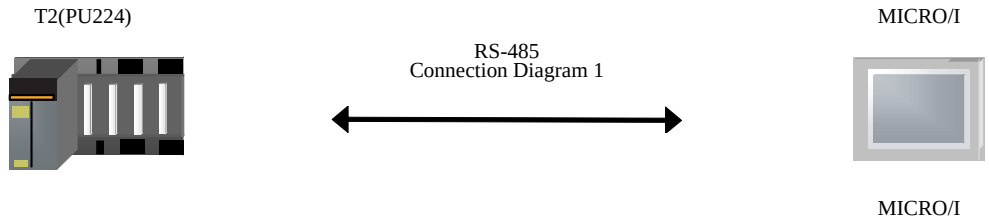
19.2.1 PROSEC T Series T1



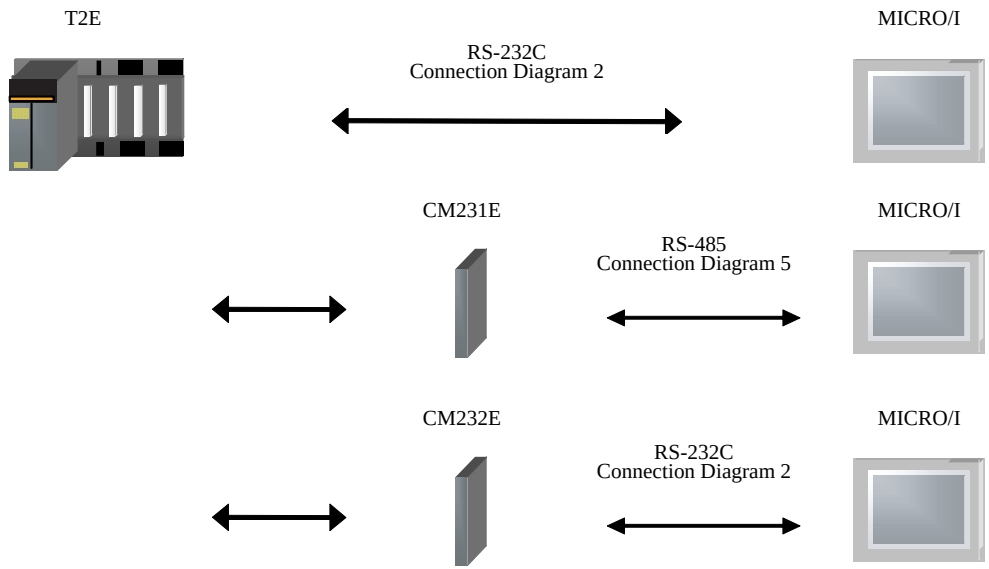
19.2.2 PROSEC T Series T1S



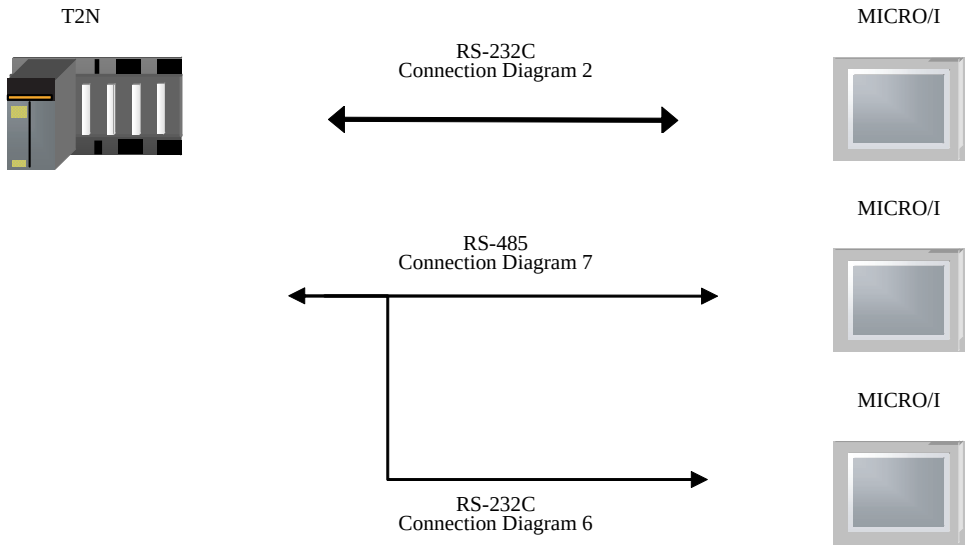
19.2.3 PROSEC T Series T2 (PU224)



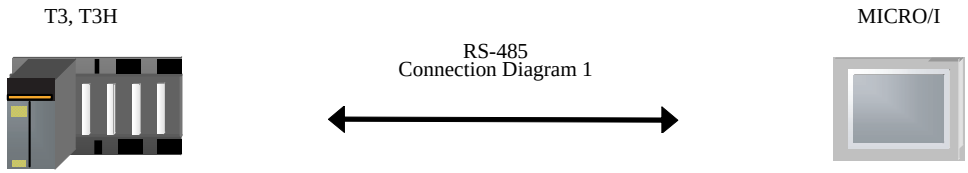
19.2.4 PROSEC T Series T2E



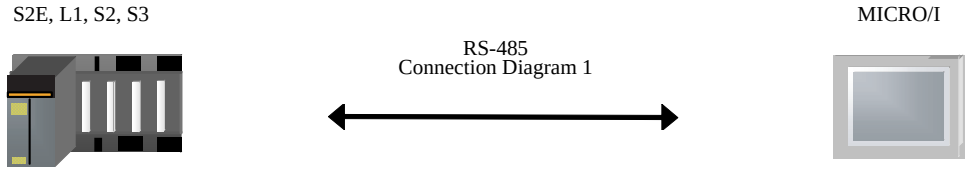
19.2.5 PROSEC T Series T2N



19.2.6 PROSEC T Series T3, T3H



19.2.7 Series S2T, S2E, L1, S2, S3

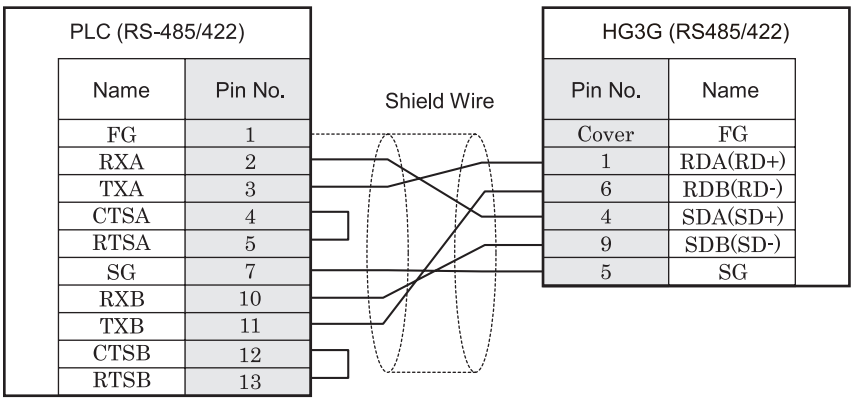


19.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

19.3.1 Connection Diagram 1: RS-485 D-sub 15P - MICRO/I

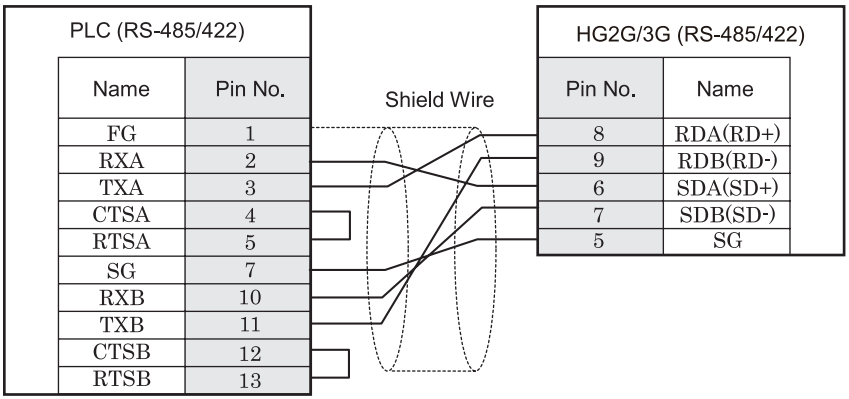
HG3G (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector plug type

HG2G/3G (Terminal)

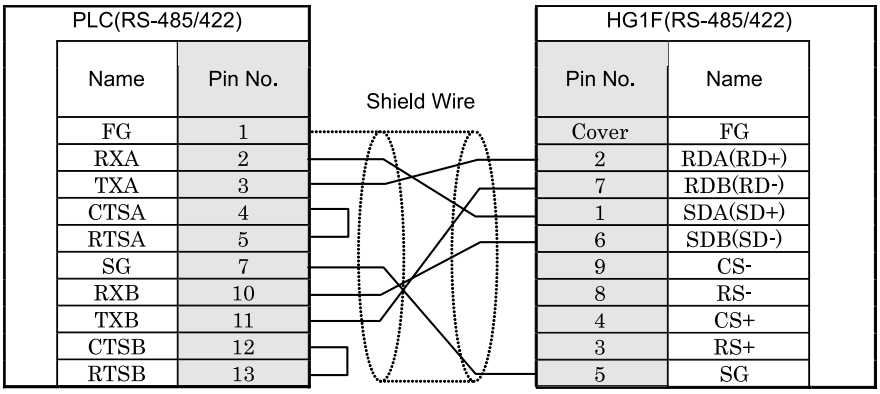


D-sub, 15P connector socket type

Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

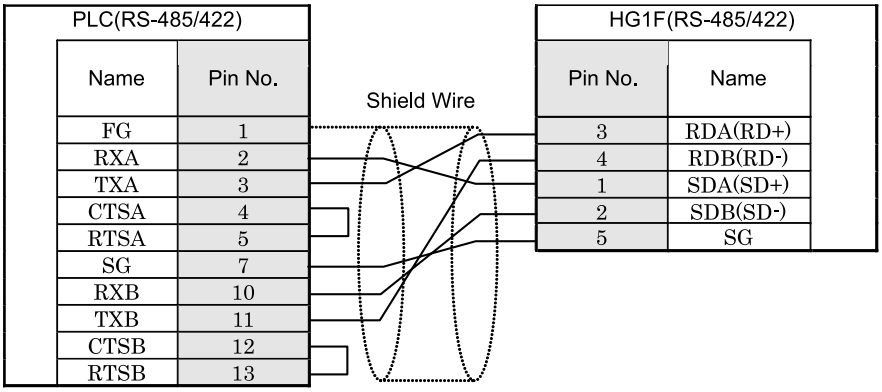
HG1F (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)

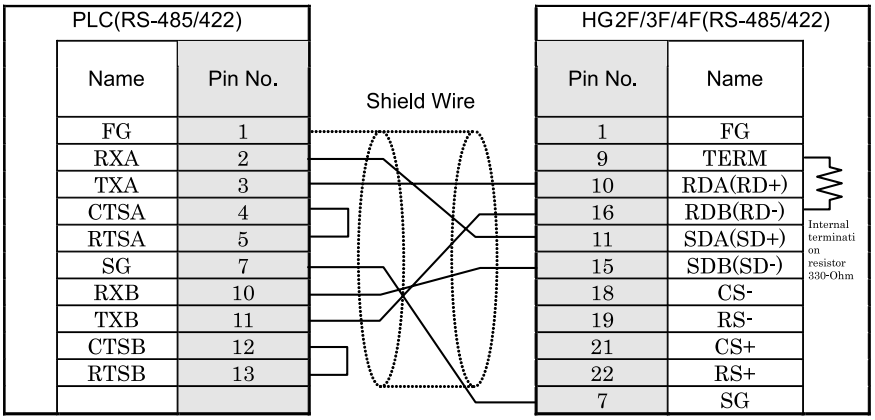


D-sub, 15P connector socket type

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

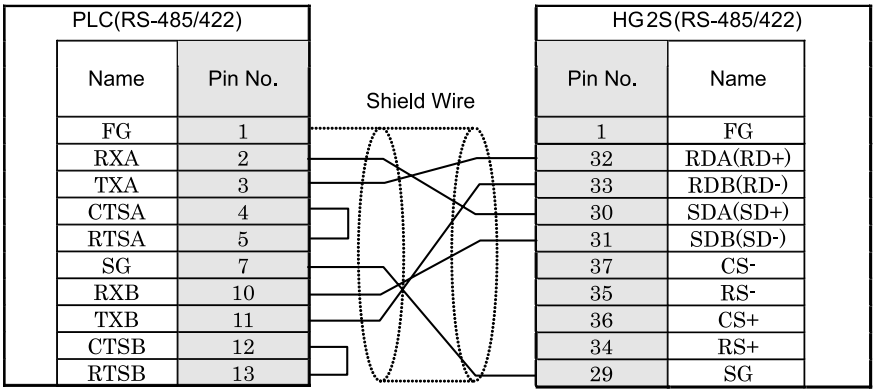
HG2F/3F/4F



D-sub, 15P connector socket type

D-sub, 25P connector socket type

HG2S



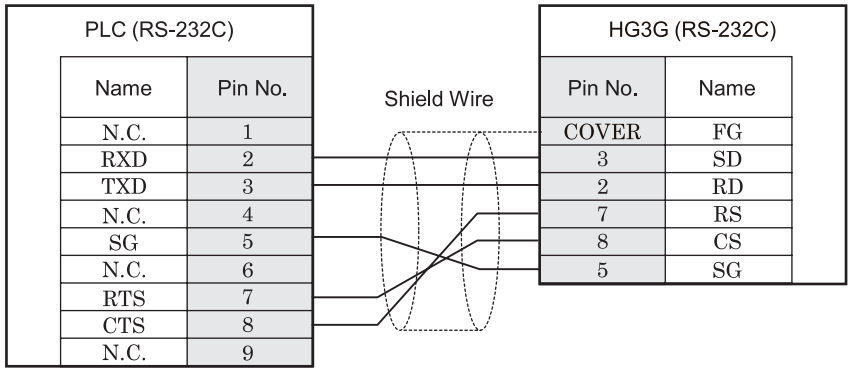
D-sub, 15P connector socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

19.3.2 Connection Diagram 2: RS-232 D-sub 9P - MICRO/I

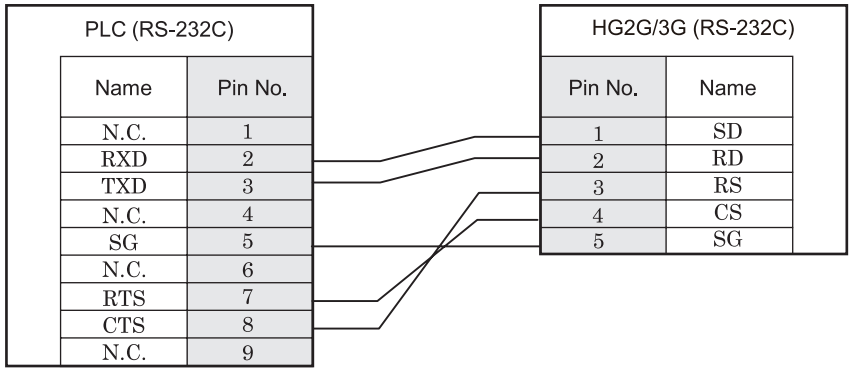
HG3G (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector plug type

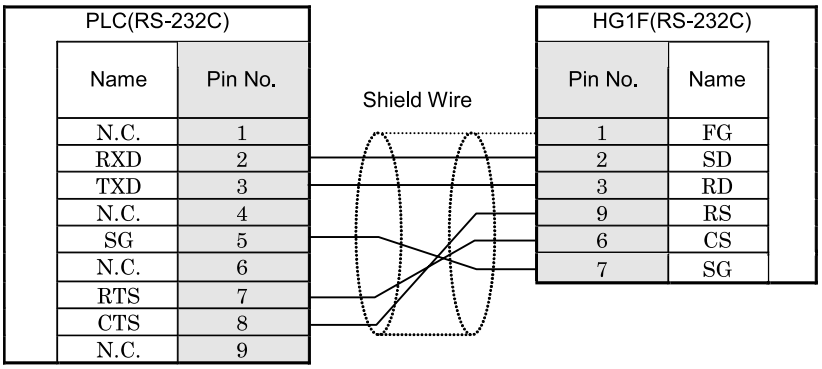
HG2G/3G (Terminal)



D-sub, 9P connector socket type

Terminal

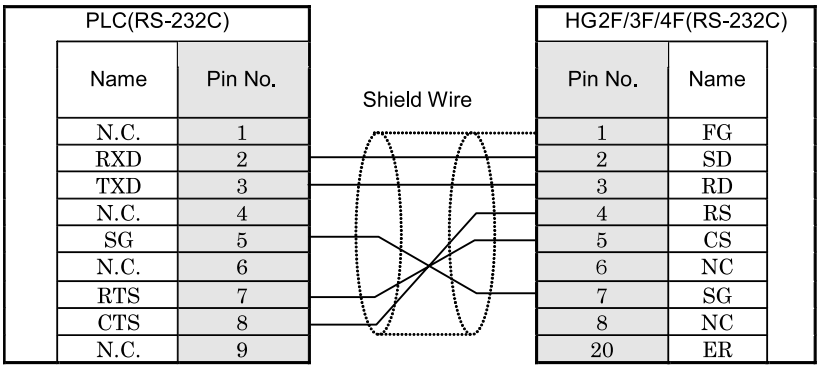
HG1F (Connector)



D-sub, 9P connector socket type

D-sub, 9P connector socket type

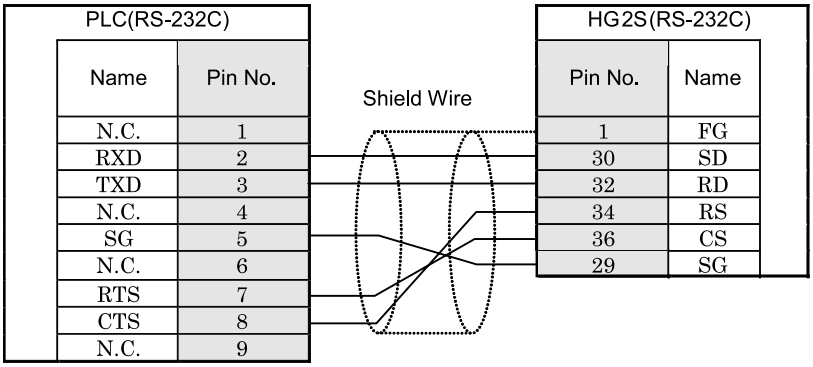
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S

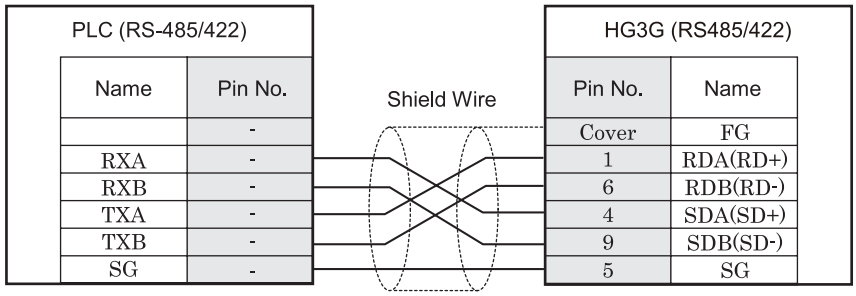


D-sub, 9P connector socket type

D-sub, 37P connector socket type

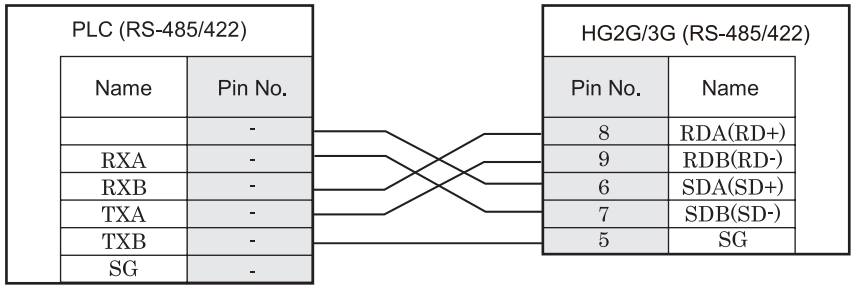
19.3.3 Connection Diagram 3: T1S RS-485 Terminal Block - MICRO/I

HG3G (Connector)



Terminal block — D-sub, 9P connector plug type

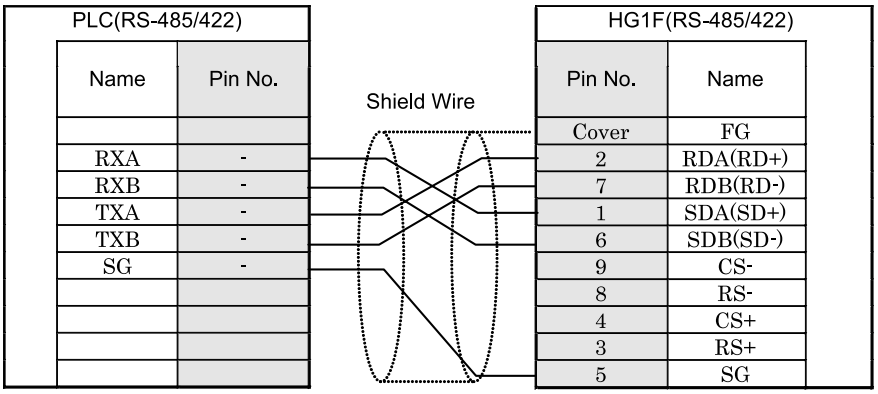
HG2G/3G (Terminal)



Terminal block — Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

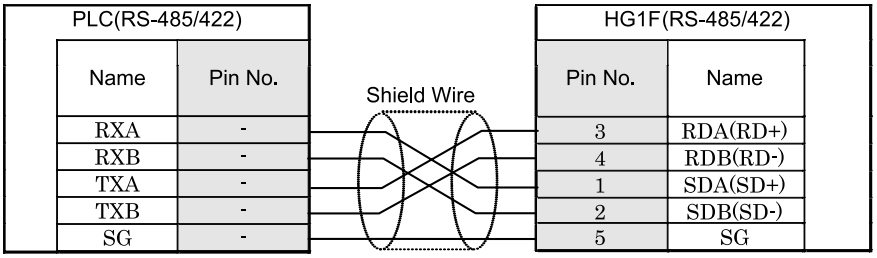
HG1F (Connector)



Terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

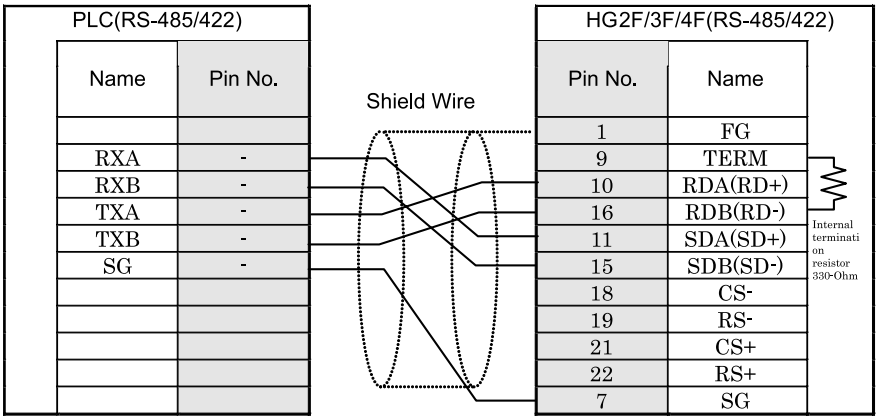


Terminal block

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

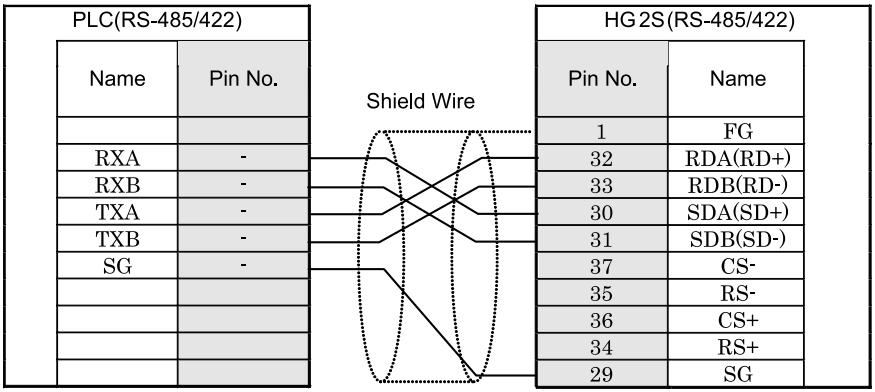
HG2F/3F/4F



Terminal block

D-sub, 25P connector socket type

HG2S



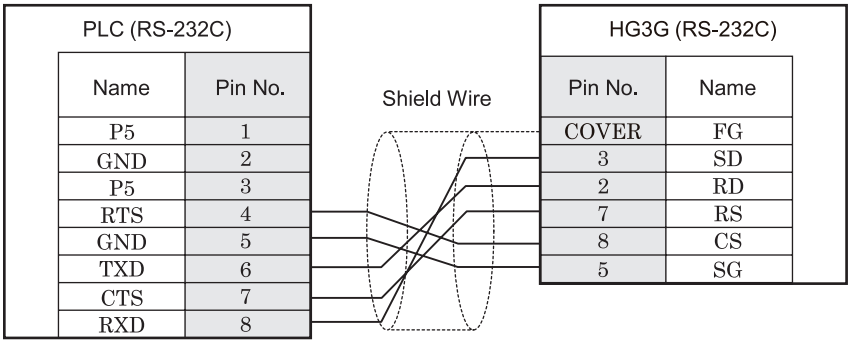
Terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

19.3.4 Connection Diagram 4: T1,T1S RS-232C Din connector 8P - MICRO/I

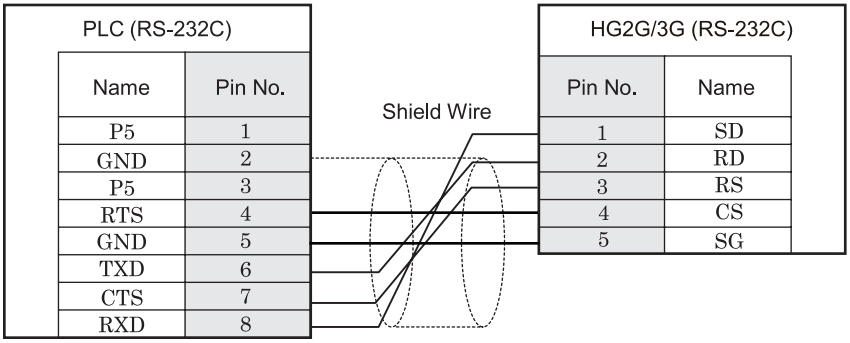
HG3G (Connector)



Din connector 8P socket type

D-sub, 9P connector plug type

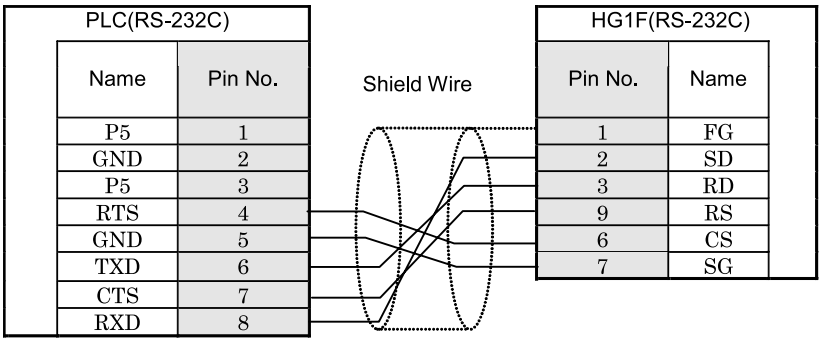
HG2G/3G (Terminal)



Din connector 8P socket type

Terminal

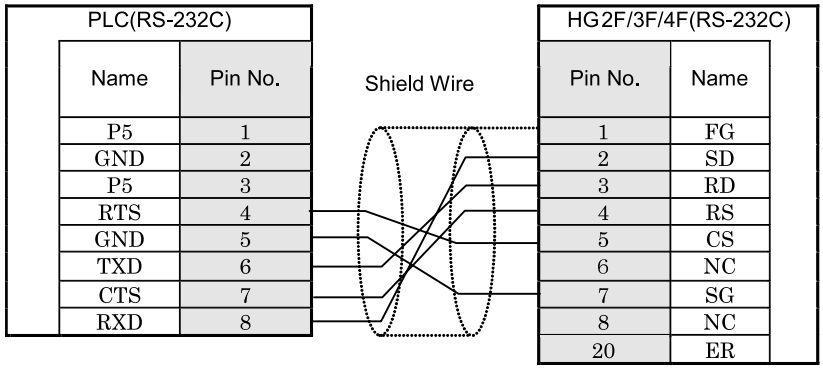
HG1F (Connector)



Din connector 8P socket type

D-sub, 9P connector socket type

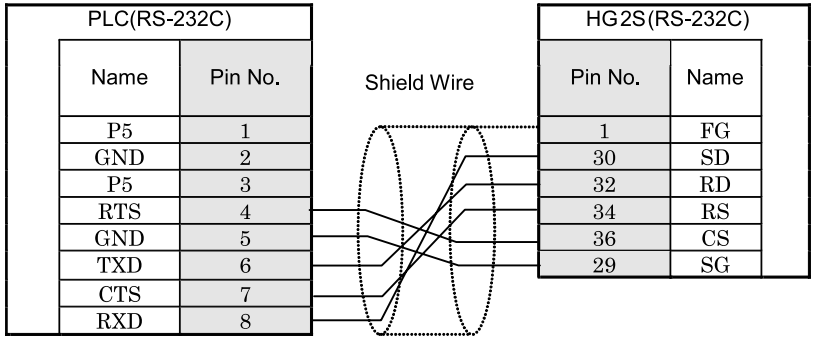
HG2F/3F/4F



Din connector 8P socket type

D-sub, 25P connector socket type

HG2S

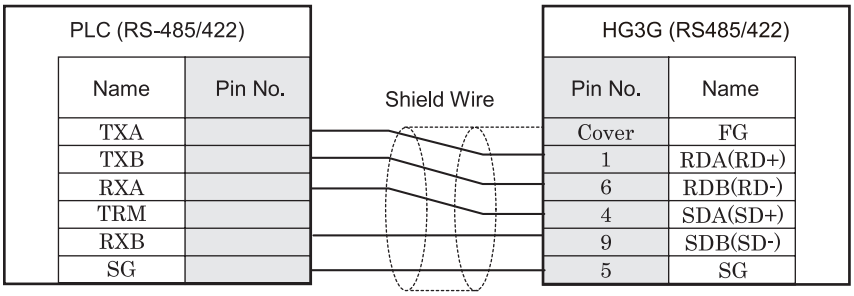


Din connector 8P socket type

D-sub, 37P connector socket type

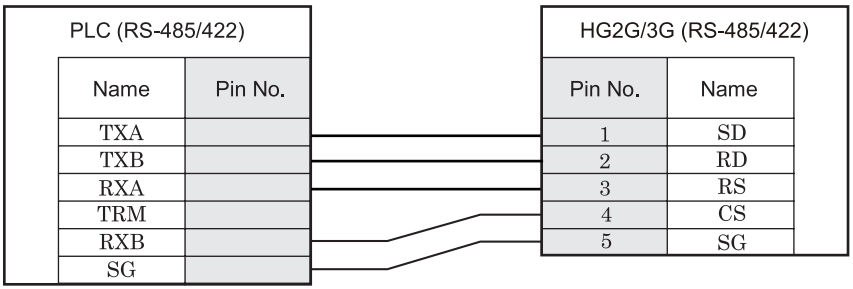
19.3.5 Connection Diagram 5: RS-485 Terminal Block - MICRO/I

HG3G (Connector)



Terminal block D-sub, 9P connector plug type

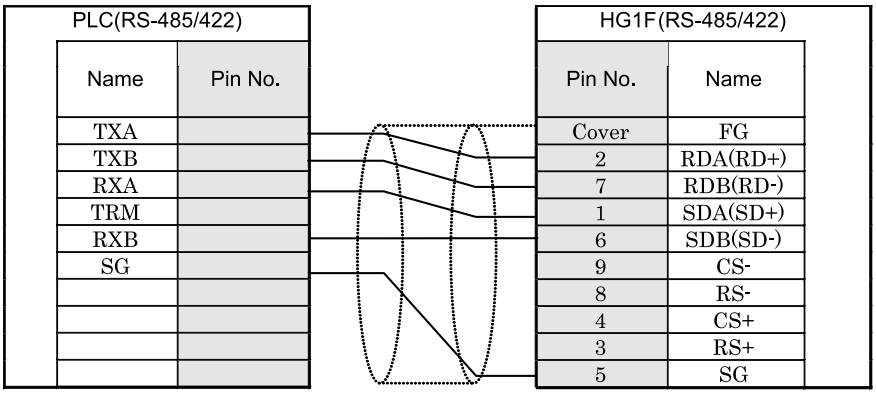
HG2G/3G (Terminal)



Terminal block Terminal

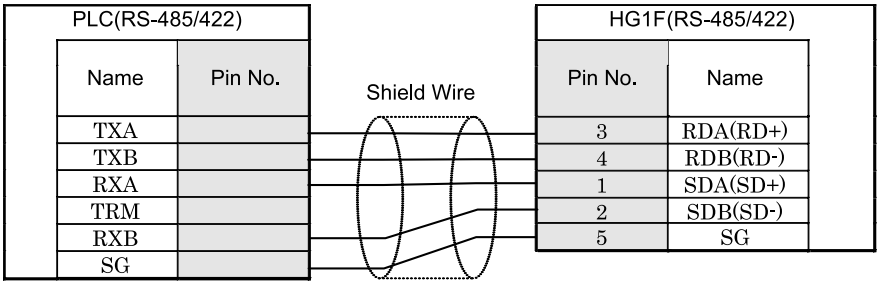
There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG1F (Connector)



Terminal block D-sub, 9P connector socket type

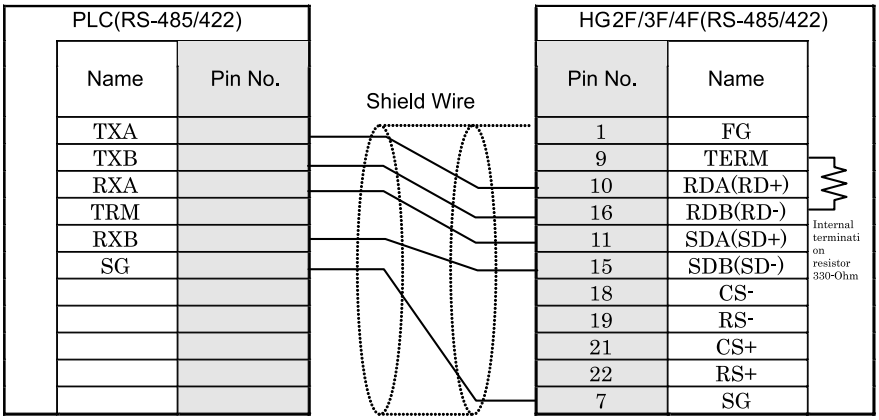
HG1F (Terminal)



Terminal block Terminal

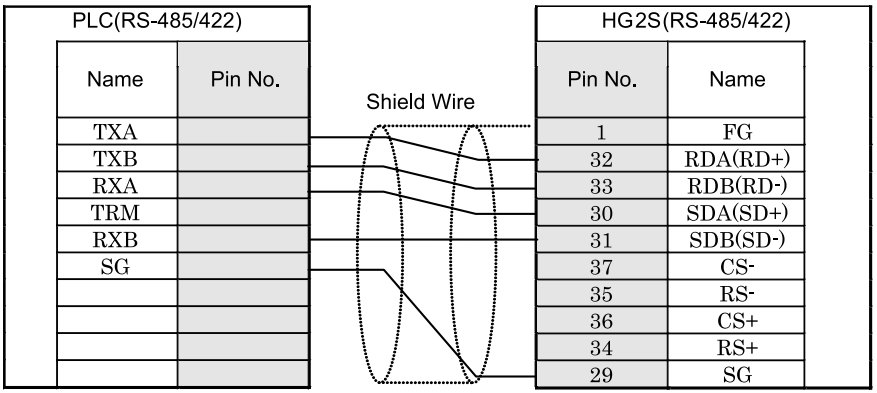
There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG2F/3F/4F



Terminal block D-sub, 25P connector socket type

HG2S

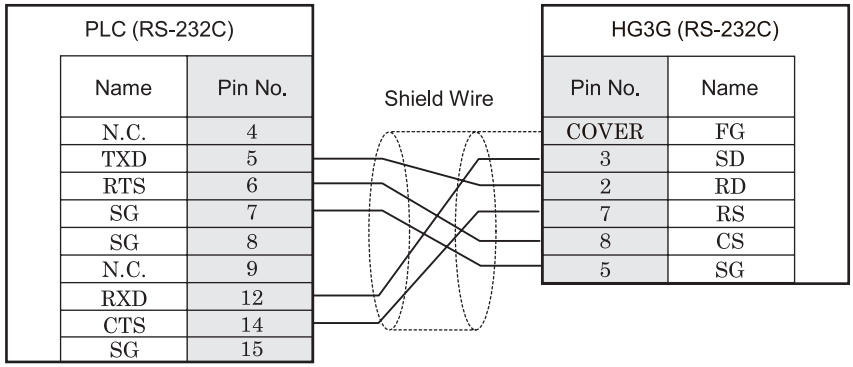


Terminal block D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

19.3.6 Connection Diagram 6: T2N RS-232C D-sub 15Pin connector(RS232C/RS485) - MICRO/I

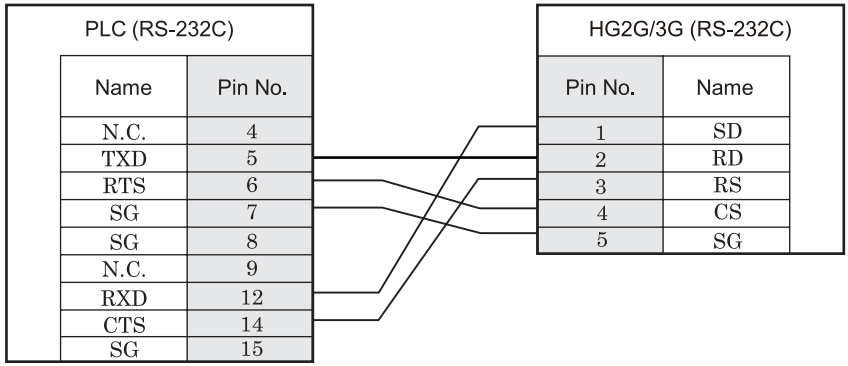
HG3G (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector plug type

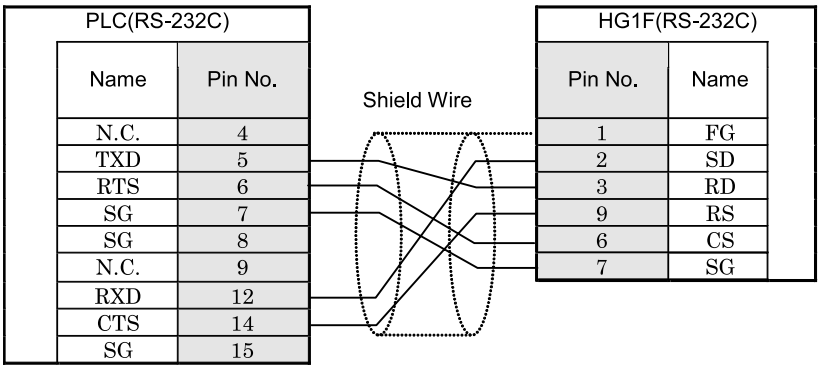
HG2G/3G (Terminal)



D-sub, 15P connector socket type

Terminal

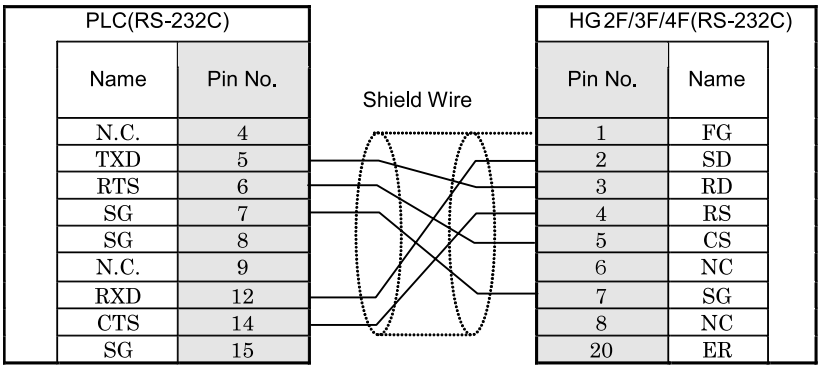
HG1F (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector socket type

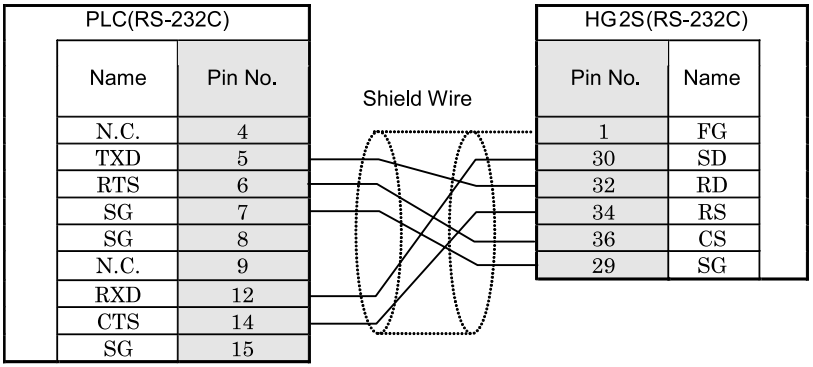
HG2F/3F/4F



D-sub, 15P connector socket type

D-sub, 25P connector socket type

HG2S

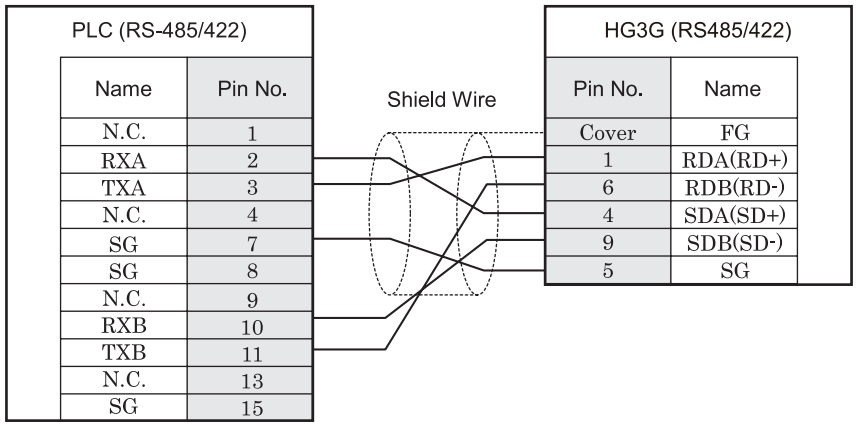


D-sub, 15P connector socket type

D-sub, 37P connector socket type

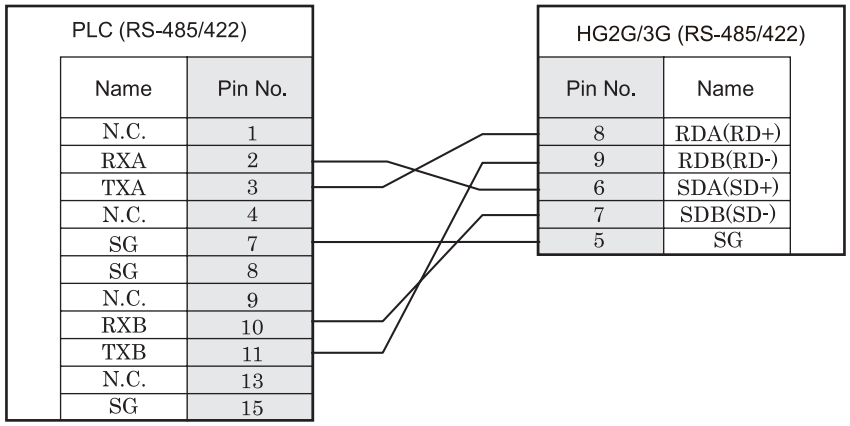
19.3.7 Connection Diagram 7: T2N RS-485 D-sub 15Pin connector(RS232C/RS485) - MICRO/I

HG3G (Connector)



D-sub, 15P connector socket type — D-sub, 9P connector plug type

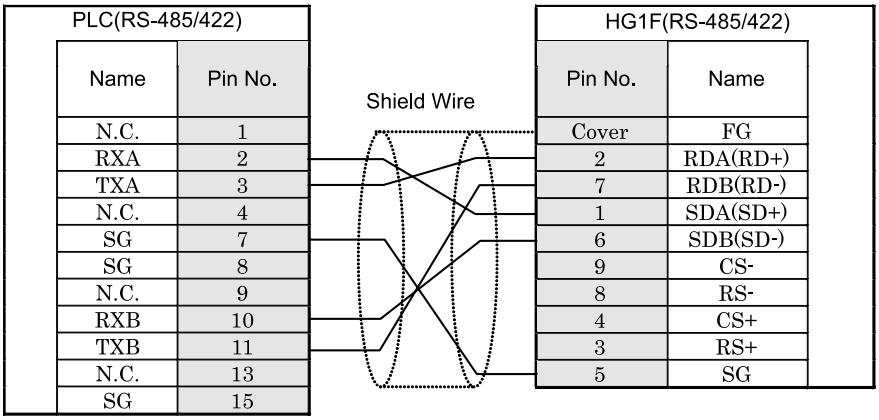
HG2G/3G (Terminal)



D-sub, 15P connector socket type — Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

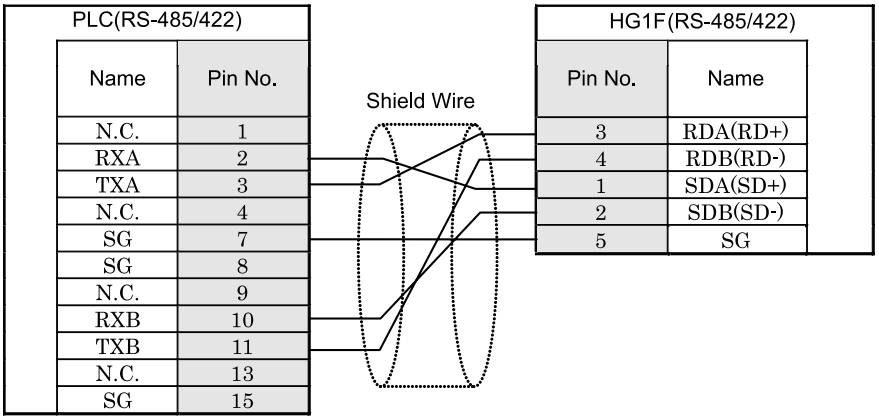
HG1F (Connector)



D-sub, 15P connector socket type

D-sub, 9P connector socket type

HG1F (Terminal)

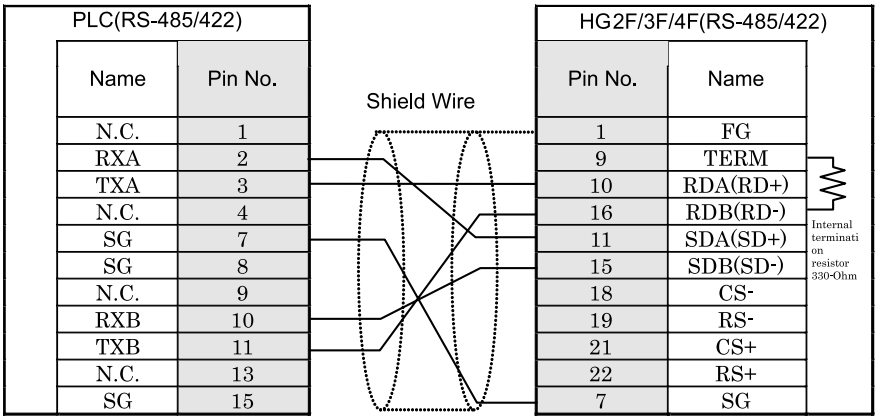


D-sub, 15P connector socket type

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

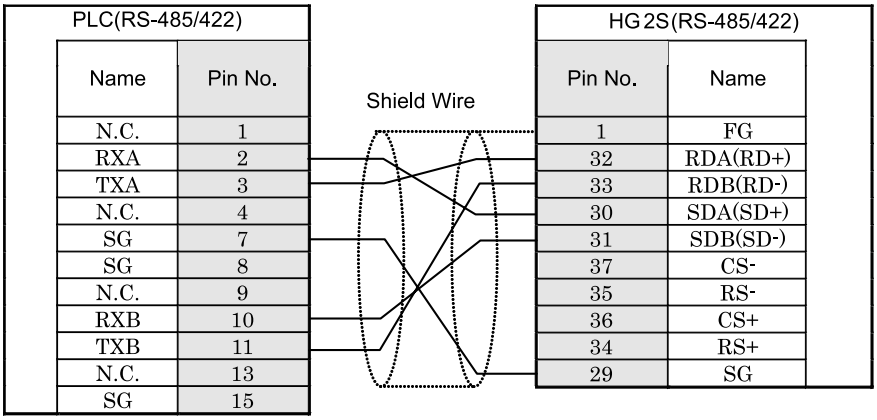
HG2F/3F/4F



D-sub, 15P connector socket type

D-sub, 25P connector socket type

HG2S



D-sub, 15P connector socket type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

19.4 Environment Settings

Refer to the followings to configure the communication port between PLC (PROSEC T Series or V Series) and MICRO/I. Attend to the limitation of the configuration. It depends on the CPU unit and Link unit.

19.4.1 Toshiba PROSEC T Series, V Series

Items	Details	
Interface	RS-232C	RS-485(4wire/2wire)
Slave Number	01- 32 (DEC)	
Baud Rate [bps]	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	
Data Bits [bit]	7,8	
Parity	None/Odd/Even	
Stop Bits [bit]	1, 2	
Flow Control	None/Hardware	
PLC Model	Check:PROSEC Series Uncheck: EX100 Series	

Refer to the PROSC T Series and V Series user's manual for the details of communication setting.

19.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input device	X	X	0 - 8191F	R	*1
Output device	Y	Y	0 - 8191F	R/W	*1
Auxiliary device	R	R	0 - 4095F	R/W	*1
Special device	S	S	0 - 511F	R/W	*1
Timer device	TS	T.	0 - 999	R	DEC
Counter device	CS	C.	0 - 511	R	DEC
Link device	Z	Z	0 - 999F	R/W	*1
Link relay	L	L	0 - 255F	R/W	*1

*1. Set the first digit to HEX and another digit to DEC.

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input register	XW	XW	0 - 8191	R	DEC
Output register	YW	YW	0 - 8191	R/W	DEC
Auxiliary register	RW	RW	0 - 4095	R/W	DEC
Special register	SW	SW	0 - 511	R/W	DEC
Timer register	T	T	0 - 999	R	DEC
Counter register	C	C	0 - 511	R	DEC
Data register	D	D	0 - 8191	R/W	DEC
Link register	W	W	0 - 2047	R/W	DEC
Link relay register	LW	LW	0 - 255	R/W	DEC
File register	F	F	0 - 32767	R/W	DEC

19.6 The mapping table of devices between PROSEC T Series and V Series

When you use V Series PLCs, refer to the following table and replace a device name from PROSEC T Series to V Series.

V Series (S controller)			T Series (Computer Link)	
Variable name		**Symbol**	**Device Name**	**Symbol**
System register	Device	S	Special device	S
	Register	SW	Special register	SW
Data register	Device	D	Auxiliary device	R
	Register	DW	Auxiliary register Data register	RW D
I/O variable	Device	IX	Input device	X
		QX	Output device	Y
	Register	IW	Input register	XW
		QW	Output register	YW
User register	Register	Variable name	File register	F

- V Series (S controller) has some variables to keep compatibility with PROSEC T Series. Computer Link protocol of V Series can communicate those variables with the symbol of T Series.
- Refer to the PROSC T Series and V Series user's manual for the details of communication setting.

20 LS Industrial Systems

20.1 Connection Table

20.1.1 Compatible PLCs

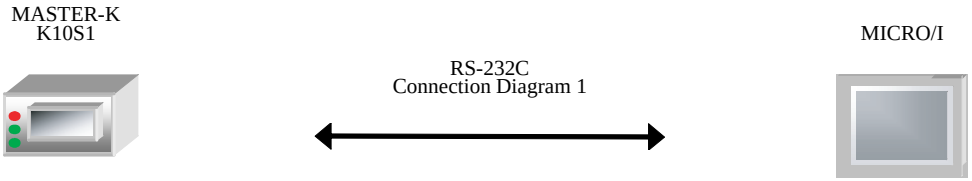
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
MASTER-K	K10S1	Not required (Connects to CPU unit)	RS-232C Connection Diagram 1 (refer to P466)	None	MASTER-K
	K80S, K120S, K200S,	Not required (Connects to CPU unit)	RS-232C Connection Diagram 2 (refer to P468)		
	K80S	G7L-CUEB	RS-232C Connection Diagram 3 (refer to P470)		
		G7L-CUEC	RS-232C Connection Diagram 4 (refer to P473)		
	K200S	G6L-CUEB	RS-232C Connection Diagram 3 (refer to P470)		
		G6L-CUEC	RS-232C Connection Diagram 4 (refer to P473)		
	K300S*1	G4L-CUEA*1	RS-232C Connection Diagram 3 (refer to P470)		
			RS-232C Connection Diagram 4 (refer to P473)		

*1. We tested with the PLC of these parts.

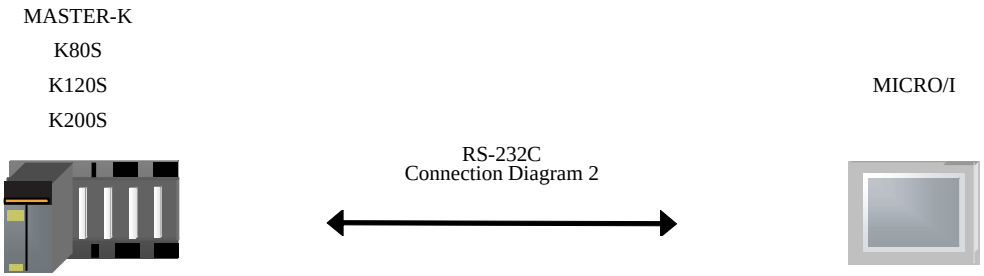
20.2 System Configuration

This is the system configuration for connection of LS Industrial Systems PLCs to the MICRO/I.

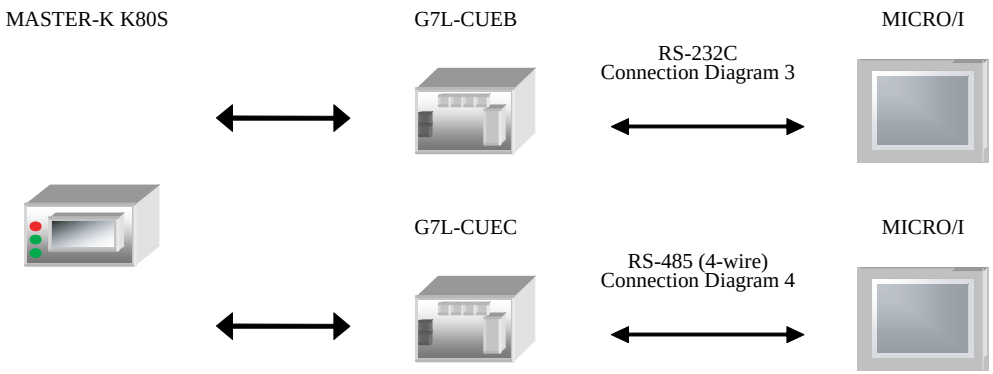
20.2.1 MASTER-K K10S1 (Loader Port)



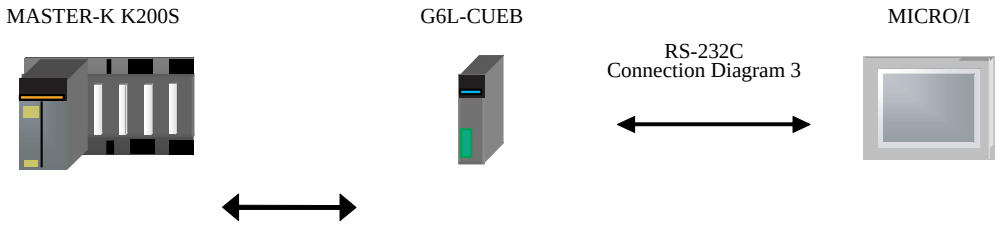
20.2.2 MASTER-K K80S, K120S, K200S (Loader Port)



20.2.3 MASTER-K K80S (Interface Module)



20.2.4 MASTER-K K200S (Interface Module)



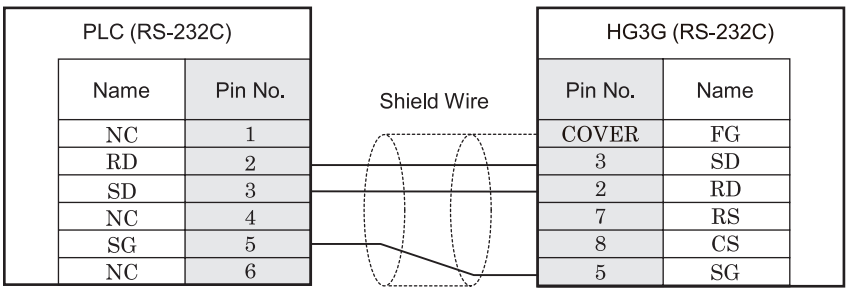
20.2.5 MASTER-K K300S (Interface Module)

20.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

20.3.1 Connection Diagram 1: MASTER-K K10S1 (Loader Port) - MICRO/I

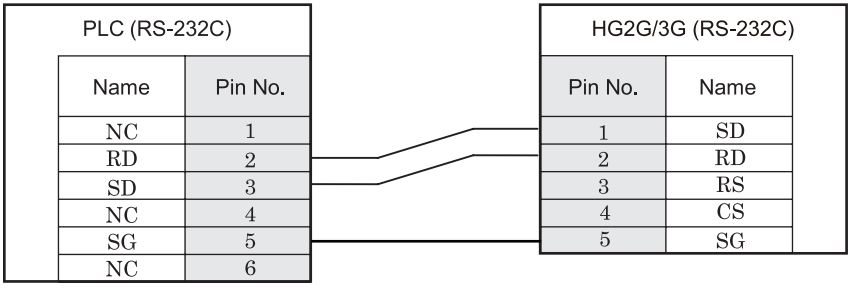
HG3G (Connector)



Mini Din 6Pin

D-sub, 9P connector plug type

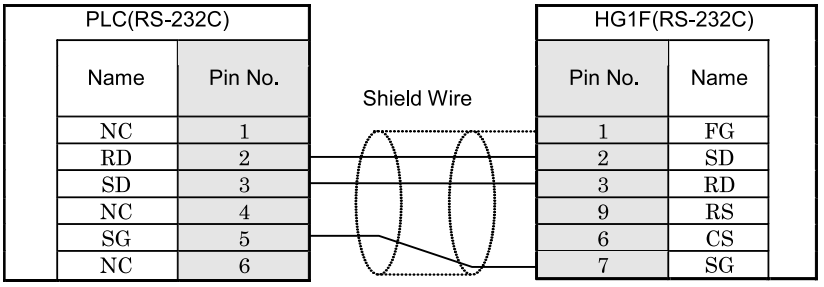
HG2G/3G (Terminal)



Mini Din 6Pin

Terminal

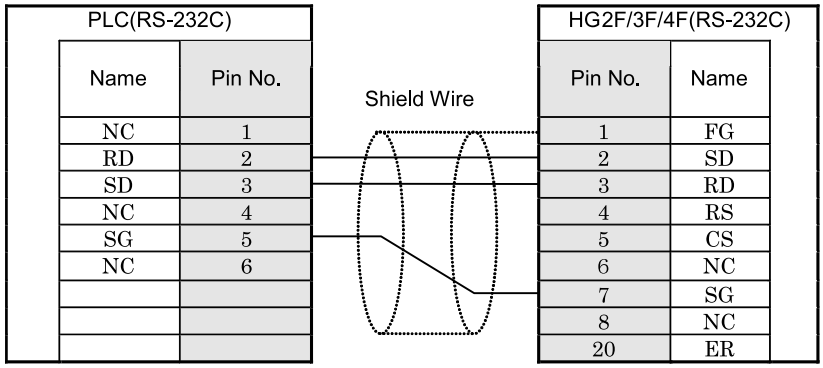
HG1F (Connector)



Mini Din 6Pin

D-sub, 9P connector socket type

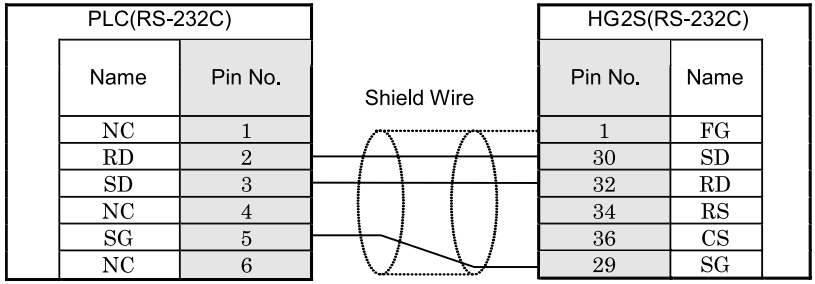
HG2F/3F/4F



Mini Din 6Pin

D-sub, 25P connector socket type

HG2S

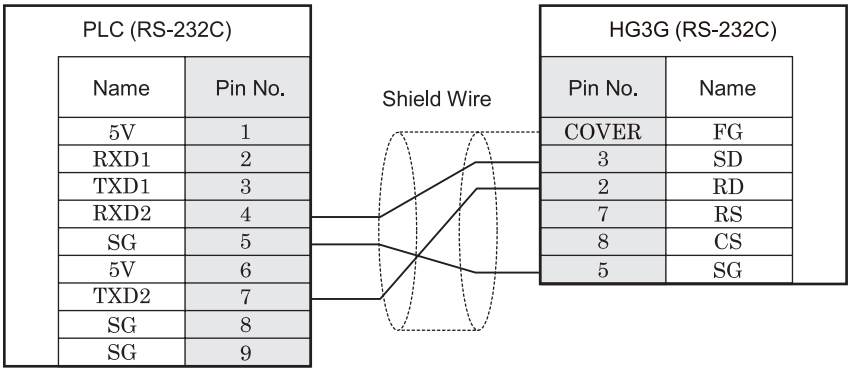


Mini Din 6Pin

D-sub, 37P connector socket type

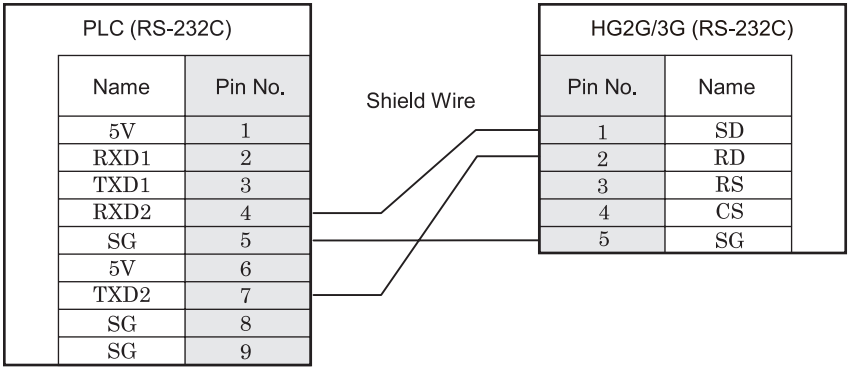
20.3.2 Connection Diagram 2: MASTER-K K80S, 120S, 200S (Loader Port) - MICRO/I

HG3G (Connector)



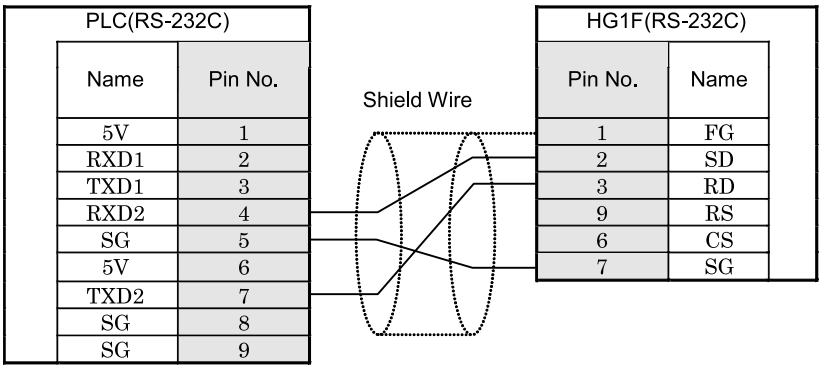
D-sub, 25P connector plug type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 25P connector plug type — Terminal

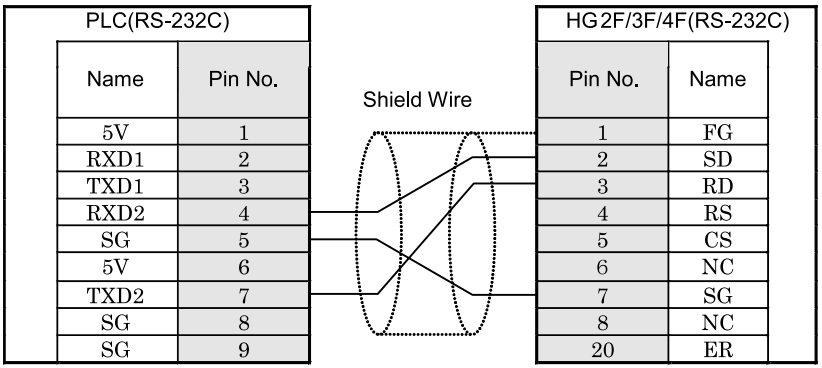
HG1F (Connector)



D-sub, 25P connector plug type

D-sub, 9P connector socket type

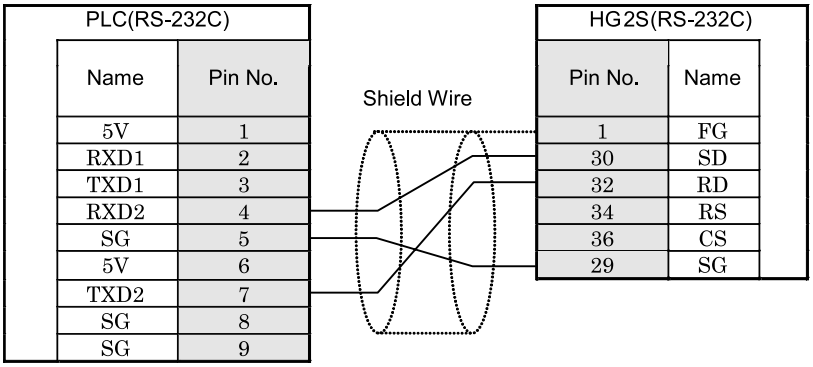
HG2F/3F/4F



D-sub, 25P connector plug type

D-sub, 25P connector socket type

HG2S

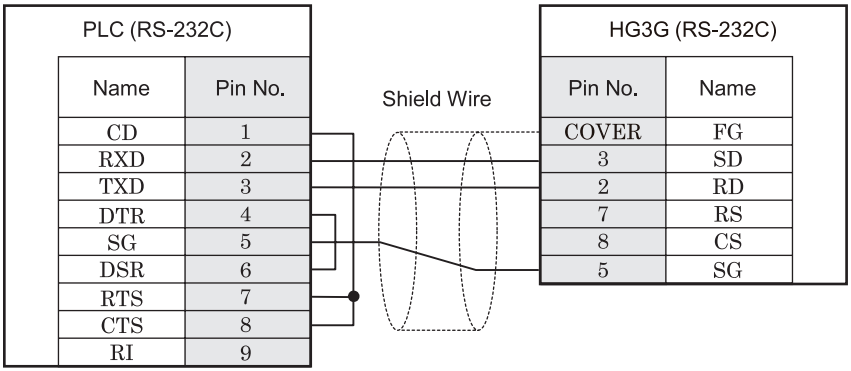


D-sub, 25P connector plug type

D-sub, 37P connector socket type

20.3.3 Connection Diagram 3: MASTER-K (Interface Module RS232C Port) - MICRO/I

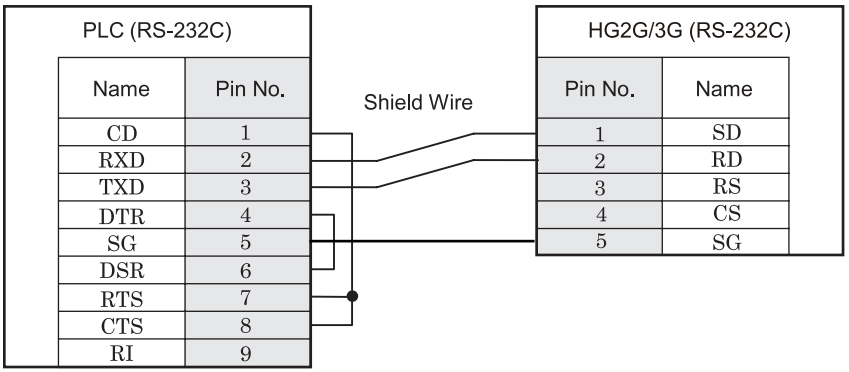
HG3G (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector plug type

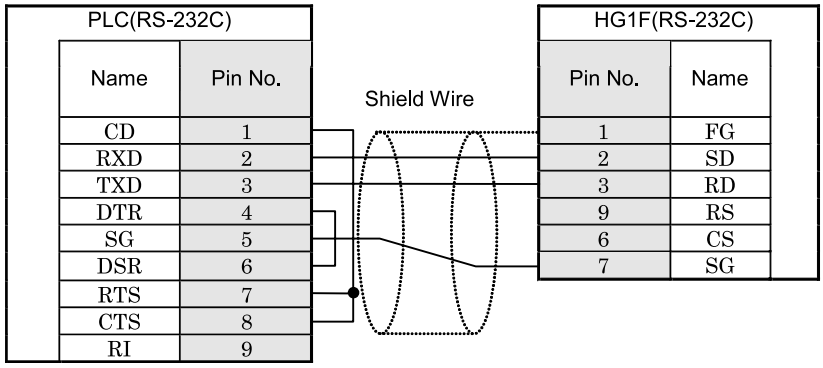
HG2G/3G (Terminal)



D-sub, 25P connector socket type

Terminal

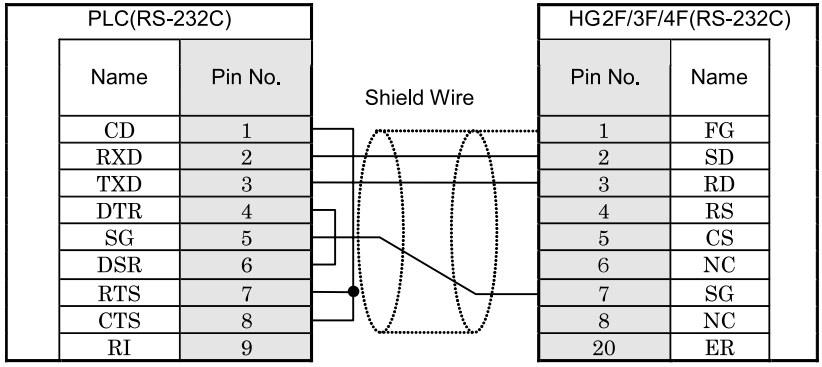
HG1F (Connector)



D-sub, 25P connector socket type

D-sub, 9P connector socket type

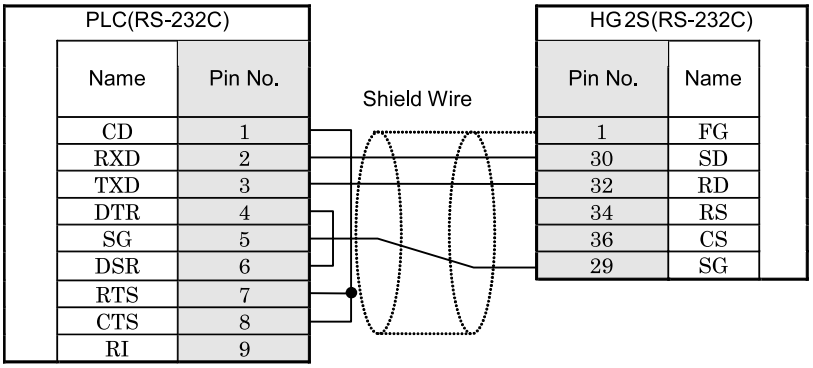
HG2F/3F/4F



D-sub, 25P connector socket type

D-sub, 25P connector socket type

HG2S

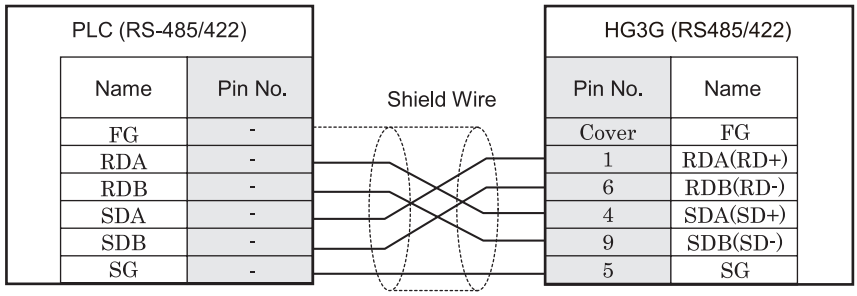


D-sub, 25P connector socket type

D-sub, 37P connector socket type

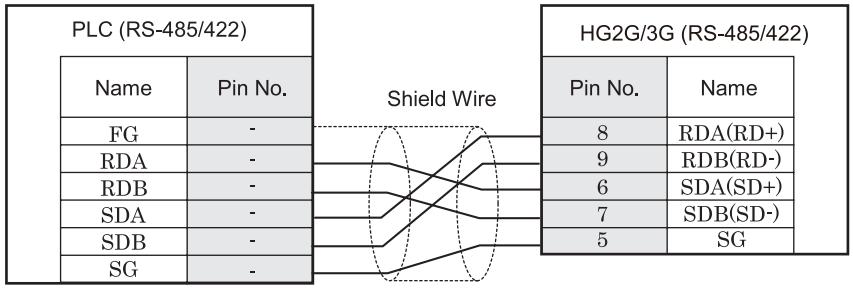
20.3.4 Connection Diagram 4: MASTER-K (Interface Module RS-485 Port) - MICRO/I

HG3G (Connector)



Terminal Block D-sub, 9P connector plug type

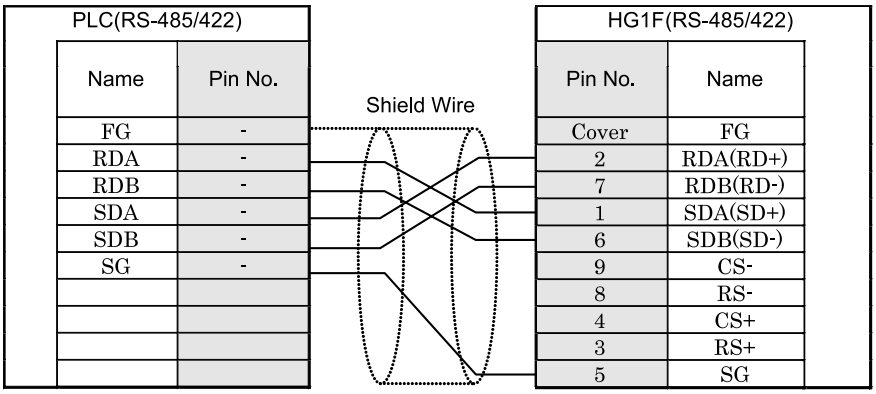
HG2G/3G (Terminal)



Terminal Block Terminal

There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

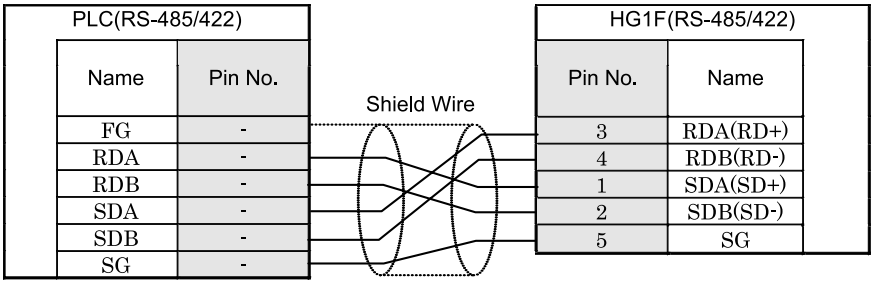
HG1F (Connector)



Terminal Block

D-sub, 9P connector socket type

HG1F (Terminal)

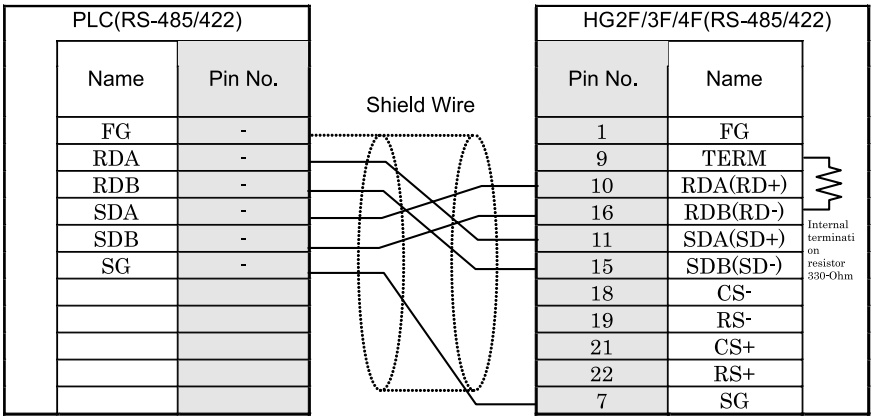


Terminal Block

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

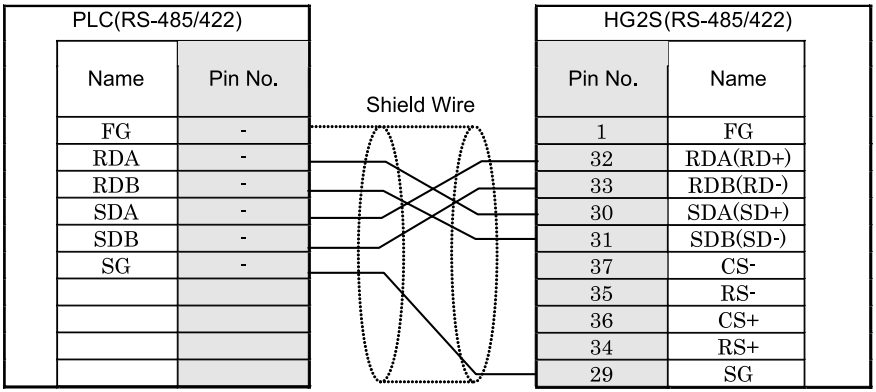
HG2F/3F/4F



Terminal Block

D-sub, 25P connector socket type

HG2S



Terminal Block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

20.4 Environment Settings

Refer to the followings to configure the communication port between PLC (PROSEC T Series or V Series) and MICRO/I. Attend to the limitation of the configuration. It depends on the CPU unit and Link unit.

20.4.1 LG Industrial Systems MASTER-K K10S1, K80S, K120S, K200S (Loader Port)

Items	Details
Interface	RS-232C
Baud Rate [bps]	38400
Data Bits [bit]	8
Parity	None
Stop Bits [bit]	1
Flow Control	None

20.4.2 LG Industrial Systems MASTER-K K80S, K200S, K300S (Interface Module)

Items	Details	
Interface	RS-232C	RS-485(4wire/2wire)
Baud Rate [bps]	1200, 2400, 4800, 9600, 19200, 38400	
Data Bits [bit]	7,8	
Parity	None/Odd/Even	
Stop Bits [bit]	1, 2	
Flow Control	None/Hardware	
Station No.	00 - 1F(HEX)	

Refer to the MASTER-K Series user's manual for details of communication settings.

20.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
I/O Relay (bit)	P	P	0 - 31F	R/W	HEX
Auxiliary Relay (bit)	M	M	0 - 191F	R/W	HEX
Keep Relay (bit)	K	K	0 - 31F	R/W	HEX
Link Relay (bit)	L	L	0 - 63F	R/W	HEX
Special Relay (bit)	F	F	0 - 63F	R	HEX
Timer (Contact)	TS	T	0 - 255	R/W	DEC
Counter (Contact)	CS	C	0 - 255	R/W	DEC

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
I/O Relay (word)	WP	P	0 - 31	R/W	DEC
Auxiliary Relay (word)	WM	M	0 - 191	R/W	DEC
Keep Relay (word)	WK	K	0 - 31	R/W	DEC
Link Relay (word)	WL	L	0 - 63	R/W	DEC
Special Relay (word)	WF	F	0 - 63	R	DEC
Timer (Current Value)	T	T	0 - 255	R/W	DEC
Counter (Current Value)	C	C	0 - 255	R/W	DEC
Data Register	D	D	0 - 4999	R/W	DEC

21 VIGOR

21.1 Connection Table

21.1.1 Compatible PLCs

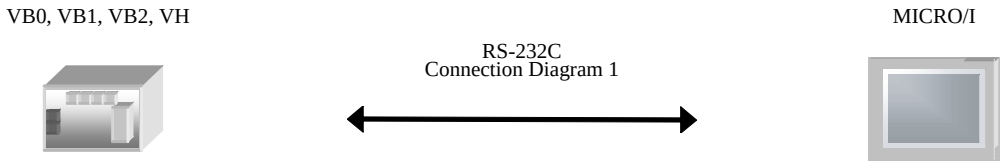
Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
			Interface	Flow Control	Host I/F Driver
VB	V0, VB1*1, VB2	Not required (Connects to CPU unit)	RS-232C Connection Diagram 1 (refer to P481)	None	VB/VH
		VB-485A	RS-485 Connection Diagram 2 (refer to P483)		
		VB-CADP	RS-232C Connection Diagram 3 (refer to P486)		
			RS-485 Connection Diagram 4 (refer to P488)		
		VB-232	RS-232C Connection Diagram 5 (refer to P486)		
		VB-485	RS-485 Connection Diagram 6 (refer to P488)		
VH	VH	Not required (Connects to CPU unit)	RS-232C Connection Diagram 1 (refer to P481)		
		VB-485A	RS-485 Connection Diagram 2 (refer to P483)		
		VB-CADP	RS-232C Connection Diagram 3 (refer to P486)		
			RS-485 Connection Diagram 4 (refer to P488)		
		VB-232	RS-232C Connection Diagram 5 (refer to P486)		
		VB-485	RS-485 Connection Diagram 6 (refer to P488)		

*1. We tested with the PLC of these parts.

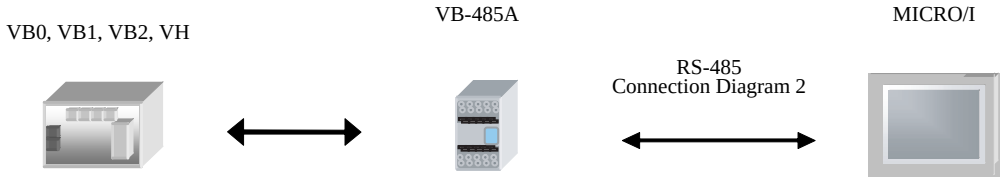
21.2 System Configuration

This is the system configuration for connection of VIGOR PLCs to the MICRO/I.

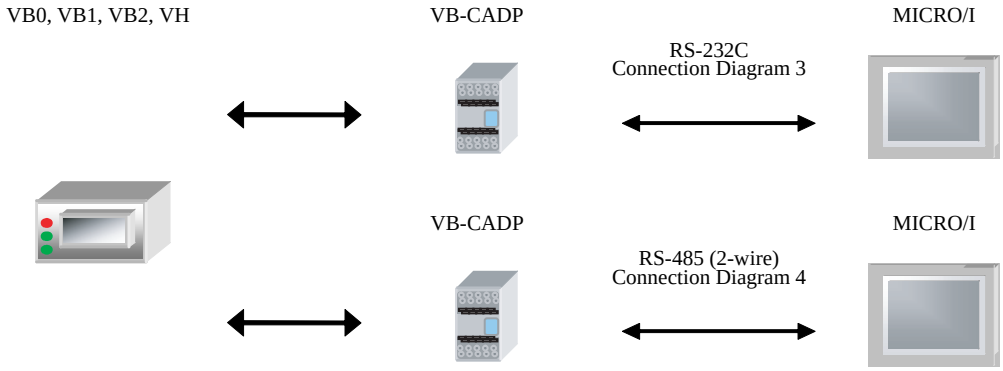
21.2.1 VB0, VB1, VB2, VH (Programming Tool Communication Port)



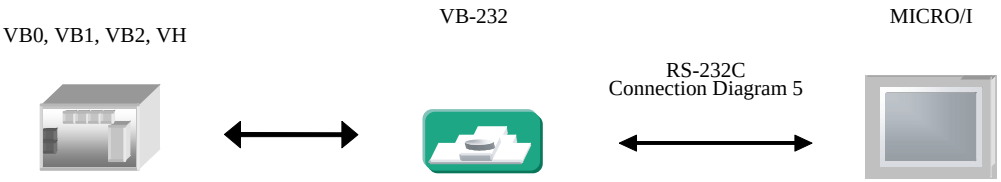
21.2.2 VB0, VB1, VB2, VH (VB-485A)



21.2.3 VB0, VB1, VB2, VH (VB-CADP)



21.2.4 VB0, VB1, VB2, VH (VB-232)



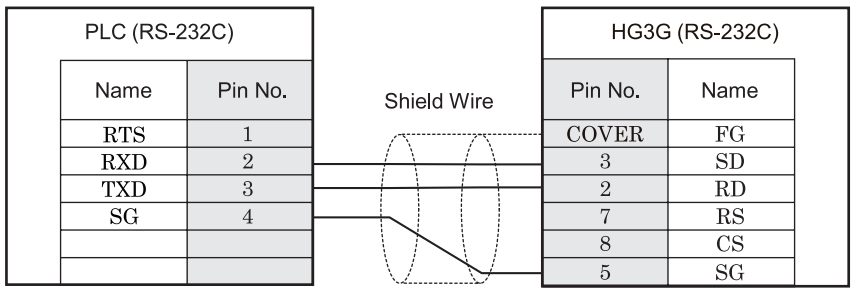
21.2.5 VB0, VB1, VB2, VH (VB-485)

21.3 Connection Diagram

The connector types given in the Connection Diagrams are for the unit and not the cable. For details regarding wiring, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

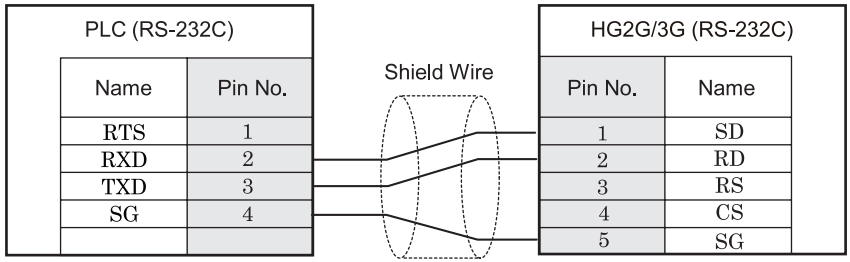
21.3.1 Connection Diagram 1: VB0, VB1, VB2, VH (Programming Tool Communication Port)

HG3G (Connector)



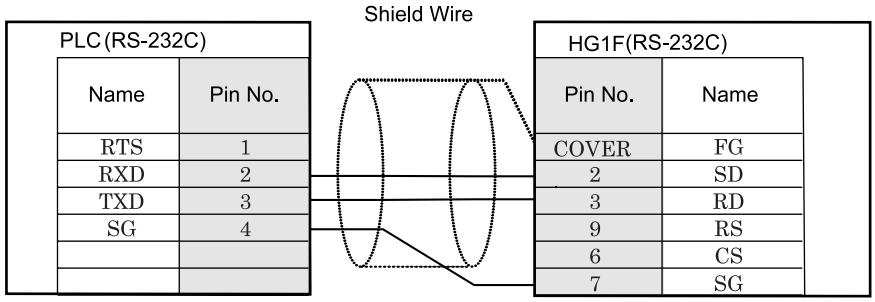
A type connector — D-sub, 9P connector plug type

HG2G/3G (Terminal)



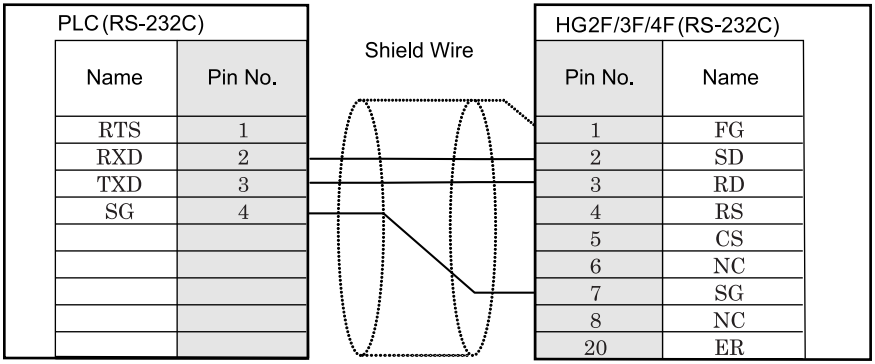
A type connector — Terminal

HG1F (Connector)



A type connector — D-sub, 9P connector socket type

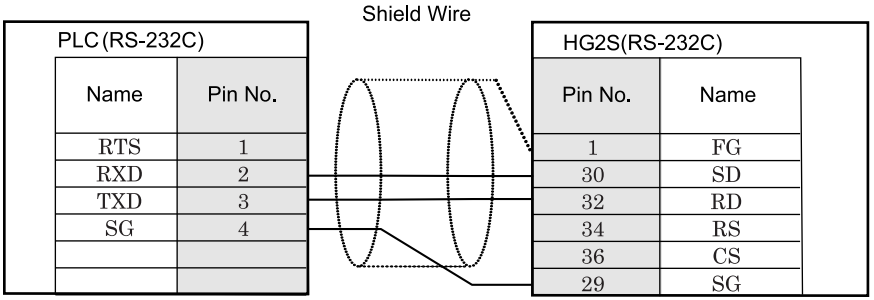
HG2F/3F/4F



A type connector

D-sub, 25P connector socket type

HG2S

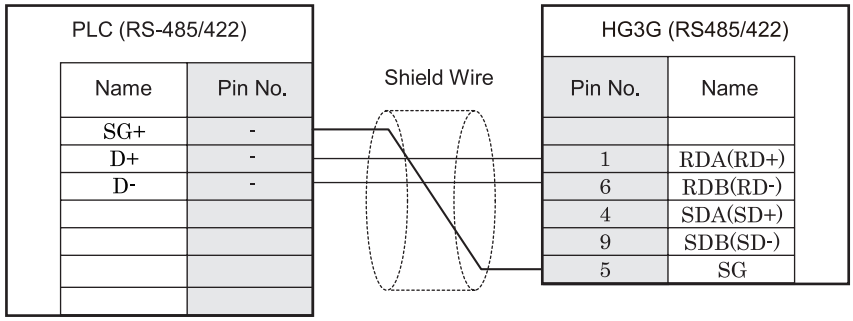


A type connector

D-sub, 37P connector socket type

21.3.2 Connection Diagram 2: VB0, VB1, VB2, VH (VB-485A)

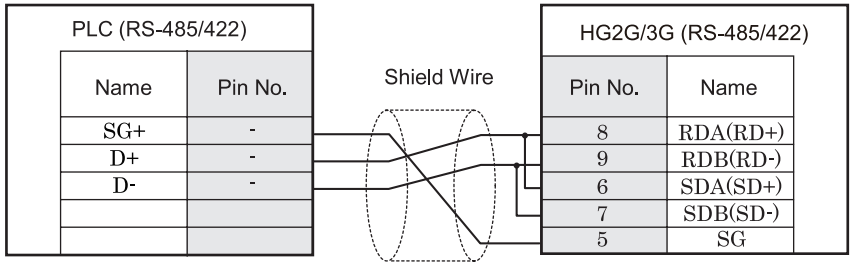
HG3G (Connector)



Screw down terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)

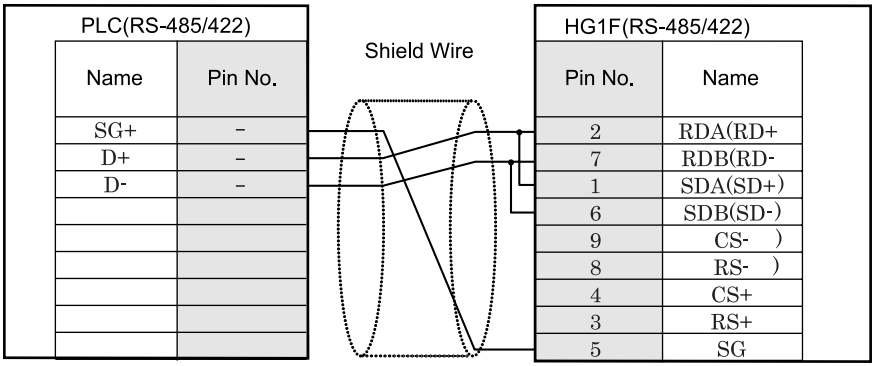


Screw down terminal block

Terminal

HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don't need to connect SDA or SDB.
If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

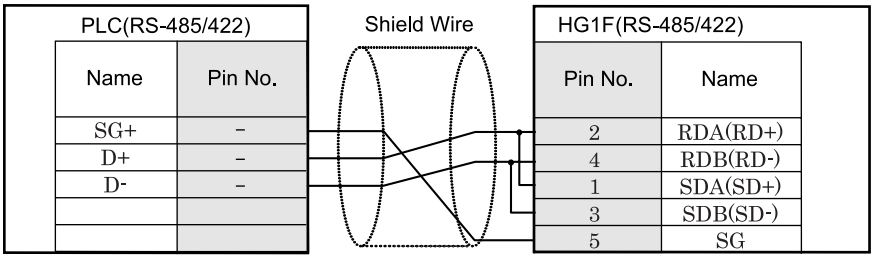
HG1F (Connector)



Screw down terminal block

D-sub, 9P connector socket type

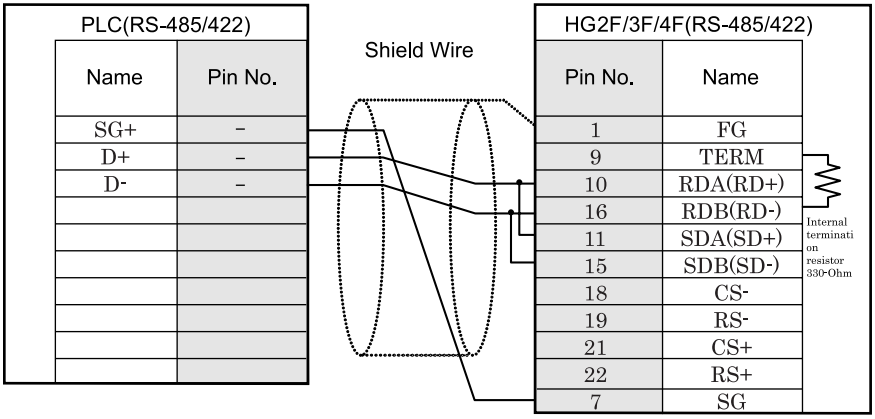
HG1F (Terminal)



Screw down terminal block

Terminal

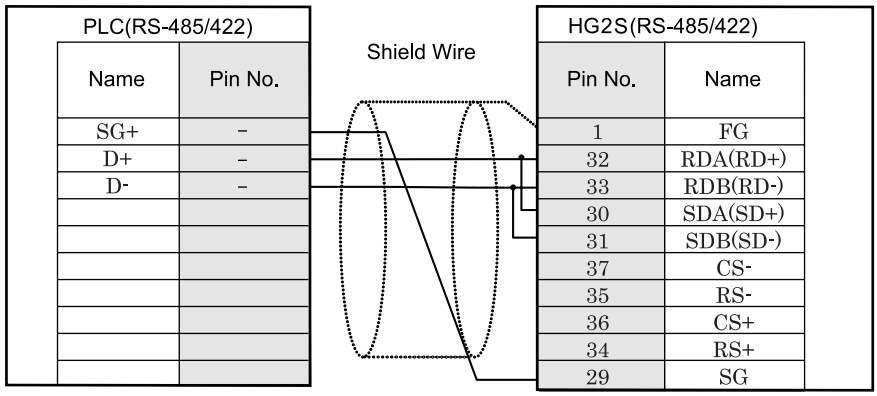
HG2F/3F/4F



Screw down terminal block

D-sub, 25P connector socket type

HG2S

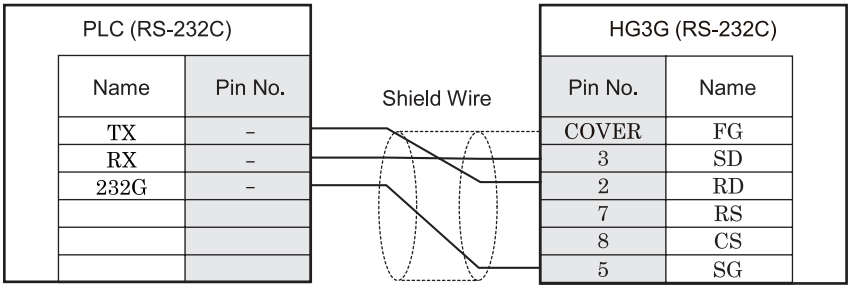


Screw down terminal block

D-sub, 37P connector socket type

21.3.3 Connection Diagram 3: VB0, VB1, VB2, VH (VB-CADP) - RS-232C

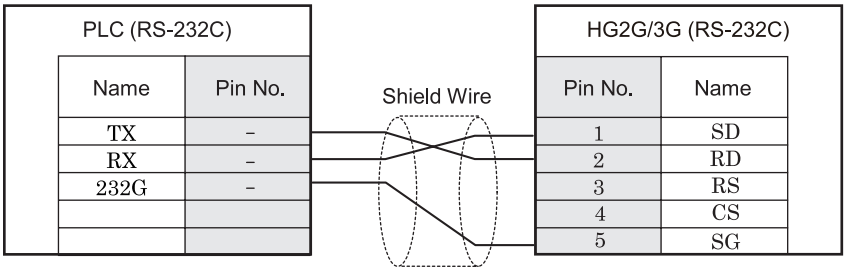
HG3G (Connector)



Screw down terminal block

D-sub, 9P connector plug type

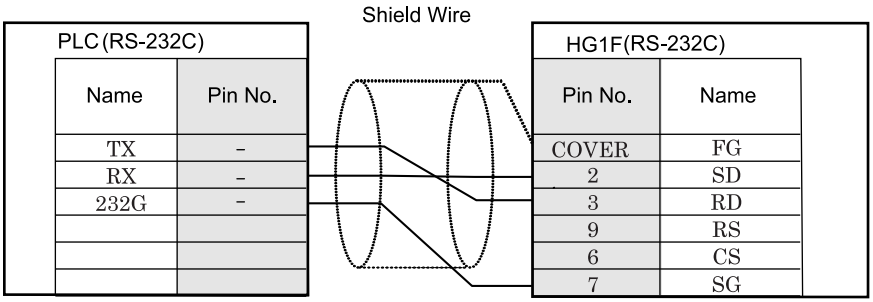
HG2G/3G (Terminal)



Screw down terminal block

Terminal

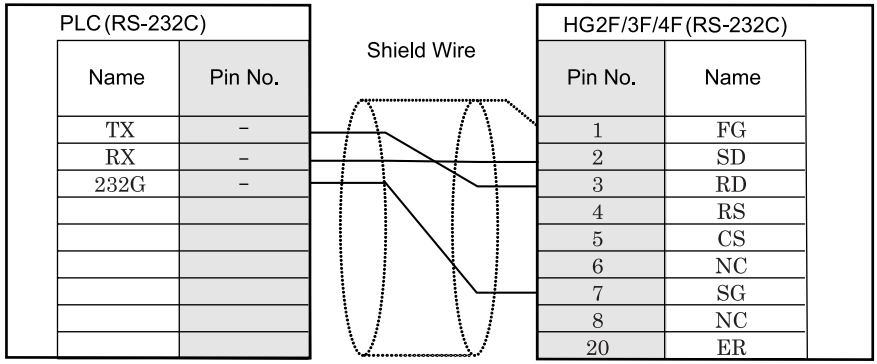
HG1F (Connector)



Screw down terminal block

D-sub, 9P connector socket type

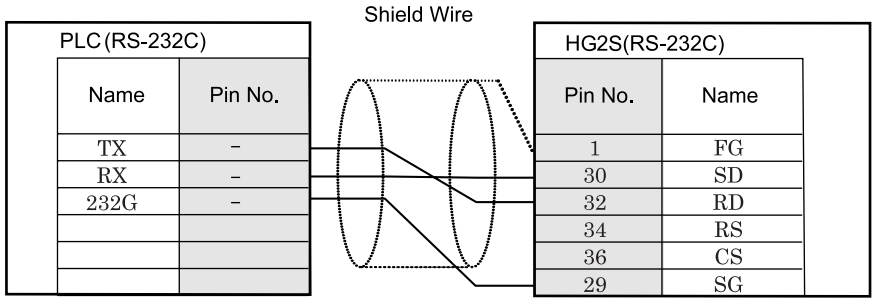
HG2F/3F/4F



Screw down terminal block

D-sub, 25P connector socket type

HG2S

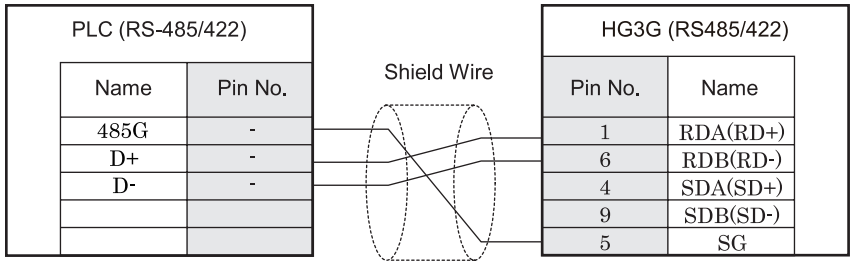


Screw down terminal block

D-sub, 37P connector socket type

21.3.4 Connection Diagram 4: VB0, VB1, VB2, VH (VB-CADP) - RS-485

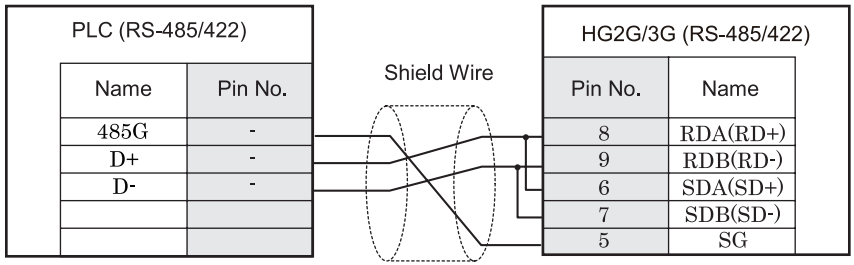
HG3G (Connector)



Screw down terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)



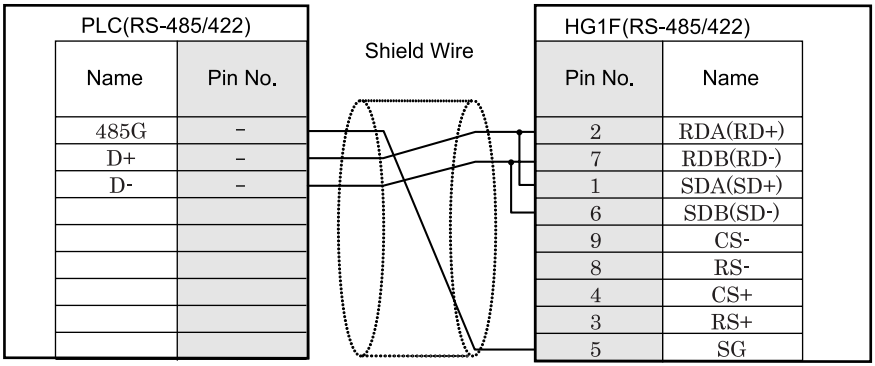
Screw down terminal block

Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18

- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB. If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

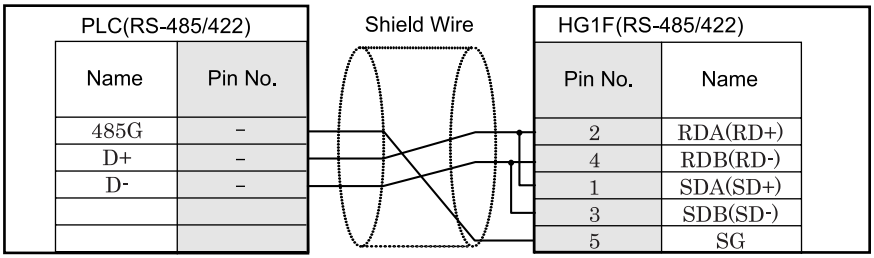
HG1F (Connector)



Screw down terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

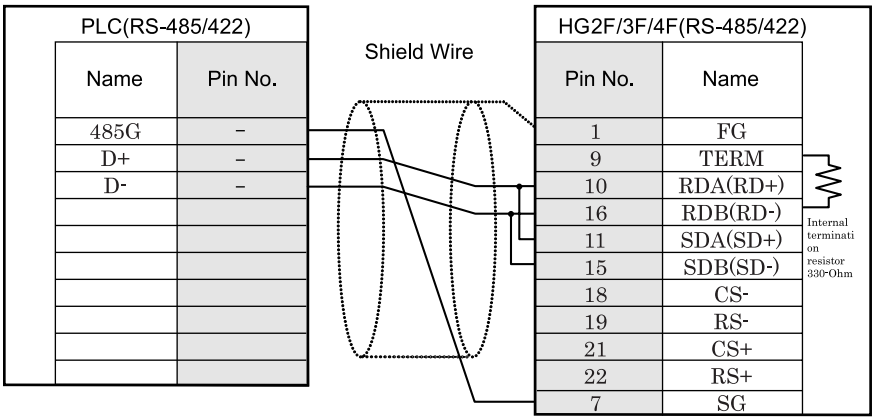


Screw down terminal block

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

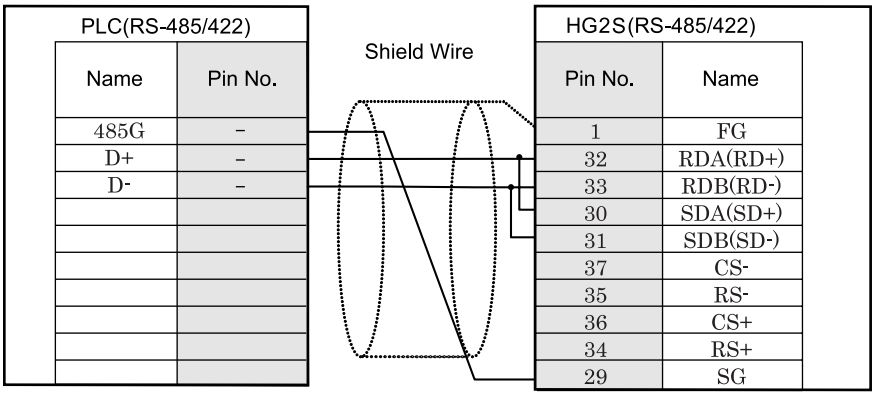
HG2F/3F/4F



Screw down terminal block

D-sub, 25P connector socket type

HG2S



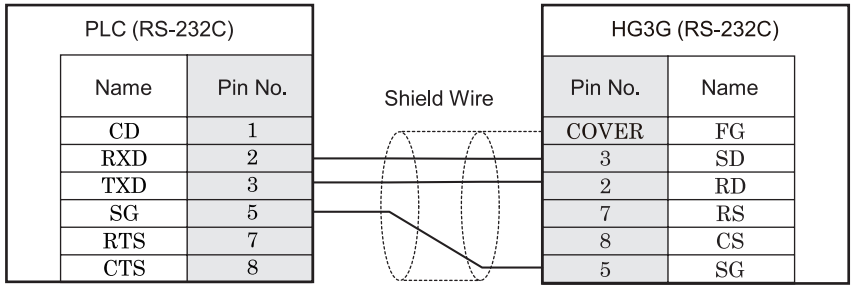
Screw down terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

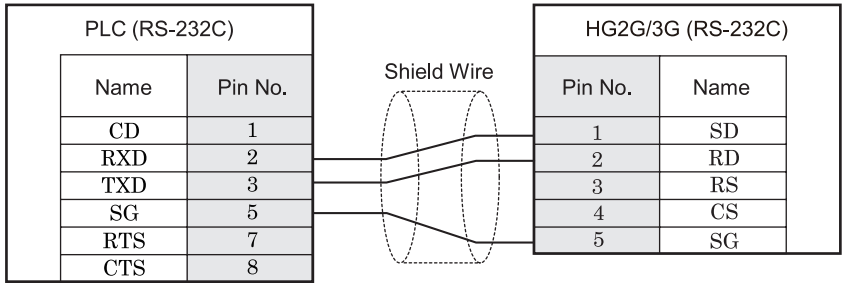
21.3.5 Connection Diagram 5: VB0, VB1, VB2, VH (VB-232)

HG3G (Connector)



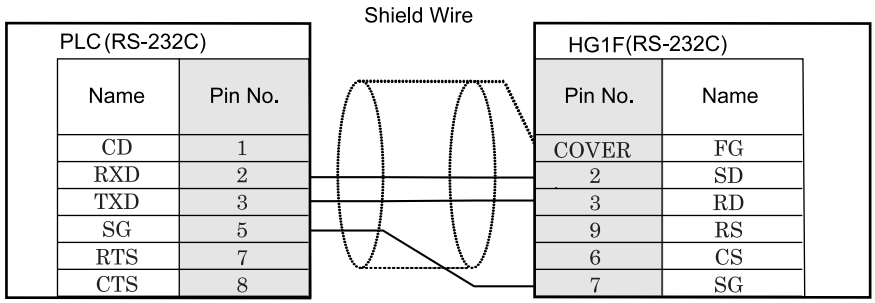
D-sub, 9P connector socket type — D-sub, 9P connector plug type

HG2G/3G (Terminal)



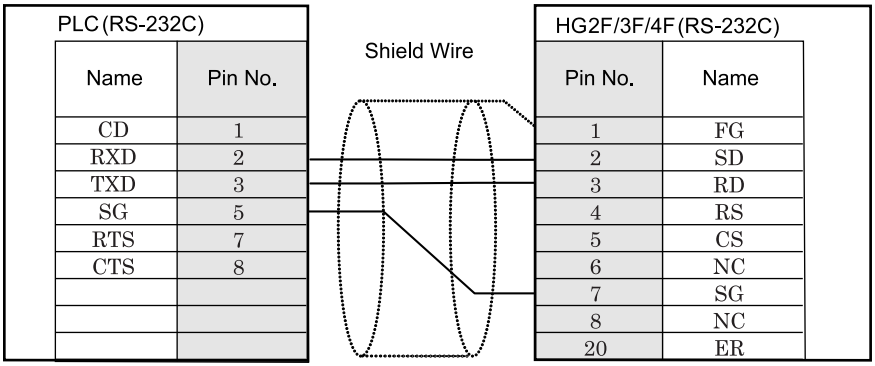
D-sub, 9P connector socket type — Terminal

HG1F (Connector)



D-sub, 9P connector socket type — D-sub, 9P connector socket type

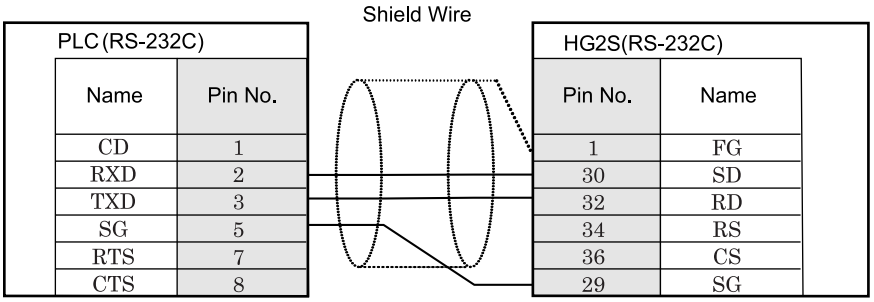
HG2F/3F/4F



D-sub, 9P connector socket type

D-sub, 25P connector socket type

HG2S

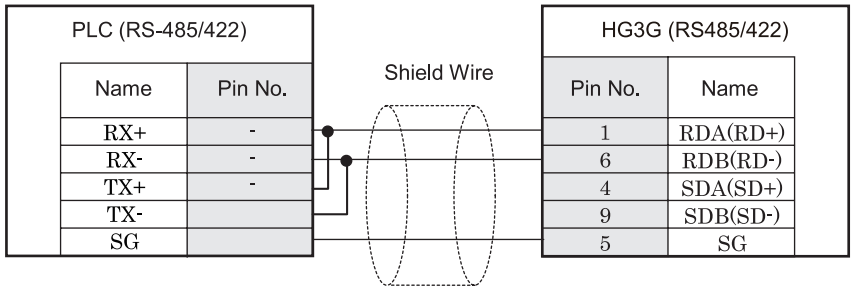


D-sub, 9P connector socket type

D-sub, 37P connector socket type

21.3.6 Connection Diagram 6: VB0, VB1, VB2, VH (VB-485)

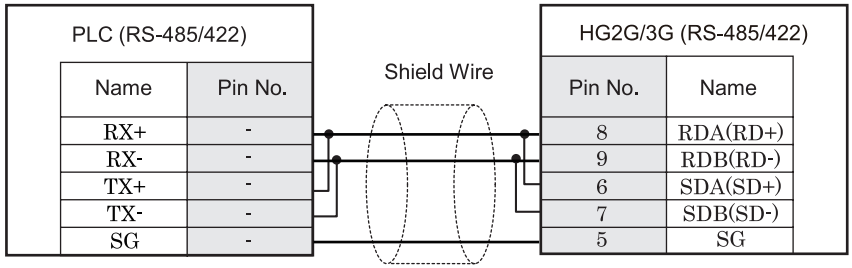
HG3G (Connector)



Screw down terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)



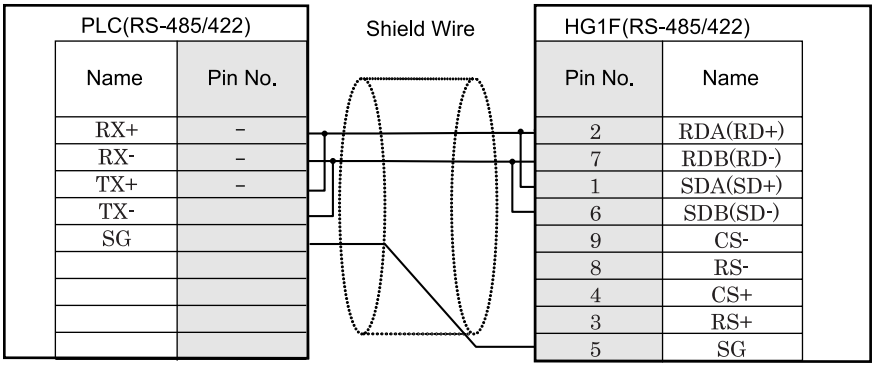
Screw down terminal block

Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18

- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB.
  If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

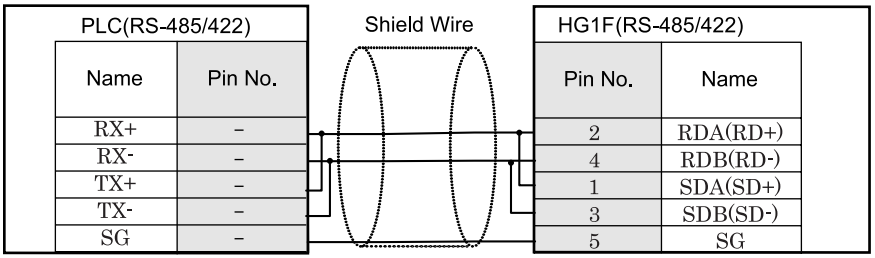
HG1F (Connector)



Screw down terminal block

D-sub, 9P connector socket type

HG1F (Terminal)

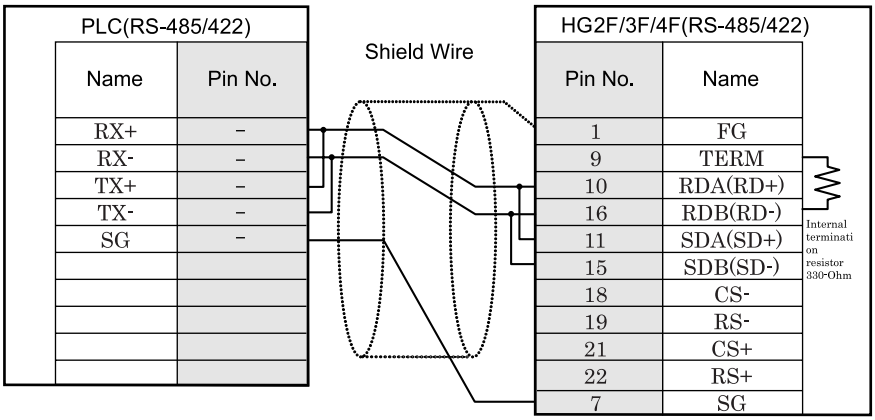


Screw down terminal block

Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

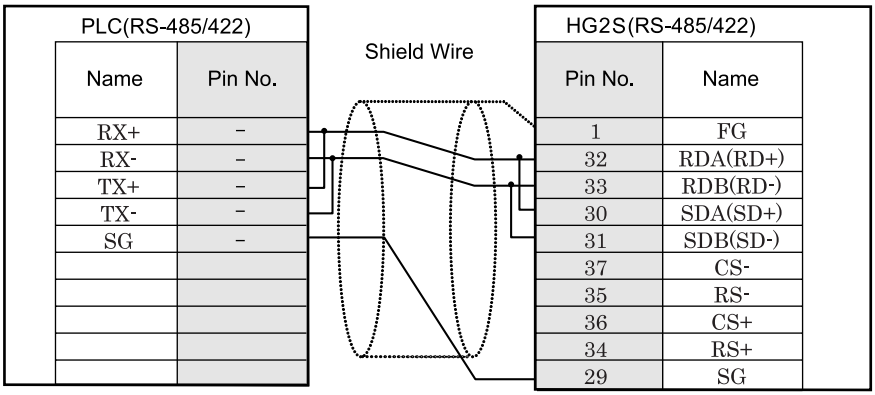
HG2F/3F/4F



Screw down terminal block

D-sub, 25P connector socket type

HG2S



Screw down terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

21.4 Environment Settings

The communication port settings for VB/VH series and MICRO/I host port are as follows.

21.4.1 VB/VH Series (Communication Port for Programming Tool)

Items		Details
Communication Interface		RS-232C
Baud Rate [bps]	Use the same settings as for the MICRO/I.	19200(fixed)
Data Bits [bit]		7 (fixed)
Parity		Even
Stop Bits [bit]		1 (fixed)
Flow Control		None
Station Number		0 (fixed)

21.4.2 VB/VH Series (VB-485A, VB-232 or VB-485)

Items		Details	
Communication Interface		RS-232C	RS-485(4wire)
Baud Rate [bps]	Use the same settings as for the MICRO/I.	1200, 2400, 4800, 9600, 19200, 38400	
Data Bits [bit]		7	
Parity		Even	
Stop Bits [bit]		1	
Flow Control		None	
Station Number		0 - 255(DEC)	

21.4.3 VB/VH Series (VB-CADP)

Items		Details		
Port		CP2		CP3
Communication Interface		RS-232C	RS-485	RS-485
Baud Rate [bps]	Use the same settings as for the MICRO/I.	1200, 2400, 4800, 9600, 19200, 38400		19200
Data Bits [bit]		7		7
Parity		Even		Even
Stop Bits [bit]		1		1
Flow Control		None		None
Station Number		0 - 255(DEC)		0 - 99(DEC)

Refer to the VB/VH Series user's manual for details of communication settings.

21.5 Usable Devices

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay(Bit)	X	X	0 - 777	R	OCT
Output Relay(Bit)	Y	Y	0 - 777	R/W	OCT
Auxiliary Relay(Bit)	M	M	0 - 5119	R/W	DEX
Step Relay	S	S	0 - 999	R/W	DEX
Special Relay	SM	M	9000 - 9255	R/W	DEX
Timer Contact	T	T	0 - 255	R	DEX
Timer Coil	TC	T	0 - 255	R	DEX
Counter Contact	C	C	0 - 255	R	DEX
Counter Coil	CC	C	0 - 255	R	DEX

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Input Relay(Word)	WX	X	0 - 769	R	OCT
Output Relay(Word)	WY	Y	0 - 760	R/W	OCT
Auxiliary Relay(Word)	WM	M	0 - 5104	R/W	DEX
Step Relay(Word)	WS	S	0 - 992	R/W	DEX
Special Relay(Word)	WSM	M	9000 - 9240	R/W	DEX
Data Registor	T	D	0 - 8191	R/W	DEX
Special Registor	SD	D	9000 - 9255	R/W	DEX
Timer Current Value	TCV	T	0 - 255	R/W	DEX
16 Bit Counter Current Value	CCV	C	0 - 199	R/W	DEX
32 Bit Counter Current Value	DCCV	C	2000 - 2551	R/W	DEX

Device Address 992 in Step Relay (Word) only contains 8bits because the maximum device address of Step Relay (Bit) is 999.

Chapter 3 O/I Link Communication Interface

1 O/I Link Communication Interface

1.1 Outline

O/I Link Communication is used for performing 1:N communication (where one PLC is connected to multiple MICRO/I units). Construct a Master/Slave network (hereafter called an O/I Link) using the MICRO/I units, and perform PLC Link Communication with the PLC using the Master HG1F/2F/3F/4F (hereafter called Master). The Slave MICRO/I units (hereafter called Slaves) can read from and write to the PLC devices via the Master.
Up to one Master and 15 Slaves can be connected, and as is the case with PLC Link Communication, no special communication program is required in the PLC.

With just a simple setting change, screen data being used with PLC Link Communication can be used as is with a MICRO/I setup as a Master or Slave.

WARNING HG2G/3G Series use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G/3G Series can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.

1.2 Operation

With O/I Link Communication a MICRO/I can read data from and write data to host devices.

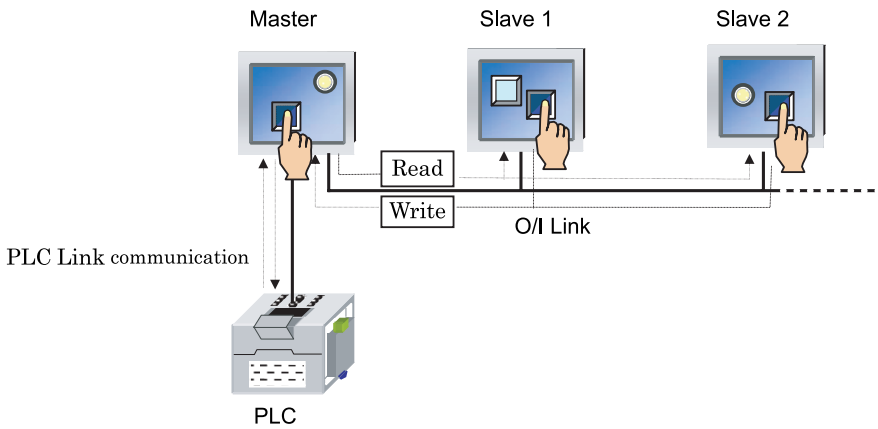
- Reading from the PLC

  The Master MICRO/I unit reads data directly from the PLC devices set in the currently displayed screen, and Slave MICRO/I units read data from the PLC devices set in the currently displayed screen via the Master. Display parts (such as numerical displays and pilot lamps) in the MICRO/I screens are updated with the latest data at all times.

- Writing to the PLC

  When data input parts (such as bit and word button parts) in the Master screen are operated, they directly write to the PLC, and if they are in a Slave screen they write to the PLC via the Master.

O/I Link Communication



1.3 Required Optional Parts

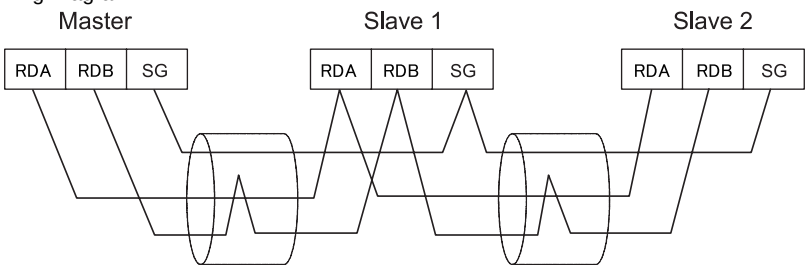
A HG2G/3G, HG1F/2F/3F/4F must be equipped with an HG9Z-2G1 O/I Link Unit in order to be able to perform O/I Link communication. Refer to the O/I Link Unit installation and instruction manuals for details regarding connection to the HG1F/2F/3F/4F and wiring.

- HG9Z-2G1

1.4 O/I Link Wiring Diagram

1.4.1 Connect between HG3G

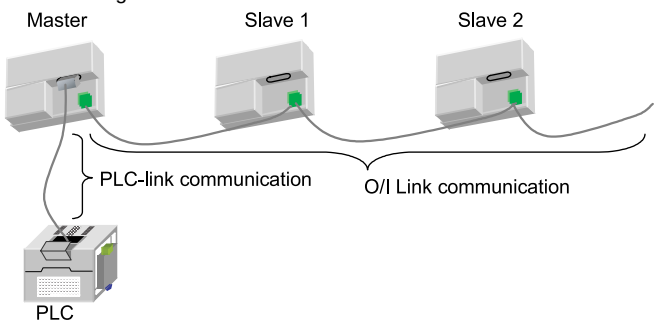
HG3G O/I Link Wiring Diagram



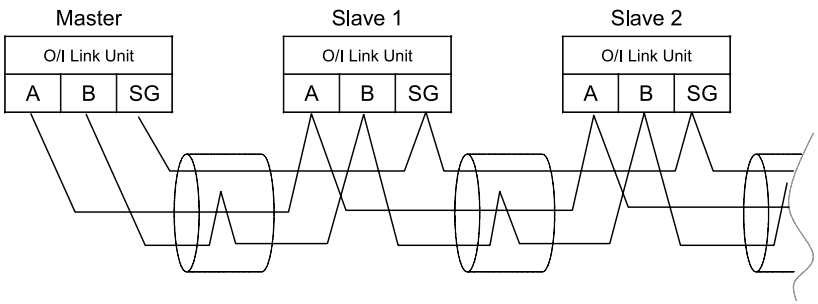
- HG2G/3G Series use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G/3G Series can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.
- When connect the COM1 of the HG3G and the SERIAL1 of the HG2G, set the terminating resistor OFF.

1.4.2 Connect between HG2G, HG1F/2F/3F/4F + O/I Link Unit

HG2G, HG1F/2F/3F/4F O/I Link Wiring



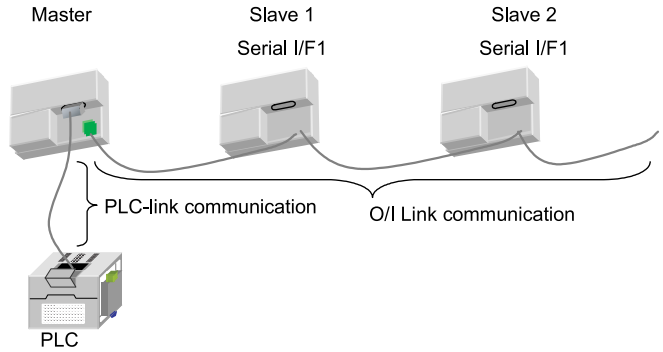
HG2G, HG1F/2F/3F/4F O/I Link Wiring Diagram



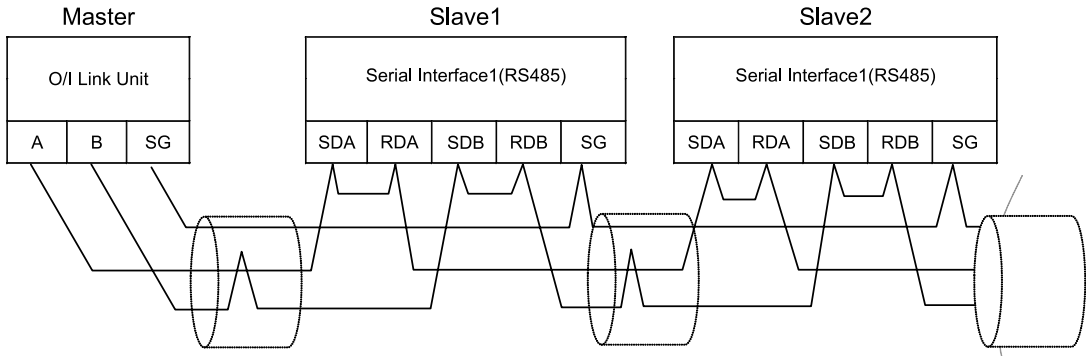
HG2G/3G Series use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G/3G Series can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.

1.4.3 Connect between HG2G, HG1F/2F/3F/4F+O/I Link Unit (Master) and HG2G, HG1F/2F/3F/4F serial interface1 (Slave)

HG2G, HG1F/2F/3F/4F O/I Link and serial I/F Wiring



HG2G, HG1F/2F/3F/4F O/I Link Wiring Diagram

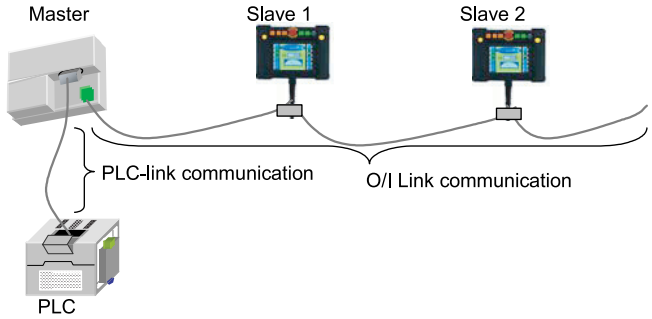


WARNING

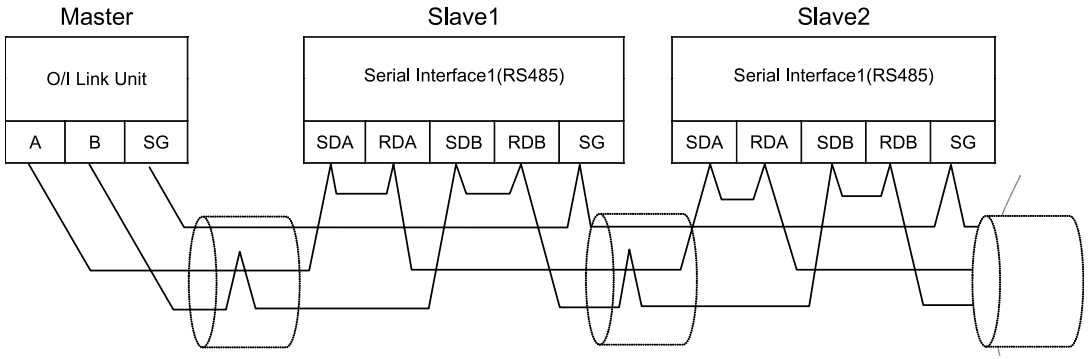
- HG2G Series use different type of O/I link communication protocol than HG1F/2F/2S/3F/4F. HG2G Series can not be connected with other HG1F/2F/2S/3F/4F in O/I link communication.
- The HG2G, HG1F/2F/3F/4F serial interface1 can only be operated as a slave.

1.4.4 Connect between HG1F/2F/3F/4F+O/I Link Unit (Master) and HG2S serial interface1 (Slave)

HG1F/2F/3F/4F + HG2S O/I Link Wiring



HG1F/2F/3F/4F + HG2S O/I Link Wiring Diagram



WARNING The HG2S can only be operated as a slave.

2 O/I Link Communication Interface Settings

To use the O/I Link Communication Interface, you must set the necessary items in the O/I Link tab of the [Configuration]-[System Setup]-[Project] dialog box (refer to 6 in Chapter 3 of the instruction manual).

[Dialog Box Name] - [Tab Name]	Setting	Description
[Project Settings] - [O/I Link]	O/I Link Station	Set the MICRO/I connected to the PLC as the master, and the other MICRO/I as slaves (1 to 15). Make sure that the settings do not overlap.
	Slave Station	MICRO/I that are connected to the master MICRO/I (i.e. the one whose O/I Link Type is registered as Master) must be registered as slaves (1 to 15). Select the checkbox.

In addition, make the following settings for the PLC Link Communication Interface.

[Dialog Box Name] - [Tab Name]	Setting	Master	Slave 1 to 15
[Project Settings] - [Host I/F Driver]	Manufacturer	Use the same setting for all MICRO/I.	
	Host I/F Driver		
	Connection Type		
	Transmission Wait	Set it according to the environment.	Setting not required.
	Time Out		
	Retry Cycles		
	Other	Match to the setting of the PLC that you will use.	

[Dialog Box Name] - [Tab Name]	Setting	Master	Slave 1 to 15
[Project Settings] - [Communication Interface]	SERIAL 1/COM1	The use of Serial 1 depends on the following selected O/I type :. HG3G series: Serial 1 maybe selected as the “O/I Link Master” for O/I Link communication, or select “Host Communication” as the communication interface for PLC communication. HG2G, HG1F/2F/3F/4F series: Select “Host Communication”.	Select “O/I Link Slave” as the interface used for O/I Link communication.
	SERIAL 2/COM2	The use of Serial 2 depends on the following selected O/I type : HG3G series: Serial 1 maybe selected as the “O/I Link Master” for O/I Link communication, or select “Host Communication” as the communication interface for PLC communication. HG2G, HG1F/2F/3F/4F series: Not Supported.	The use of Serial 2 depends on the following selected O/I type. HG3G series: Select “O/I Link Slave” for O/I Link communication. HG2G, HG1F/2F/3F/4F series: Not Supported.
	O/I Link	Using the O/I Link adaptor depends on the selected O/I type: HG3G series: Not available. HG2G, HG1F/2F/3F/4F series: Select “O/I Link Master”.	Using the O/I Link adaptor depends on the selected O/I type: HG3G series: Not available. HG2G, HG1F/2F/3F/4F series: Select “O/I Link Slave” as the interface used for O/I Link communication.
	Baud Rate	Match to the setting of O/I Link slave.	Match to the setting of O/I Link master.
[Project Settings] - [Host I/F Driver]	Transmission Wait	Set it according to the environment.	Setting not required.
	Time Out		
	Retry Cycles		
	Other	Match to the setting of the PLC that you will use.	
[Project Settings] - [System]	Start Time	Set it according to the environment.	Setting not required.
	Use System Area	When Use System Area is selected, we recommend that you make the setting so that there is no overlap. Overlap between system areas can affect operation.	
	Device		
	Use System Areas 3, 4		
	Watch Dog	Set according to your application.	
	Device		
	Time		

3 Communication Service

The Master is equipped with registers for changing the slave connection settings and for monitoring the online status of the slaves. In addition, the slaves are equipped with a register that can be used to monitor the polling period of the master.

WARNING

Online status indicates that the master and a slave are communicating normally, and offline status indicates that either the master is not communicating with a slave or there is a problem with the communication.

3.1 Slave Registration Setting Register (LSD102 in the master)

This register can be used to change the slave connection settings. You can freely add and remove slaves using this master register. The configuration of the register is given below.

Slaves whose corresponding bit is “1” are registered.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
LSD 102	Slave 15	Slave 14	Slave 13	Slave 12	Slave 11	Slave 10	Slave 9	Slave 8	Slave 7	Slave 6	Slave 5	Slave 4	Slave 3	Slave 2	Slave 1	Always 0

After power is applied or the screen data is downloaded, the slaves to be used are cleared in accordance with the connection settings made using WindO/I-NV2. To add or remove slaves, set their corresponding bits to 1 or 0 respectively.

3.2 Slave Online Data Register (LSD104 in the master)

This register can be used to monitor the online status of the slaves registered to the O/I Link. The configuration of the register is given below.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
LSD 104	Slave 15	Slave 14	Slave 13	Slave 12	Slave 11	Slave 10	Slave 9	Slave 8	Slave 7	Slave 6	Slave 5	Slave 4	Slave 3	Slave 2	Slave 1	Always 0

Bits corresponding to online slaves are 1, and bits corresponding to offline slaves or slaves not selected for connection are 0.

WARNING

If the values of the data for the slave registration setting and the slave online data register are not the same, either the registered slave does not exist, or there is some problem with the slave connection. Check the wiring and the settings.

3.3 O/I Link Polling Period Register (LSD101 in the slaves)

This register stores the value of the polling period from the master in 10 msec steps. Use it to provide an indication of the response time from the master.

3.4 Slave Error information Register(LSD106 in the master)

When the communication error occurred between master and any slave, the bit of each slave turns on for one scan time.

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
LSD 106	Slave 15	Slave 14	Slave 13	Slave 12	Slave 11	Slave 10	Slave 9	Slave 8	Slave 7	Slave 6	Slave 5	Slave 4	Slave 3	Slave 2	Slave 1	Always 0

4 Communication Status Confirmation

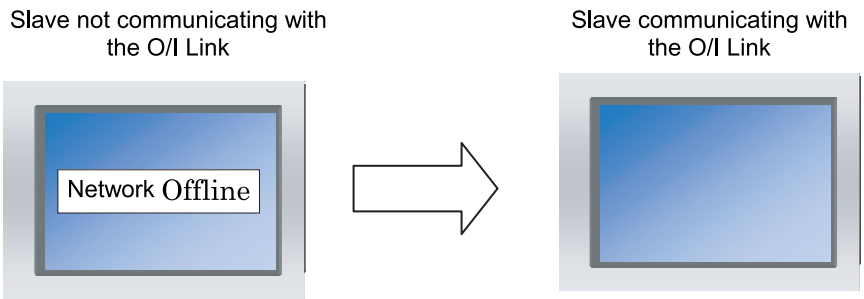
4.1 Master Error Processing

The master does not display O/I Link errors. To monitor for errors, compare LSD102 and LSD104. If they are different, it indicates that there is a communication problem.

In the case of PLC Link communication with the PLC, errors are displayed and the error information is written to the System Area.

4.2 Slave Error Processing

When a slave is not engaged in O/I Link communication with the master, Network Offline is displayed in the center of the screen. The screen is cleared when communication starts.



4.3 Status of a Slave in the O/I Link

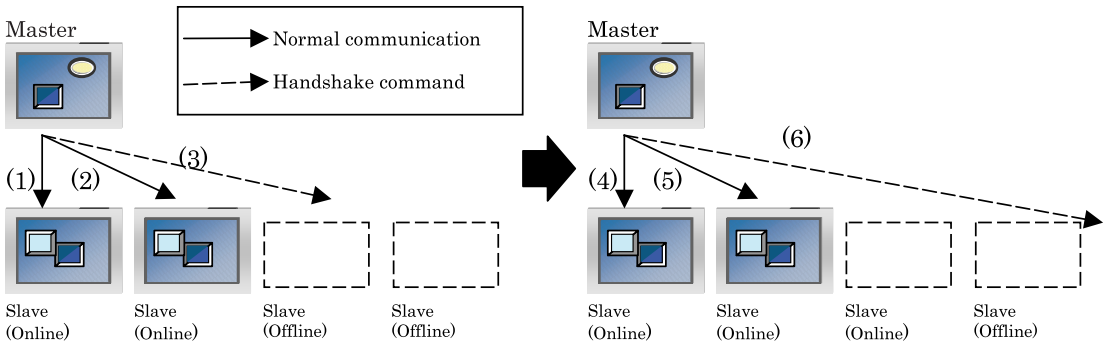
If a slave unit does not exist or fails to engage in normal communication even though the slave is registered in the Slave Registration Setting Register (LSD102 in the master), the status of the slave is referred to as “offline” status.

Conversely, the status of the slave in which normal communication is executed is referred to as “online” status.

When a slave unit is in offline status, the master always monitors the slave status if it is online. In one cycle, the master searches for one slave unit in the offline status after the master completes the communications with all slave units in online status. Two sets of O/I cycle periods are required in order to recognize two slave units in offline status.

Fig. When 2 slave units are in offline status:

The numbers in () indicate the processing sequence.



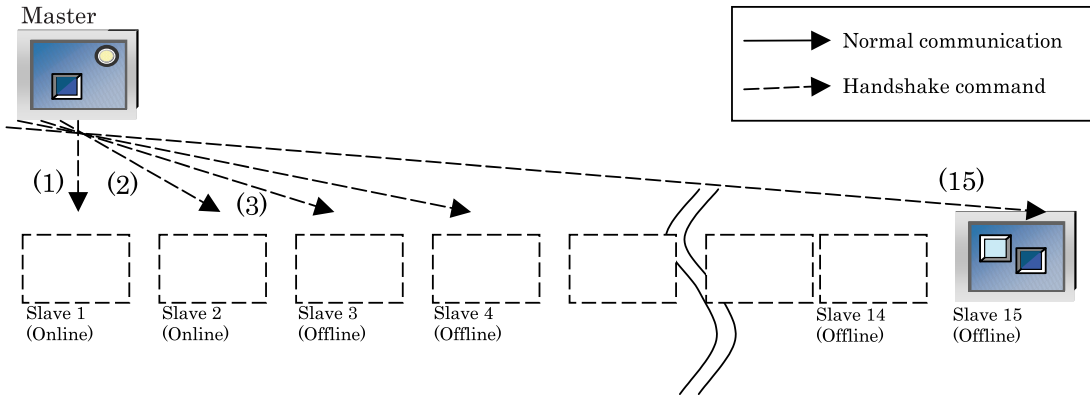
The Time Out duration for the command that detects the presence/absence of a slave (hereafter referred to as a handshake command) is set to 30 msec on the master.

When there are one or more slave units in the offline status, the total scanning time of the O/I Link will increase by 30 msec. Even when 15 slave units are in offline status, the increase will remain at 30 msec.

After power is turned on, the master sends handshake commands to the registered slave units in the ascending sequence and launches normal communication starting with the slave units that send back the response.

When 15 slave units are registered, and only the 15th slave actually exist, the master sends handshake commands sequentially starting from the 1st slave unit until it recognizes the 15th slave unit. The whole sequence takes approximately 420 msec (30 msec x 14).

After the data transmission with the 15th slave unit is completed, the master registers the slave to LSD102 and performs normal communications with Slave 15. During the communication, the master sends a handshake command to one slave unit in offline status per one O/I Link scanning.



4.4 Slave changes status from Online to Offline in the O/I Link

When a slave does not respond during normal communication between the master and a slave, the master aborts the processing and starts communicating with the next slave unit. During the next O/I Link cycle, the master will again send a command to the slave unit with which the error occurred during the previous cycle. If the slave does not respond again, the slave will set to the offline state and will be deleted from Slave online information register (LSD104 in the master).

5 Notice to O/I link

5.1 System Software Version of the MICRO/I

The O/I Link communication will not function if the HG1F/2F/3F/4F with runtime system software version 1.7 and above are used with older version of the software, 1.6x or earlier.

5.2 Communication Traffic Volume of the O/I Link Network

The network scanning time which includes the time to retrieve data from PLC and also to communicate to O/I link depends on the amount of communication on the network.

When there is a lot of traffic on the network, scanning may take more time, as a result it may cause O/I to operate slow.

At the worst case, O/I is not able to complete scanning, and displays an error message, “Network Off-line”.

Please follow instructions below to improve performance. These instructions should reduce amount of communication on the network.

Item	Measure
When Base Screen or Popup Screen is switched frequently.	Please modify the settings so that Screen isn’t switched frequently.
When monitoring schedule is set shorter than the time needed for scanning network.	Please consider the time needed for network scanning before setting schedule for alarm log and parts. We strongly recommend only using alarm log setting on Master.
When there are many devices per screen.	Please reduce number of devices set per screen.

You can check the scanning time on the network by LSD6 of the master O/I and LSD101 of the slave O/I.

5.3 Notice of the case of HG1F

- Can not use the function of using serial I/F2 (user communication, printer) and O/I Link at the same time in HG1F.
- O/I Link communication is stop, when put the maintenance cable into the serial I/F2 in HG1F.

6 Result of Performance Evaluation

Evaluation of O/I Link performance is conducted in the following conditions.

Conditions

PLC	PLC Link compatible MELSEC-Q Series Baud rate: 115200 bps
O/I Link	No. of units: 16 Total cable length: 200 m Baud rate: 115 kbps

- When devices of the same type are set for Slave 1 to 15:

  For master unit, enable System Area 1 to 4 (12 words data).
  For the Slave 1 to 15, enable System Area 1 to 4(12 words data) and 50 words host device data which are same as each Slaves.

O/I Link Polling Period (LSD101 in the slaves)	220 msec
Read scan of PLC device (LSD6 in the master)	150 msec *1

*1. Since the master performs lump communication for the devices used redundantly with the slave units, the communication time can be reduced.

- When devices of different types are set for Slave 1 to 15

  For master unit, enable System Area 1 to 4 (12 words data).
  For the Slave 1 to 15, enable System Area 1 to 4(12 words data) and 50 words host device data which are different from each Slaves.

O/I Link Polling Period (LSD101 in the slaves)	250 msec
Read scan of PLC device (LSD in the master)	1360 msec

Note. The above measurement results vary depending on the host I/F driver.
Use the values as a rough guide. Also make sure to evaluate the performance before constructing a system.

Chapter 4 DM Link Communication

1 Outline

With the DM Link communication method, devices such as PLCs, PCs, and board computers (hereafter referred to as hosts) read from and write to dedicated DM Link memory (hereafter referred to as data memory) in the MICRO/I. When one host is communicating with one MICRO/I using this communication method it is called DM Link 1:1 communication, and when one host is communicating with multiple MICRO/I units, it is called DM Link 1:N communication.
Both methods use a special protocol developed by IDEC that does not require the host device to run a communications program.

1.1 DM Link Communication

Using DM Link communication the host device can read from and write to the MICRO/I data memory. Conversely, of course, the MICRO/I can display and modify the contents of its data memory.

1.2 Reading Data from the Host Unit

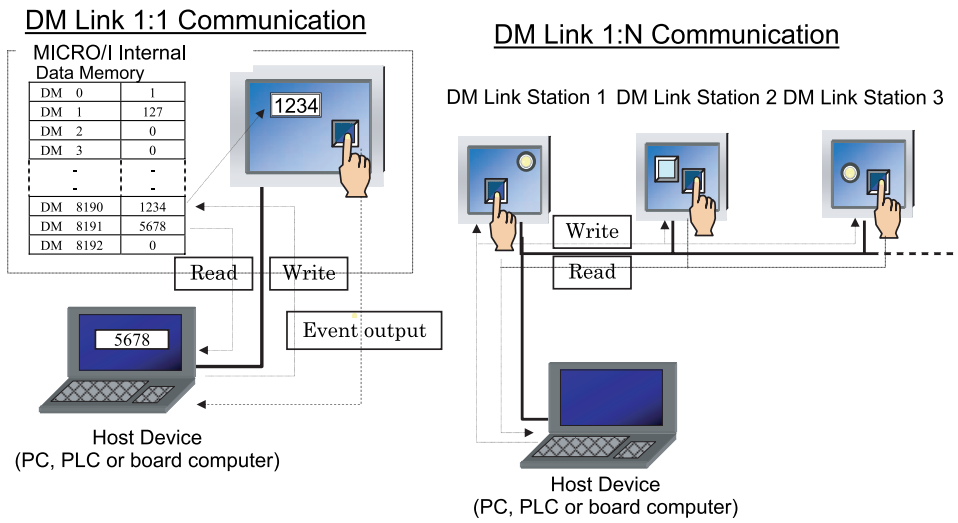
By operating operate data input parts placed in the MICRO/I screen it is possible to modify the contents of the data memory and then read this memory using the host.

1.3 Writing Data to the Host

The host can write to the MICRO/I data memory and thereby modify the content of display parts in the MICRO/I screen.

1.4 Event Output from the MICRO/I

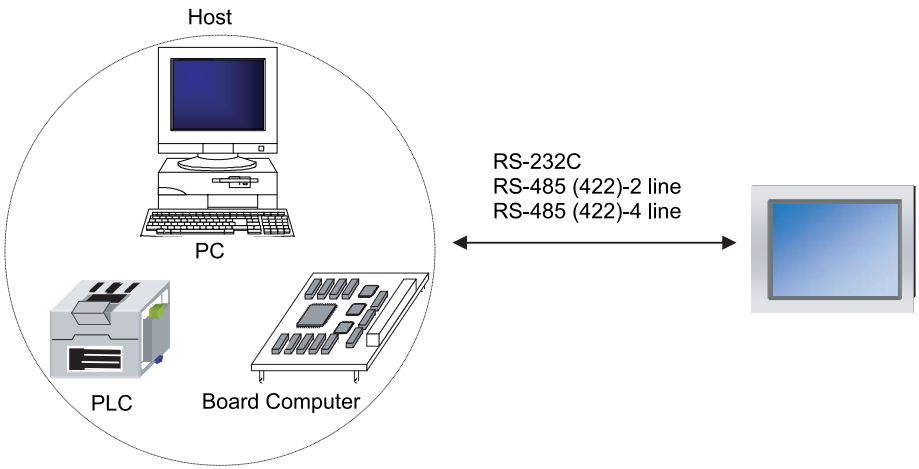
With DM Link 1:1 communication the MICRO/I can directly transmit to the host device. This is called Event Output.



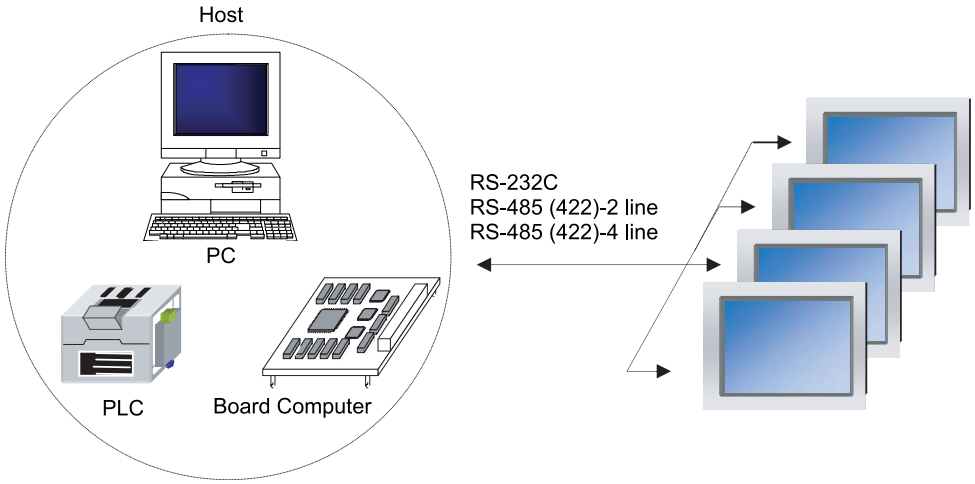
2 System Configuration

The system configuration for the DM Link communication method is shown below.

2.1 DM Link 1:1 Communication



2.2 DM Link 1:N Communication



WARNING

- When using an RS-232C connection with DM Link 1:N communication, only one MICRO/I unit can be connected.
- When constructing a system using RS-485(422), design the circuit so that when the host device receiver input is not connected, the receiver output is in the mark state.

3 Wiring

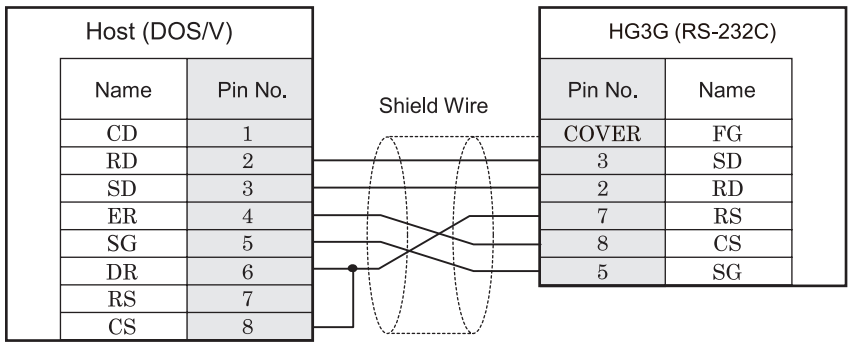
The following is an example of wiring for use with DM Link communication.

3.1 RS-232C

3.1.1 With ER Control

Host: DOS/V Personal Computer System.

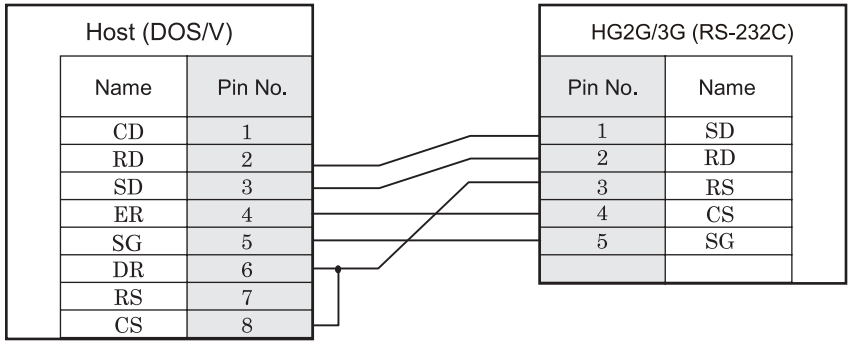
HG3G (Connector)



D-sub, 9P connector

D-sub, 9P connector plug type

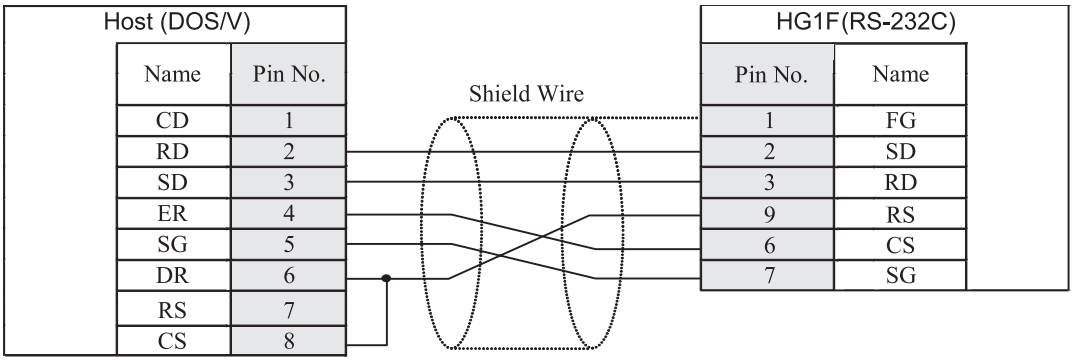
HG2G/3G (Terminal)



D-sub, 9P connector

Terminal

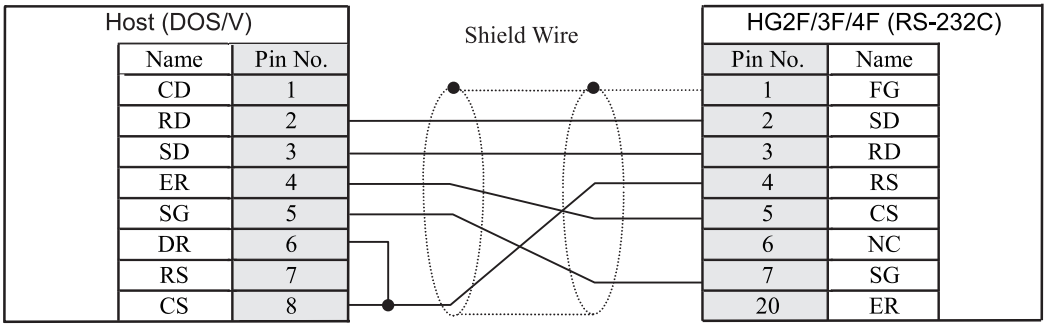
HG1F (Connector)



D-sub, 9P connector

D-sub, 9P connector type

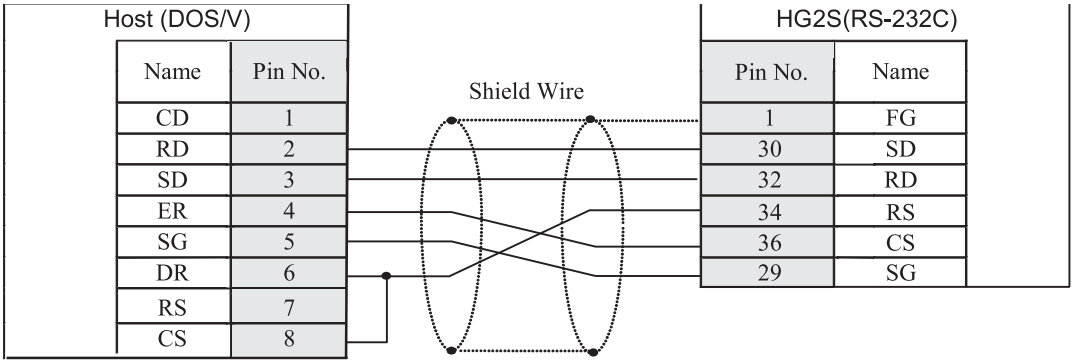
HG2F/3F/4F



D-sub, 9P connector

D-sub, 25 connector type

HG2S



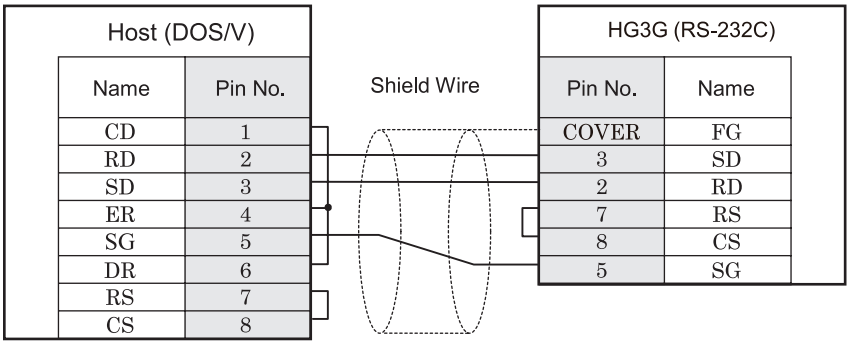
D-sub, 9P connector

D-sub, 37P connector type

WARNING The host pin numbers are for a typical personal computer. Be sure to check the pin arrangement for the host device that you will be using.

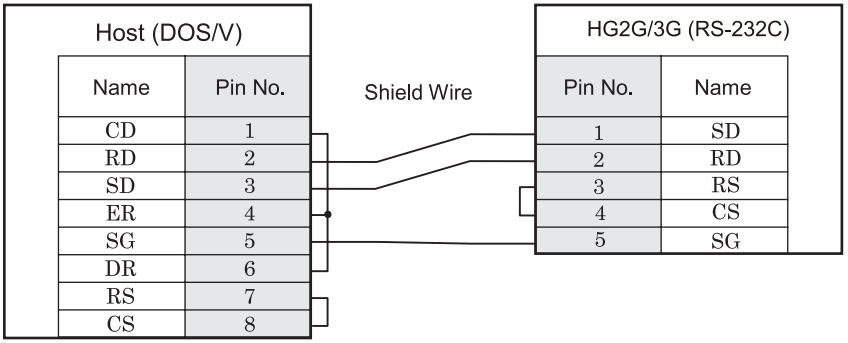
3.1.2 Without ER control

HG3G (Connector)



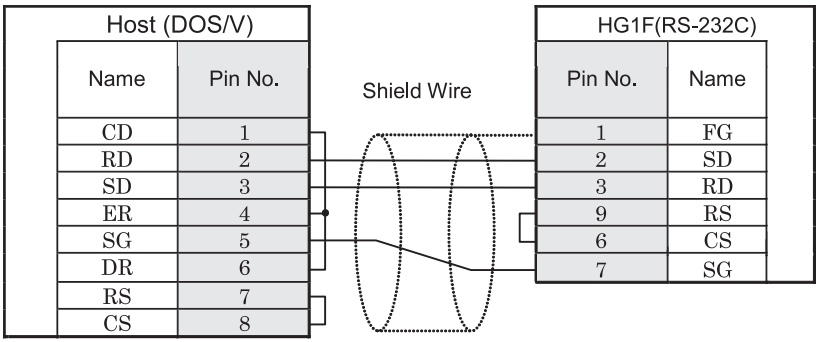
D-sub, 9P connector plug type D-sub, 9P connector plug type

HG2G/3G (Terminal)



D-sub, 9P connector plug type Terminal

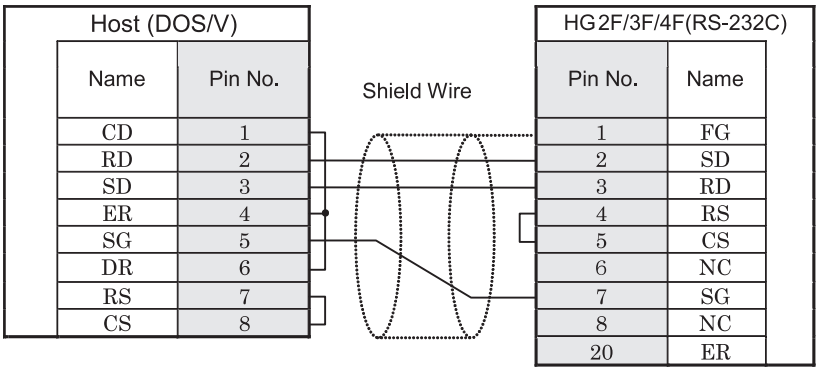
HG1F (Connector)



D-sub, 9P connector plug type

D-sub, 9P connector type

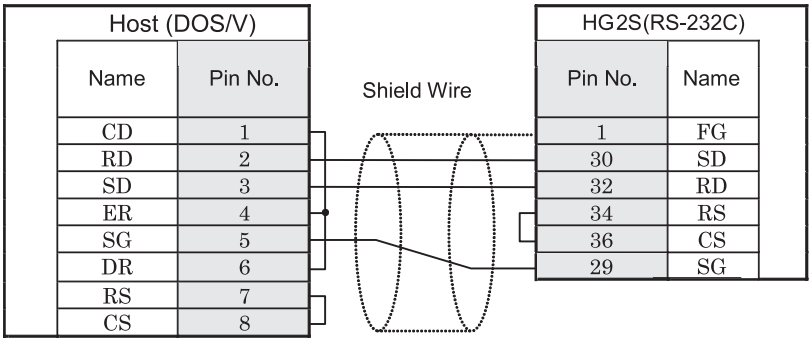
HG2F/3F/4F



D-sub, 9P connector plug type

D-sub, 25P connector type

HG2S



D-sub, 9P connector plug type

D-sub, 37P connector type

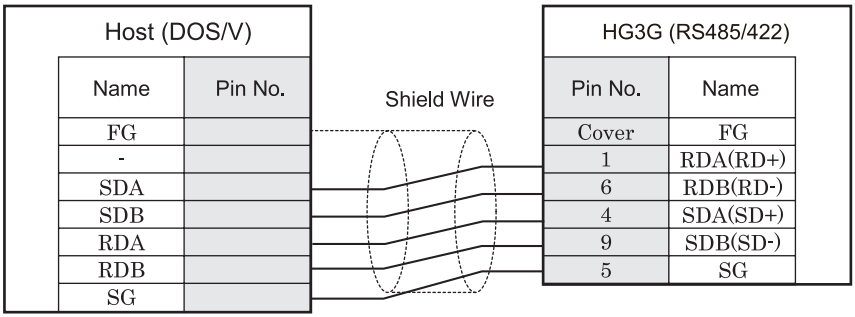
WARNING

The host pin numbers are for a typical personal computer. Be sure to check the pin arrangement for the host device that you will be using.

3.2 RS-485 (422)

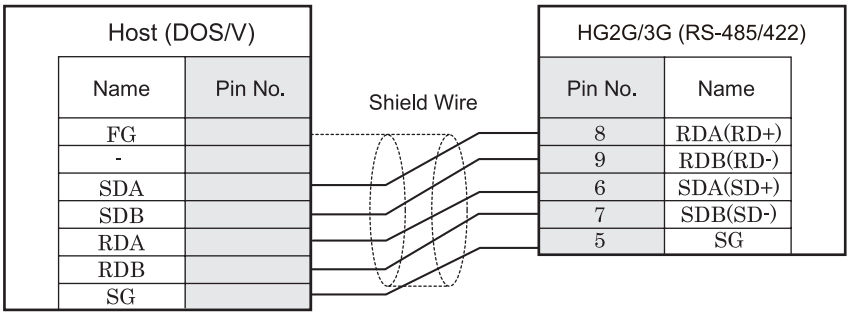
3.2.1 4-line

HG3G (Connector)



D-sub, 9P connector plug type

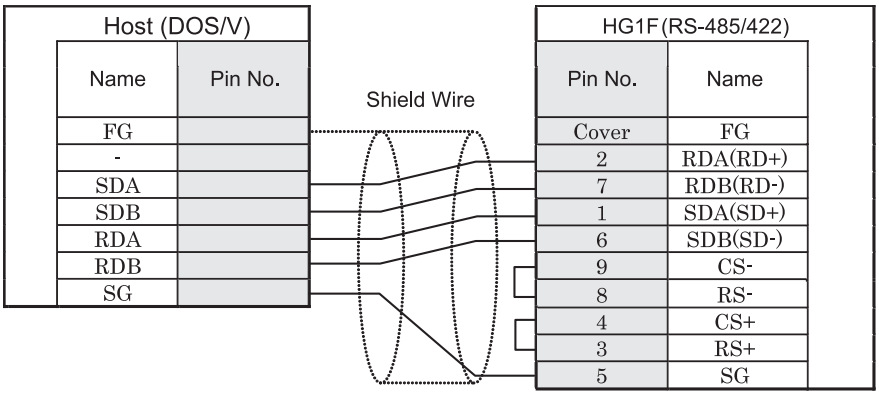
HG2G/3G (Terminal)



Terminal

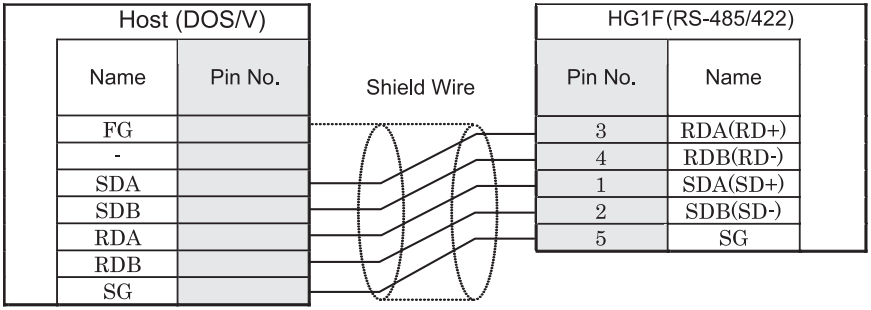
There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG1F (Connector)



D-sub, 9P connector type

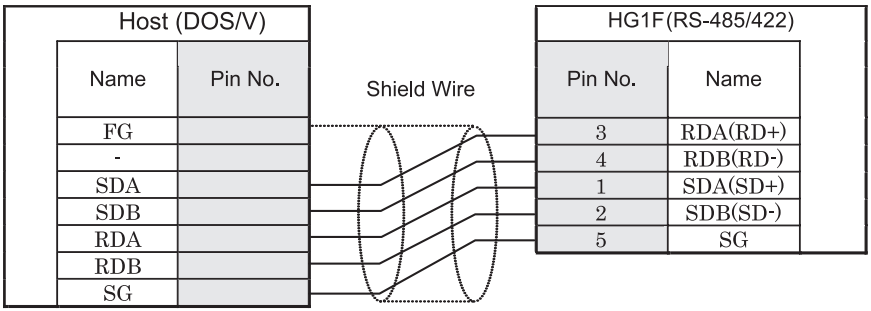
HG1F (Terminal)



Terminal

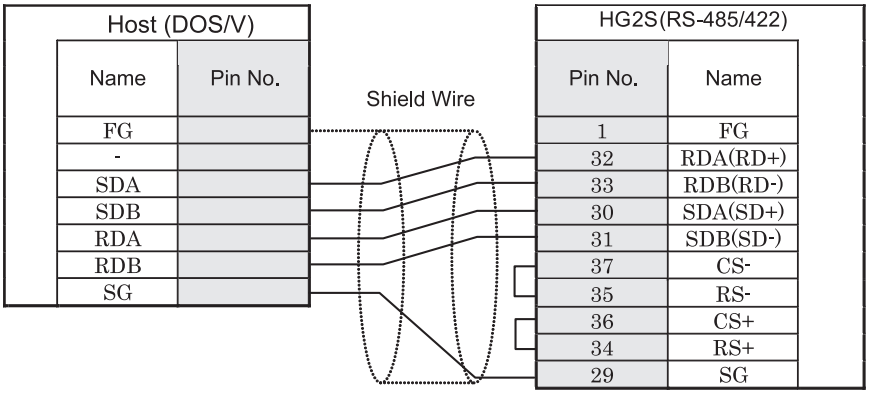
There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG2F/3F/4F



D-sub, 25P connector type

HG2S

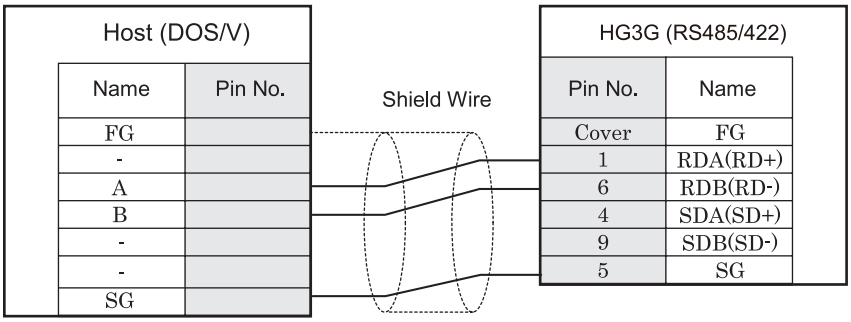


D-sub, 37P connector type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

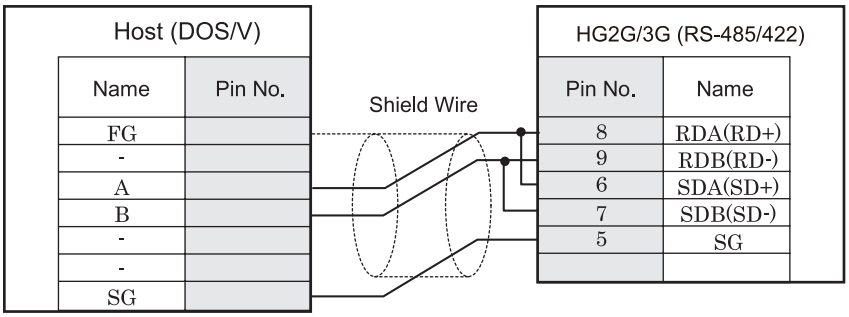
3.2.2 2-line

HG3G (Connector)



D-sub, 9P connector plug type

HG2G/3G (Terminal)

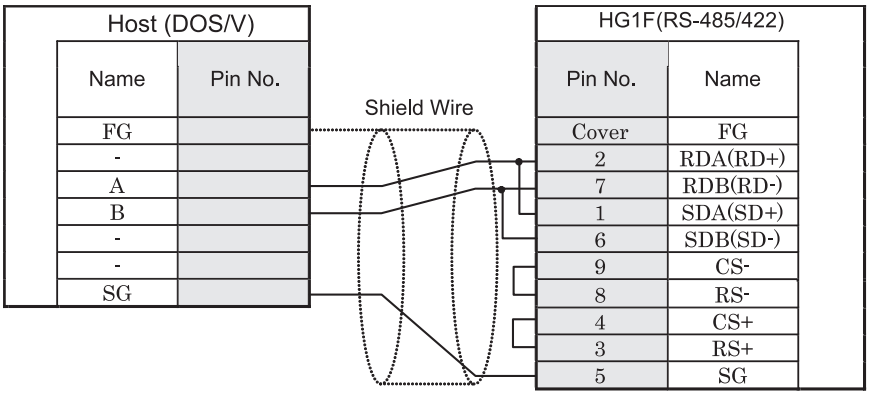


Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

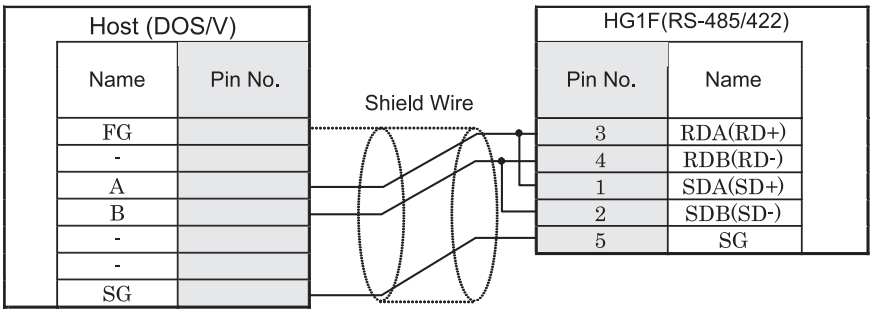
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB.
  If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

HG1F (Connector)



D-sub, 9P connector type

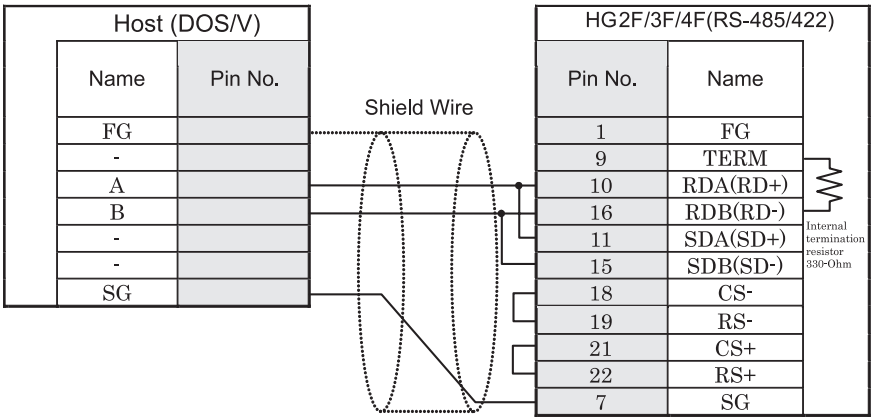
HG1F (Terminal)



Terminal

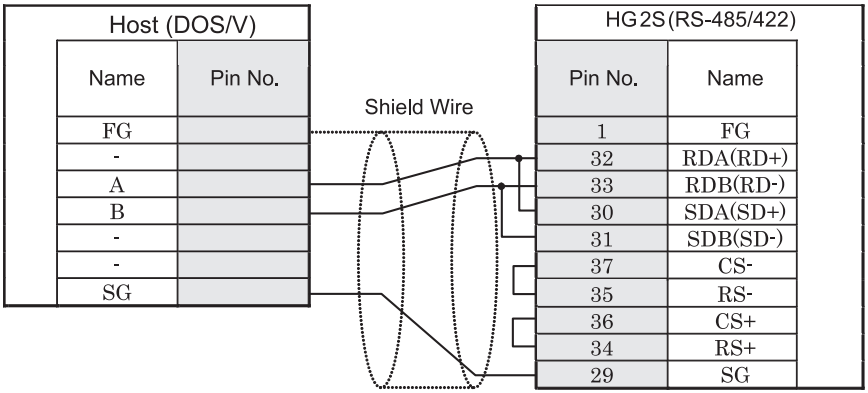
There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG2F/3F/4F



D-sub, 25P connector type

HG2S



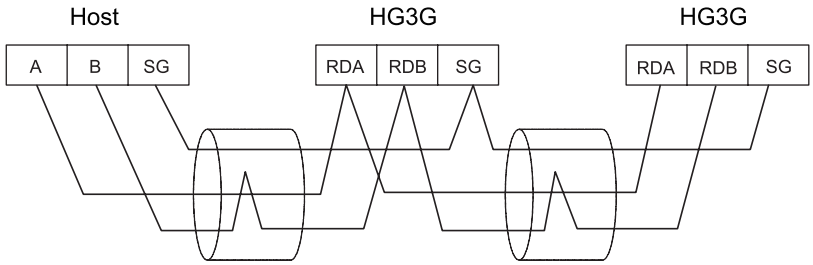
D-sub, 37P connector type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

3.2.3 RS-485 (422) to 2-line (DM Link 1:N Communication: N=2)

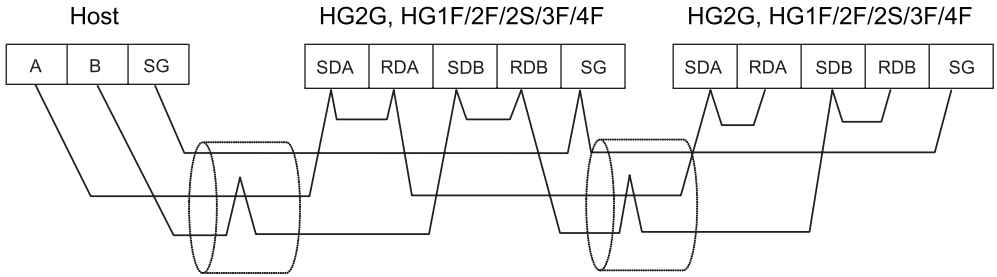
In the following diagram, only describe the terminal name.
Refer to Chapter 4 “3.2.2 2-line” on page 522 for the correspondence between the terminal name and the pin no.

HG3G Wiring Diagram



If more than one MICRO/I are connected to a host device, select “RS-485(422)-2wire” as “Serial Interface”.

HG2G, HG1F/2F/2S/3F/4F Wiring Diagram



- There is no pin No. corresponding to TERM on the HG1F/HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.
- If more than one MICRO/I are connected to a host device, select “RS-485(422)-2wire” as “Serial Interface”.

4 Communication Specifications

4.1 Communication Method

The communication method varies depending on the serial interface selected.

4.1.1 DM Link 1:1 Communication

Serial Interface	Communication Method
RS-232C	Full Duplex
RS-485 (422)-2 line	Half Duplex
RS-485 (422)-4 line	Full Duplex

4.1.2 DM Link 1:N Communication

Serial Interface	Communication Method
RS-232C	Half Duplex
RS-485 (422)-2 line	
RS-485 (422)-4 line	

4.2 Communication Conditions

Item	Setting
Synchronization	Asynchronous
Baud Rate	1200/ 2400/ 4800/ 9600/ 19200/ 38400/ 57600/ 115200bps
Data Bits	7 or 8 bits
Stop Bits	1 or 2 bits
Parity	Even/Odd/None

4.3 Flow control

The following choices are available for the flow control method.

4.3.1 DM Link 1:1 Communication

Serial Interface	Flow Control
RS-232C	ER Control/None
RS-485 (422)-2 line	None
RS-485 (422)-4 line	

4.3.2 DM Link 1:N Communication

Serial Interface	Flow Control
RS-232C	ER Control/None
RS-485 (422)-2 line	None
RS-485 (422)-4 line	

5 Data Memory (DM) Allocation

With the DM Link communication method, DM0 to DM13 and DM16 to DM8191 are the user area that you can freely use. DM14 and DM15 are allocated as the event data transmission control area.

Data Memory	Description
DM0 to 11	User Area (Event Transmission can be available)
DM12, 13	User Area (Event Transmission is not available)
DM14	D0 to D11 event output enable/disable setting
DM15	Event area start address setting
DM16 to 8191	User Area

5.1 System Area

If you allocate DM for use as the system area, make the start address for the system area DM0 or after DM16 to avoid the overlapping DM14 and DM15. For further details regarding the system area, refer to the MICRO/I instruction manual.

5.2 D0 to D11 Event Transmission (DM14)

You can set whether or not DM0 to DM11 are to perform event transmission. When the value in DM14 is 1, system area event transmission is performed, and when it is 0, it is not performed. After power up the value in DM14 is set to 0. Use this in the case that DM0 to DM11 is specified as the system area.

5.3 Event Area Setting (DM15)

Specify the start address for the event area in DM15. The area after the specified address is then allowed to be used for event data transmission. For example, if the value 256 is written to DM15, the area from DM256 to DM8191 becomes the event area, and if the data in this area changes an event data transmission is performed. After power up, the value in DM15 is 512.
Event data transmission is not performed in the following cases:

(1) When a value equal to or larger than 8192 is written to DM15.

(2) When DM Link 1:N communication is selected.

(3) When the serial interface is RS-485 (RS422)-2 line.

(4) When data in the event area is modified by a write command from the host.

5.4 User Area (DM16 to DM8191)

You can freely make use of the area from DM16 to DM8191. Use this area to exchange data with the host.

6 DM Link Communication Method Settings

The settings required in WindO/I-NV2 for the using the DM Link communication method are located in the Host I/F Selection and [Configuration]-[System Setup]-[Project] dialog boxes (refer to 1.3 and 1.4 in Chapter 2 of the MICRO/I instruction manual. Set the items in the following table in accordance with the host that you will be using.

[Dialog Box Name] - [Tab Name]	Setting Name	Description
[Change Host I/F Driver]	Manufacturer	Select IDEC HG-System.
	Protocol	Select DM Link 1:1 for DM Link 1:1 communication and DM Link 1:N for DM Link 1:N Communication.
[Project Settings] - [Host I/F Driver]	Transmission Wait	Set the time after which the MICRO/I sends a response command to the host after receiving a command from the host. The actual time until the response is sent is greater than the Transmission wait time and less than the Transmission wait time +10msec.
	Retry Cycles	This setting is not required.
	Time Out	
	With BCC	Select the checkbox if you want to perform BCC checking.
	Max Event Transmission Words (Only DM Link 1:1)	Set the max number of words for event transmission.
	Protocol (Only DM Link 1:1)	Select the number of protocol format. 0: Basic protocol format 1: Protocol format 1(Add an error code and “CR” to “ACK”, “NAK” in Basic protocol format.)
	DM LINK No. (Only DM Link 1:N)	Set the DM Link station number.
[Project Settings] - [Communication Interface]	Protocol	Select Host Communication.
	Baud Rate	Select the same setting used for the host. 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200bps
	Data Bits	Select the same setting used for the host (7 or 8 bits)
	Stop Bits	Select the same setting used for the host (1 or 2 bits)
	Parity	Select the same setting used for the host (Even, Odd or None)
	Serial Interface	Select the serial interface that you will be using. RS-232C/RS-485 (422)-2/RS-485 (422)-4
	Flow Control	Select either ER Control or None.
[Project Settings] - [System]	Start Time	Set this to 0.
	Use System Area	Select this if you want to use the system area.
	Device	Specify the system area start Device address.
	Use System Areas 3, 4	Select this if you want to use the system areas 3 and 4.
	Watch Dog	If you select Watch Dog, set the Write Device and the Time (write interval). If you will transmit from the MICRO/I to the host, set a write device for the event output area.
	Device	
	Time	

7 DM Link 1:1Communication Format

With DM Link 1:1 communication, the following communication format is used.

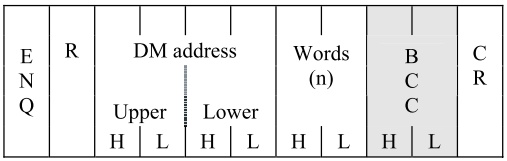
- Command (Response)
  Read
  Write
  Transmission Control
  Clear
- Event
  Event Transmission

7.1 Read

This command is used by the Host to read the MICRO/I data memory. One command can read a maximum of 255 words of data.

7.1.1 Command

Format

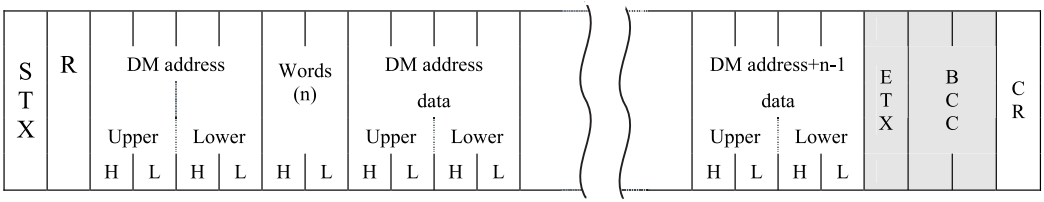


Detailed description

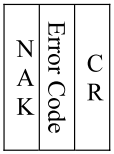
Command	Code	Description	Bytes
ENQ	05h	Command start	1
R	52h	Read Command	1
DM Address		Starting DM address for read. This is expressed as the ASCII code of the hexadecimal value of the address.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

7.1.2 Response

Format; Normal response



Format; Error response



Detailed description; Normal response

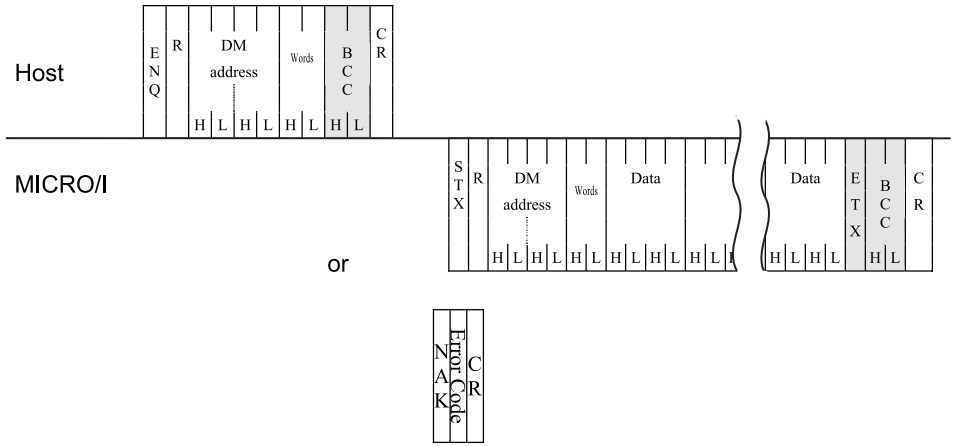
Command	Code	Description	Bytes
STX	02h	Response start	1
R	52h	Read response	1
DM address		Starting DM address for read. This is expressed as the ASCII code of the hexadecimal value of the address.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
Data		DM address data The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
ETX	03h	Only required when 'with BCC' is set. At the end of the response data.	1
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

7.1.3 Response Command

Detailed description; Error response

Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Error Code		Refer to 10 Error Processing. (Only Protocol format 1)	1
CR	0Dh	End. (Only Protocol format 1)	1

7.1.4 Read Sequence

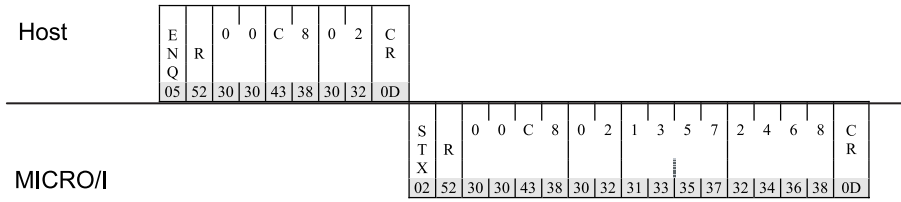


WARNING Please do not transmit the following command until host apparatus receives the response of a command which transmitted to the display machine or serves as a timeout.

7.1.5 Read Communication Example

- To read the two words of data in DM200 and DM201 (without BCC, Basic protocol format)
  If the data in DM200 is 4951 (1357h), and the data in DM201 is 9320 (2468h) the sequence is as follows.

The DM address 200 (C8) is converted and expressed as ASCII code.



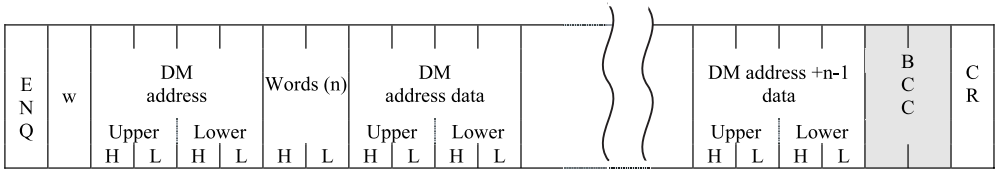
*The shaded part of the command is ASCII code.

7.2 Write

This command is used by the Host to write data to the MICRO/I data memory. One command can write a maximum of 255 words of data.

7.2.1 Command

Format

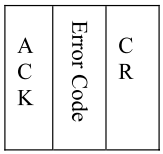


Detailed description

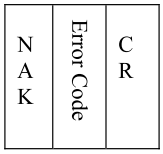
Command	Code	Description	Bytes
ENQ	05h	Command start	1
W	57h	Write Command	1
DM Address		DM address to begin writing from This is expressed as the ASCII code of the hexadecimal value of the address.	4
Words		Number of words to write The hexadecimal value expressed using ASCII code.	2
Data		DM ADDRESS DATA. The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

7.2.2 Response

Format; Normal response



Format; Error response



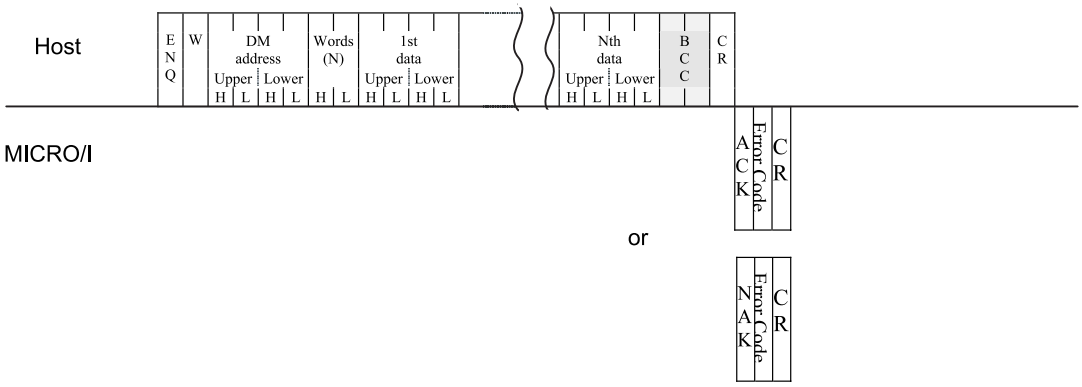
Detailed description; Normal response

Command	Code	Description	Bytes
ACK	06h	Write completed normally.	1
W	57h	Write response. (Only Protocol format 1)	1
CR	0Dh	End. (Only Protocol format 1)	1

Detailed description; Error response

Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Error Code		Refer to 10 Error Processing. (Only Protocol format 1)	1
CR	0Dh	End. (Only Protocol format 1)	1

7.2.3 Write Sequence

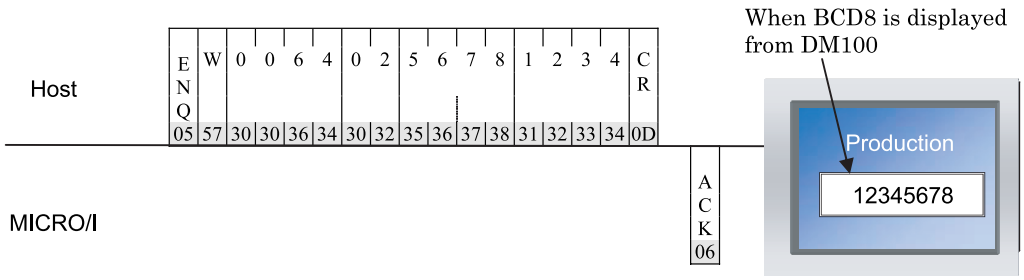


WARNING

Please do not transmit the following command until host apparatus receives the response of a command which transmitted to the display machine or serves as a timeout.

7.2.4 Write Communication Example

- Write 22136 (5678h) to DM100 and 4660 (1234h) to DM101 (without BCC, Basic protocol format)



*The shaded part of the command is ASCII code.

7.3 Transmission Control

Host commands for controlling transmission from the MICRO/I. The commands are Transmission Prohibited and Transmission Allowed. The Transmission Control commands are the same as the general X-ON and X-OFF commands. Therefore, you can use DM Link 1:1Communication with a host that can perform X-ON and OFF control without making any settings.

7.3.1 Stop Transmission Command

Format

D C 3

Detailed description

Command	Code	Description	Bytes
DC3	13h	Stop Transmission	1

- After the MICRO/I receives the DC3 command it sends up to a maximum of 15 bytes of data and then transmission is stopped.
- While transmission is stopped the MICRO/I can store up to 1023 bytes of transmission data. If event outputs occur that would cause this number to be exceeded, the MICRO/I stops operating until the data is output.
- There is no response to the Transmission Prohibited command.

7.3.2 Transmission Allowed Command

Format

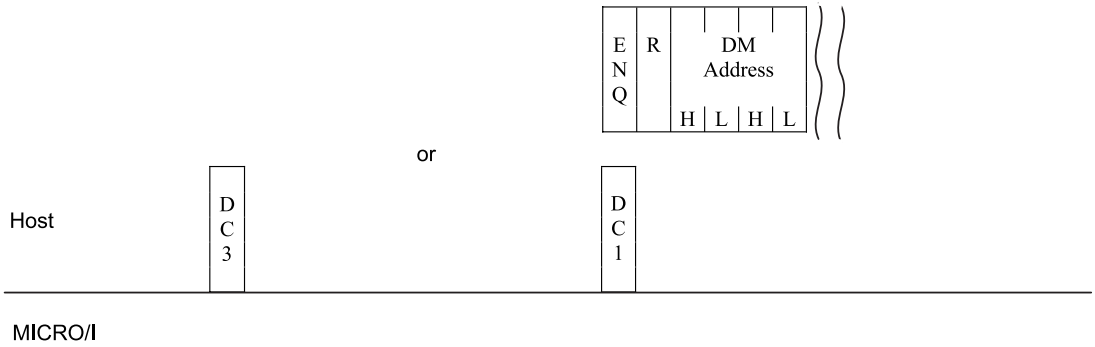
D C 1

Detailed description

Command	Code	Description	Bytes
DC1	11h	Transmission Allowed	1

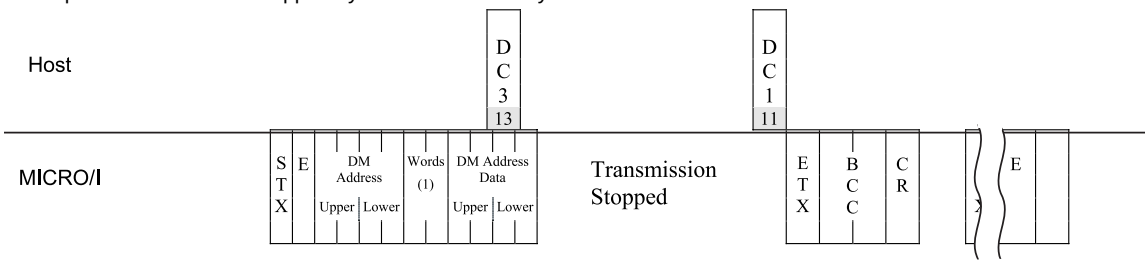
- After the MICRO/I receives DC1, it sends out all event data transmissions that were generated while transmission was stopped.
- There is no response to the Transmission Allowed command.
- When the ENQ (Start Command, 05h) is received, the MICRO/I also enters the Transmission Allowed state. After receiving ENQ, the MICRO/I sends out all event data transmissions generated while transmission was stopped.
- After receiving ENQ, the MICRO/I sends out all event data transmissions generated while transmission was stopped.
- After receiving ENQ, the MICRO/I receive buffer is cleared.

7.3.3 Transmission Control Sequence

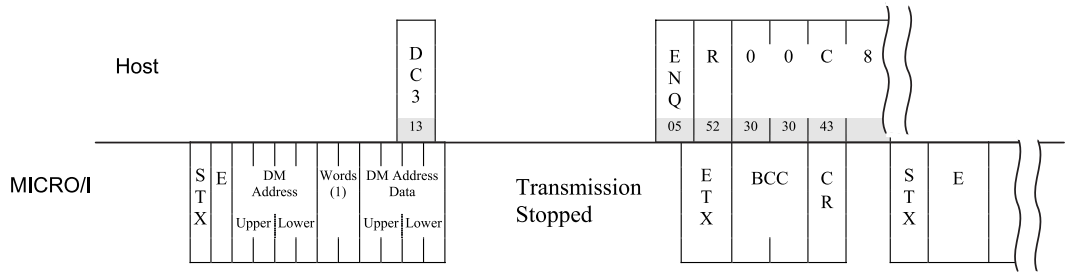


7.3.4 Transmission Control Communication Example

Example 1: Transmission stopped by DC3 and started by DC1



Example 2: Transmission stopped by DC3 and started by ENQ



*The shaded part of the command is ASCII code.

7.4 Clear Command

This host command clears the MICRO/I receive buffer.

7.4.1 Command

Format

Detailed description

Command	Code	Description	Bytes
EOT	04h	Clear the receive buffer	1

When the MICRO/I receives the EOT command, all data received prior to receiving it is cleared.

7.5 Event Transmission

This is used to perform Event Transmission when a value in the MICRO/I data memory is changed

7.5.1 Command

Format

STX	E	DM address Upper H	DM address Upper L	DM address Lower H	DM address Lower L	Words (1) H	Words (1) L	DM address data Upper H	DM address data Upper L	DM address data Lower H	DM address data Lower L	BCC	CR

Detailed description

Command	Code	Description	Bytes
STX	02h	Command start	1
E	45h	Event Transmission command	1
DM Address		Event Transmission address. This is expressed as the ASCII code of the hexadecimal value of the address.	4
Words		Event Transmission words. The hexadecimal value expressed using ASCII code.	2
Data		DM Address data. The hexadecimal value expressed using ASCII code.	4
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

WARNING

- Number of Event Transmission words should not be larger than the number of Max Event Transmission Words. If Max Event Transmission Words is 0, then Event Transmission words is set to 1.
- The Max Event Transmission Words setting is set from 0 to 255.

7.5.2 Event Data Transmission Sequence

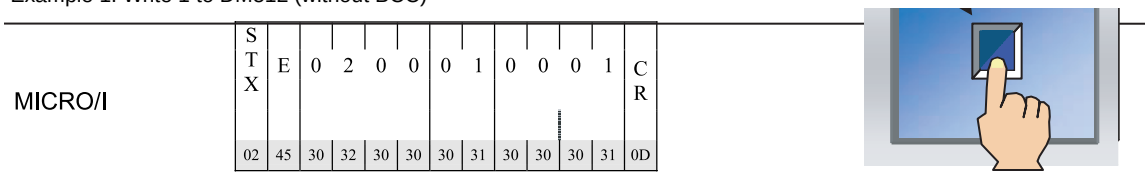
Host

MICRO/I

STX	E	DM address Upper H	DM address Upper L	DM address Lower H	DM address Lower L	Words (1) H	Words (1) L	DM address data Upper H	DM address data Upper L	DM address data Lower H	DM address data Lower L	ETX	BCC	CR

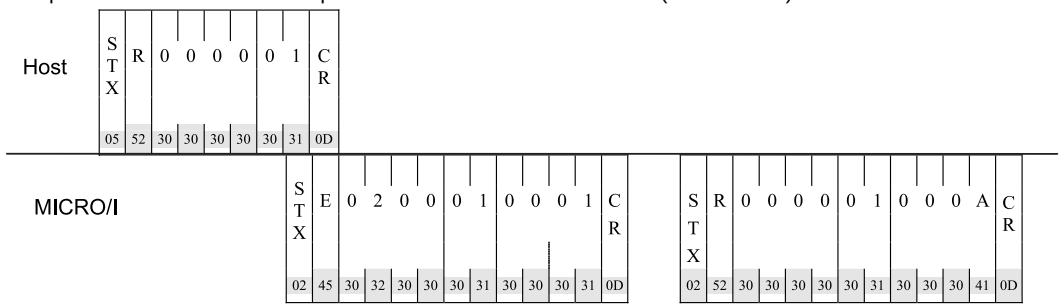
7.5.3 Event Data Transmission Communication Example

Example 1: Write 1 to DM512 (without BCC)



*The shaded part of the command is ASCII code.

Example 2: When the above example occurred in the middle of a read (without BCC)



*The shaded part of the command is ASCII code.

8 DM Link 1:N Communication Format

The communication format with DM Link 1:N Communication is as follows.

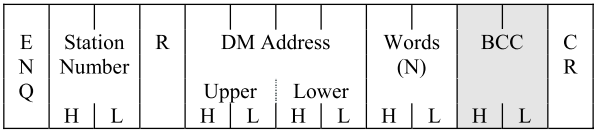
- Command (Response)
  Read
  Write Clear

8.1 Read

The Read command is used by the host to read the MICRO/I data memory.
One command can read a maximum of 255 words of data.

8.1.1 Command

Format

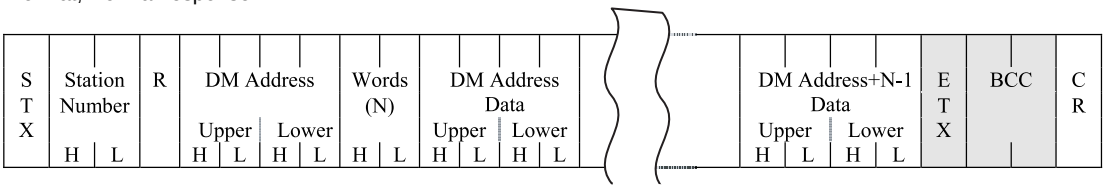


Detailed description

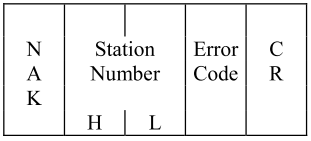
Command	Code	Description	Bytes
ENQ	05h	Command Start	1
Station Number		The O/I station number expressed in ASCII.	2
R	52h	Read Command	1
DM address		DM address to start reading from This is expressed as the ASCII code of the hexadecimal value of the address.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
BCC		Only required when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

8.1.2 Response

Format; Normal response



Format; Error response



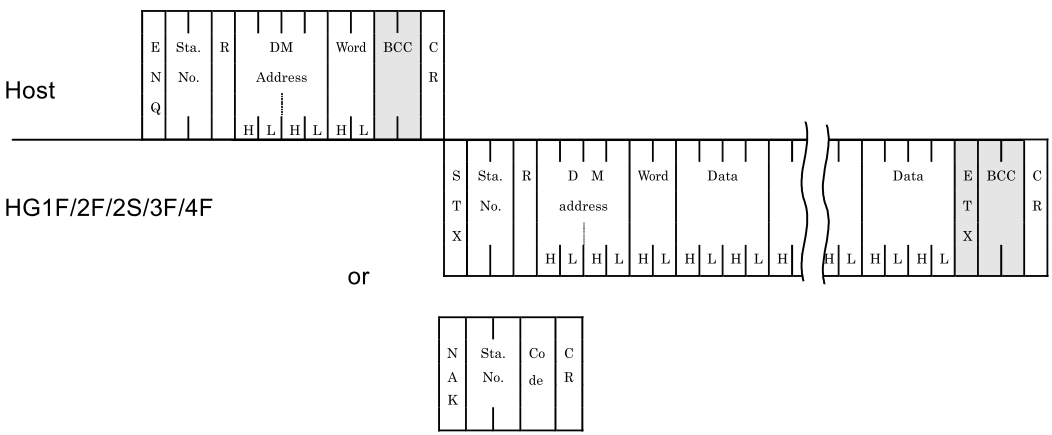
Detailed description; Normal response

Command	Code	Description	Bytes
STX	02h	Response start	1
Station Number		The O/I station number expressed in ASCII.	2
R	52h	Read response	1
DM address		DM address to start reading from This is expressed as the ASCII code of the hexadecimal value of the address.	4
Words		Number of words to read The hexadecimal value expressed using ASCII code.	2
Data		DM Address Data The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
ETX	03h	Only added when 'with BCC' is set. End of the response data.	1
BCC		Only added when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

Detailed description; Error response

Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Station Number		The O/I station number expressed in ASCII.	2
Error Code		Refer to 10 Error Processing.	1
CR	0Dh	End	1

8.1.3 Read Sequence



WARNING Please do not transmit the following command until host apparatus receives the response of a command which transmitted to the display machine or serves as a timeout.

8.1.4 Read Communication Example

- Read the two words of data from DM200 and DM201of O/I station number 1 (without BCC)
  In this example the data in DM200 is 1357h and the data in DM201 is 2468h.

The DM address 200 (00C8h) is converted to ASCII code and stored.

Host

ENQ	0	1	R	0	0	C	8	0	2	CR
05	30	31	52	30	30	43	38	30	32	0D

HG1F/2F/2S/3F/4F

STX	0	1	R	0	0	C	8	0	2	1	3	5	7	2	4	6	8	CR
02	30	31	52	30	30	43	38	30	32	31	33	35	37	32	34	36	38	0D

*The shaded part of the command is the actual data sent (ASCII code).

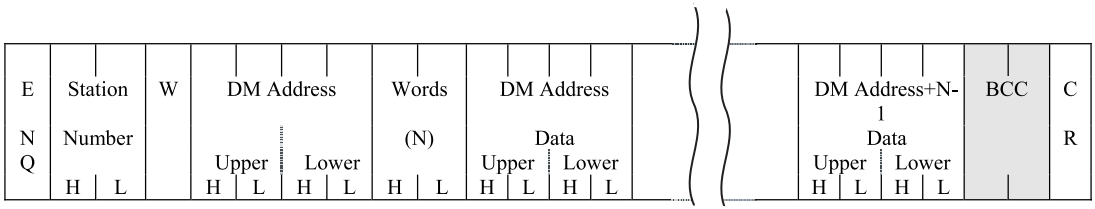
8.2 Write

This command is used by the host to write data to the MICRO/I data memory.

One command can write a maximum of 255 words of data.

8.2.1 Command

Format

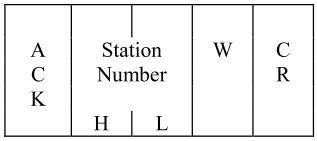


Detailed description

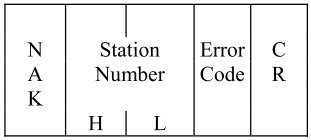
Command	Code	Description	Bytes
ENQ	05h	Command Start	1
Station Number		The O/I station number is converted into ASCII and stored.	2
W	57h	Write Command	1
DM Address		DM address to start writing from This is expressed as the ASCII code of the hexadecimal value of the address.	4
Words		Number of words to write The hexadecimal value expressed using ASCII code.	2
Data		DM Address Data The hexadecimal value expressed using ASCII code. The words are in order from the lowest address.	4 x N N is the number of words
BCC		Only added when 'with BCC' is set. Exclusive OR (HEX) from ENQ to before BCC converted to ASCII code.	2
CR	0Dh	End	1

8.2.2 Response

Format; Normal response



Format; Error response



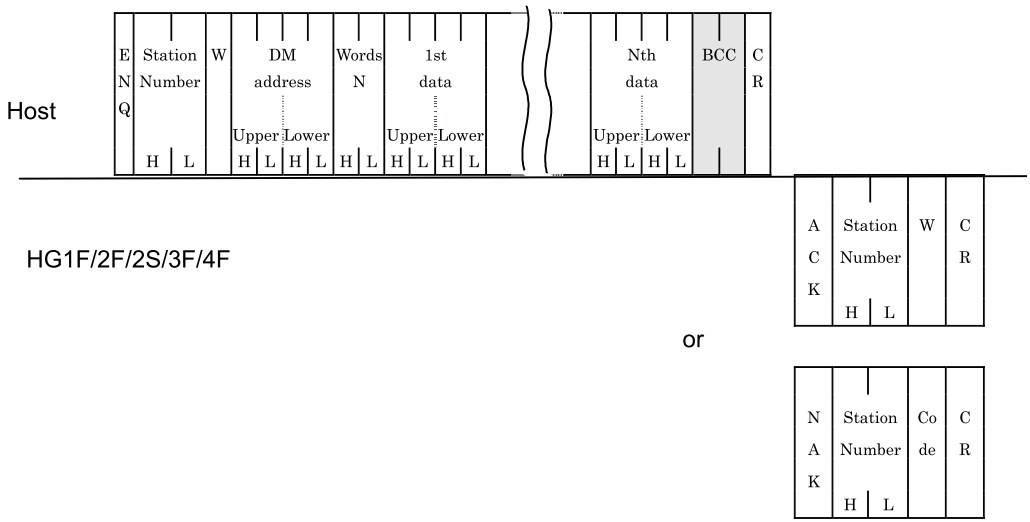
Detailed description; Normal response

Command	Code	Description	Bytes
ACK	06h	Write finished correctly.	1
Station Number		The O/I station number expressed in ASCII.	2
W	57h	Write response	1
CR	0Dh	End	1

Detailed description; Error response

Transmission Command	Code	Description	Bytes
NAK	15h	Command was not received correctly.	1
Station Number		The O/I station number is converted into ASCII and stored.	2
Error code		Refer to 10 Error Processing.	1
CR	0Dh	End	1

8.2.3 Write Sequence

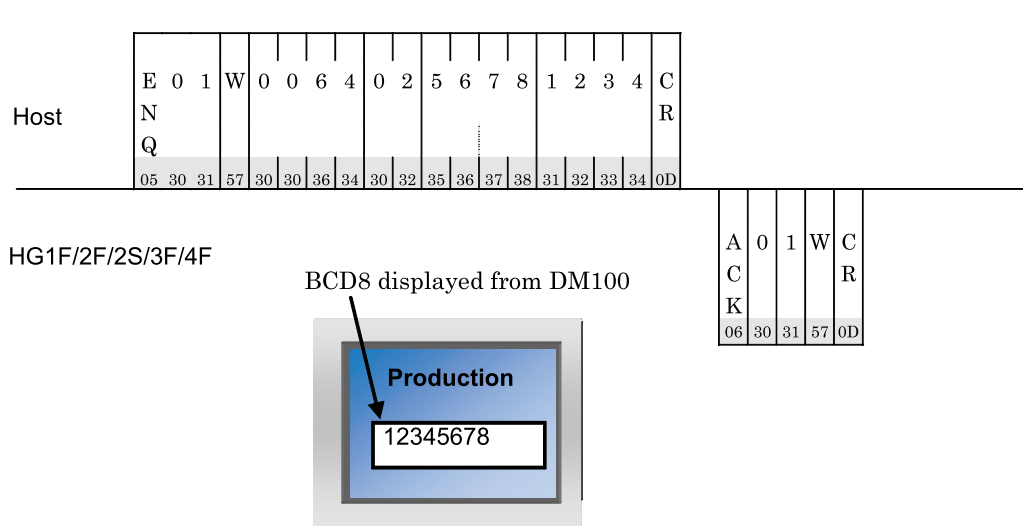


WARNING

Please do not transmit the following command until host apparatus receives the response of a command which transmitted to the display machine or serves as a timeout.

8.2.4 Write Communication Example

- Write 5678h to DM100 and 1234h to DM101 (without BCC)


WARNING
Host
ENQ 01 W 0064 02 5678 1234 CR
05 30 31 57 30 30 36 34 30 32 35 36 37 38 31 32 33 34 0D
HG1F/2F/2S/3F/4F
ACK 01 W CR
06 30 31 57 0D
BCD8 displayed from DM100
Production
12345678

8.3 Clear

Host unit command used to clear the MICRO/I receive buffer.

8.3.1 Command

Format

E O T

Detailed description

Command	Code	Description	Bytes
EOT	04h	Clear receive buffer	1

WARNING When the MICRO/I receives the EOT command, all data received prior to receiving it is cleared.

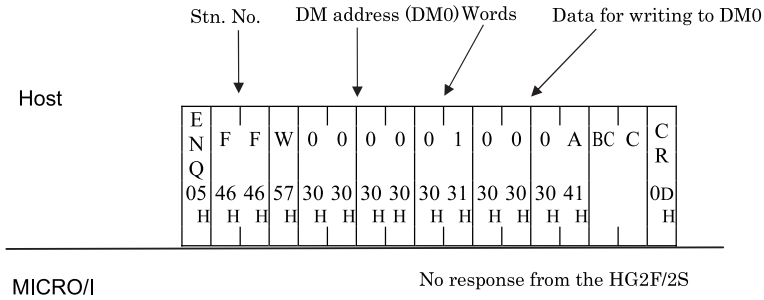
8.4 Station Number

With DM Link 1:N communication, the MICRO/I receives commands when the station number is its own station number, FFh or 00h. The operations that take place are given in the following table.

Station Number	Operation
The MICRO/I's own station number	Reads from or writes to the data memory and returns a response. This is used in normal operation.
FFh	Writes to the data memory, but does not return a response. This is used to write to all connected MICRO/I units at one time.
00h	Reads from the data memory, and returns a response. This is used to write to all connected MICRO/I units at one time. This is used for monitoring.

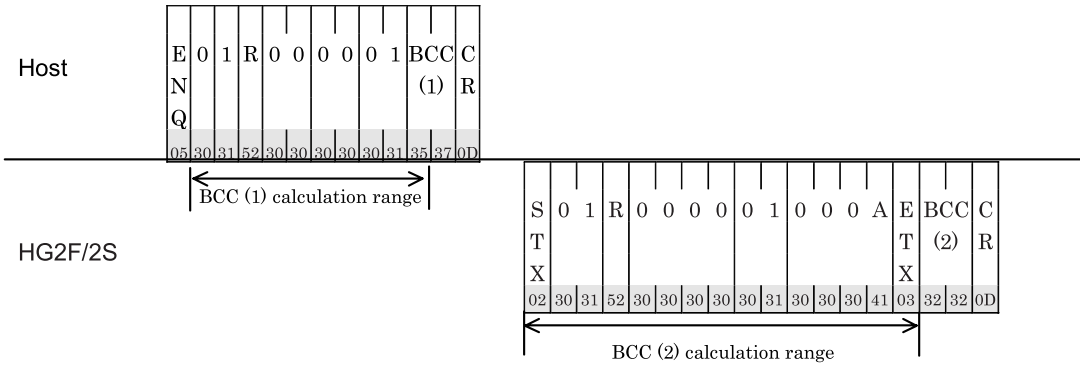
8.4.1 Communication Example

Example: Write Ah to DM0 (with BCC)



9 BCC Calculation

9.1 BCC Calculation Example (for DM Link 1:N Communication)



Refer to the Exclusive OR (XOR) truth table to calculate BCC. (A XOR B = C)

A	B	C
0	0	0
0	1	1
1	0	1
1	1	0

BCC (1) Calculation

	05h
	30h
	31h
	52h
	30h
	30h
	30h
	30h
	30h
	31h
XOR Result	57h

BCC (1)	35h	37h

BCC (2) Calculation

	02h
	30h
	31h
	52h
	30h
	30h
	30h
	30h
	30h
	30h
	31h
	30h
	30h
	30h
	41h
	03h
XOR Result	22h

BCC (2)	32h	32h

10 Error Codes

- When a command that starts with the ENQ (05h) code and ends with CR (0Dh) code is received, but the content is not valid, an error response is returned.
- The error response codes are as follows.

Error Code	Type	Error Description
'2' (32h)	BCC	BCC doesn't match (when “with BCC” is set)
'3' (33h)	Command	A command other than 'W' or 'R' was received (with the exception of the Clear command)
'4' (34h)	Address	Invalid DM address (other than DM0 to DM8191)
'5' (35h)	No. of Words	Invalid number of words specified (outside the range 1 to 255 or the DM address + No. of words - 1 exceeds 8191)
'6' (36h)	Received Bytes	Received bytes invalid (the number of words of data did not exist)

In the case of DM Link 1:N, the error code is appended to the request denial. It is not used in the case of DM Link 1:1 communication.

10.1 Response Time

The MICRO/I replies to commands from the host within 10msec plus the transmission wait.

Chapter 5 Modbus

1 Modbus

Selecting Modbus RTU or MODBUS/TCP Client for the Host I/F Driver allows the user to use the 1: N Communication function.

- 1: N Communication function (Chapter 6 1: N Communication Function)

1.1 Connection Table

1.1.1 Compatible Protocols

Protocol	WindO/I-NV2 Setting Name		
	Interface	Flow Control	Host I./F Driver
Modbus RTU Master	RS232C, RS-485/422	Hardware/None	Modbus RTU
Modbus ASCII Master	RS232C, RS-485/422	Hardware/None	Modbus ASCII
MODBUS/TCP Client	Ethernet *1	-	MODBUS/TCP Client
MODBUS/TCP Server*2	Ethernet *1	-	MODBUS/TCP Server

*1.If you select “MODUBS/TCP Client” in the Protocol setting, the interface will be used as Ethernet and the only settings of “Transmission Wait”, “Time Out” and “Retry Cycles” on the Host port tab of the [Configuration]-[System Setup]-[Project]-[Host I/F Driver] dialog box are available.

*2. Refer to Chapter 5 “1.6 MODBUS/TCP Server” on page 570.

MODBUS/TCP Client or MODBUS/TCP Server cannot be used as Host I/F Driver by MICRO/I equipped with the Ethernet Port.

1.1.2 Compatible PLCs

Manufacturer	Series Name	System (CPU unit)	Link Unit	WindO/I-NV2 Setting Name		
				Interface	Flow Control	Host I/F Driver
Schneider	Twido	TWD LC*A 10DRF	Not required (connects to CPU unit directly)	RS-485 Connection Diagram 2 (refer to P562)	Hardware	Modbus RTU Modbus ASCII
		TWD LC*A 16DRF TWD LC*A 24DRF TWD LCA* 40DRF	Not required (connects to CPU unit directly)	RS-485 Connection Diagram 2 (refer to P562)		
			TWD NAC 232D	RS-232C Connection Diagram 1 (refer to P559)		
			TWD NAC 485D	RS-485-2 Connection Diagram 2 (refer to P562)		
			TWD NAC 485T	RS-485-2 Connection Diagram 3 (refer to P565)		
Schneider	Twido	TWD LMDA 20DTK TWD LMDA 20DUK TWD LMDA 20DRT TWD LMDA 40DTK TWD LMDA 40DUK	Not required (connects to CPU unit directly)	RS-485 Connection Diagram 2 (refer to P562)	Hardware	Modbus RTU Modbus ASCII
			TWD NOZ 485D	RS-485 Connection Diagram 2 (refer to P562)		
			TWD NOZ 232D	RS-232C Connection Diagram 1 (refer to P559)		
			TWD NOZ 485T	RS-485-2 Connection Diagram 3 (refer to P565)		
			TWD XCP ODM +TWD NAC 232D	RS-232C Connection Diagram 1 (refer to P559)		
			TWD XCP ODM +TWD NAC 485D	RS-485-2 Connection Diagram 2 (refer to P562)		
			TWD XCP ODM +TWD NAC 485T	RS-485-2 Connection Diagram 3 (refer to P565)		
	Momentum	171CCC96020*1	Not required*1 (connects to Ethernet Port*1)	(Ethernet) *2	-	MODBUS/TCP Client

*1. We tested with the PLC of these parts.

*2. If you select “MODUBS/TCP Client” in the Protocol setting, the interface will be used as Ethernet and the only settings of “Transmission Wait”, “Time Out” and “Retry Cycles” on the Host Port tab of the [Project Setting] dialog box are available.

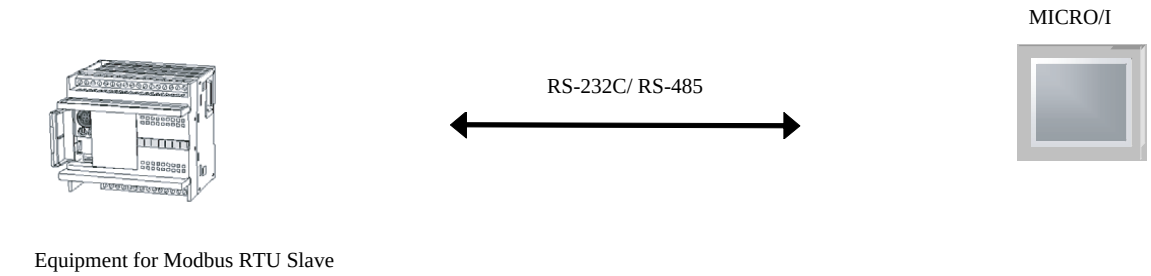
WARNING

MODBUS/TCP Client or MODBUS/TCP Server cannot be used as Host I/F Driver by MICRO/I equipped with the Ethernet port.

1.2 System Configuration

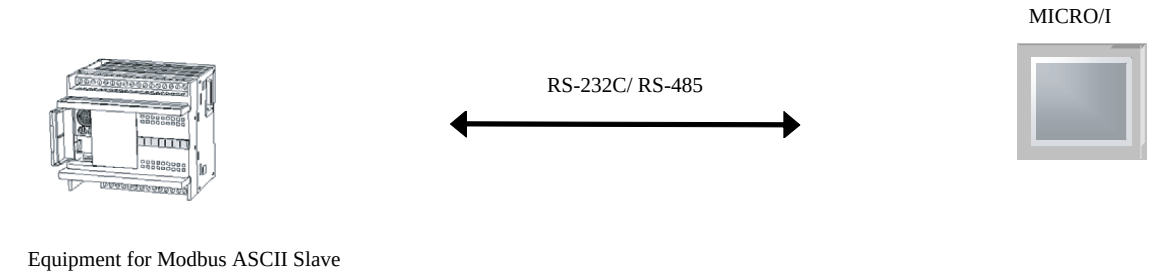
This is the system configuration for connection of Schneider PLCs to the MICRO/I.

1.2.1 Modbus RTU Master



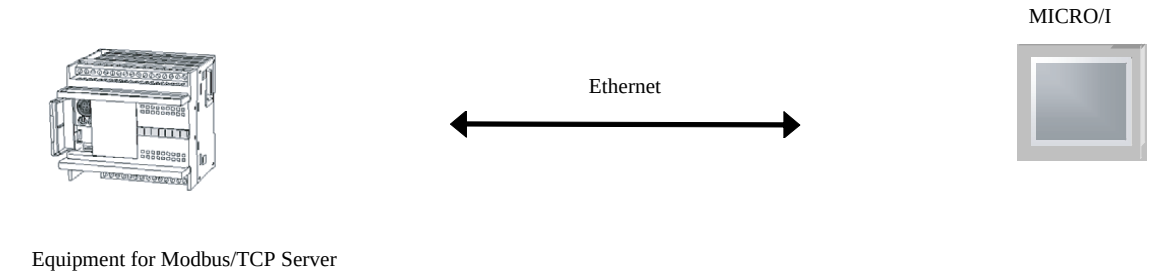
Equipment for Modbus RTU Slave

1.2.2 Modbus ASCII Master



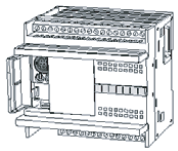
Equipment for Modbus ASCII Slave

1.2.3 Modbus/TCP Client



Equipment for Modbus/TCP Server

1.2.4 Modbus/TCP Server



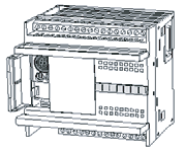
Ethernet

MICRO/I

Equipment for Modbus/TCP Client

1.2.5 Twido

- Serial Port on CPU module



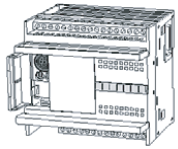
RS-485
Connection Diagram 2

MICRO/I

TWD LC*A 10DRF
TWD LC*A 16DRF
TWD LC*A 24DRF
TWD LCA* 40DRF
TWD LMDA 20DTK
TWD LMDA 20DUK
TWD LMDA 20DRT
TWD LMDA 40DTK
TWD LMDA 40DUK

In case of HG2F/3F/4F a connection cable is available (part number: HG9Z-3C115).

- Compact Controller + Communication Adapter

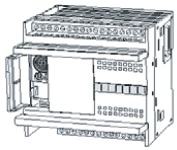


RS-232C
Connection Diagram 1

MICRO/I

TWD LC*A 16DRF
TWD LC*A 24DRF
TWD LCA* 40DRF

TWDNAC232D
(Communication Adapter)

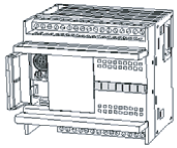


TWD LC*A 16DRF
TWD LC*A 24DRF
TWD LCA* 40DRF

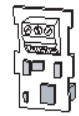
TWDNAC485D
(Communication Adapter)

RS-485
Connection Diagram 2

MICRO/I



TWD LC*A 16DRF
TWD LC*A 24DRF
TWD LCA* 40DRF

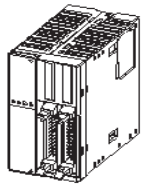


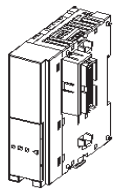
TWDNAC485T
(Communication Adapter)

RS-485
Connection Diagram 3

MICRO/I

- Module Controller + Communication Module



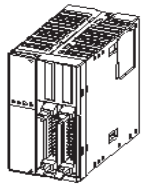


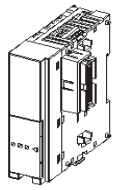
RS-232C
Connection Diagram 1

MICRO/I

TWD LMDA 20DTK
TWD LMDA 20DUK
TWD LMDA 20DRT
TWD LMDA 40DTK
TWD LMDA 40DUK

TWD NOZ232D



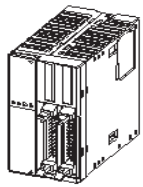


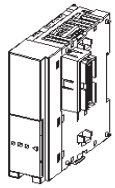
RS-485
Connection Diagram 2

MICRO/I

TWD LMDA 20DTK
TWD LMDA 20DUK
TWD LMDA 20DRT
TWD LMDA 40DTK
TWD LMDA 40DUK

TWD NOZ485D





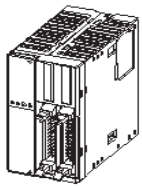
RS-485
Connection Diagram 3

MICRO/I

TWD LMDA 20DTK
TWD LMDA 20DUK
TWD LMDA 20DRT
TWD LMDA 40DTK
TWD LMDA 40DUK

TWD NOZ485T

- Module Controller + HMI Module + Communication Adapter



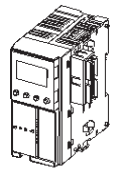
TWD LMDA 20DTK

TWD LMDA 20DUK

TWD LMDA 20DRT

TWD LMDA 40DTK

TWD LMDA 40DUK

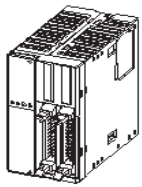


TWD XCP ODM (HMI Module)

TWD NAC232D (Communication Adapter)

RS-232C Connection Diagram 1

MICRO/I



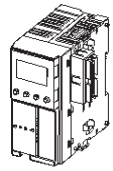
TWD LMDA 20DTK

TWD LMDA 20DUK

TWD LMDA 20DRT

TWD LMDA 40DTK

TWD LMDA 40DUK

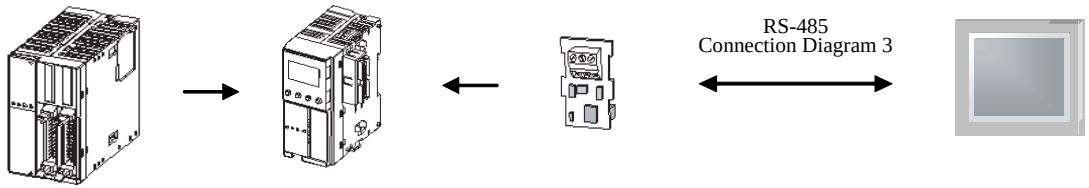


TWD XCP ODM (HMI Module)

TWD NAC485D (Communication Adapter)

RS-485 Connection Diagram 2

MICRO/I

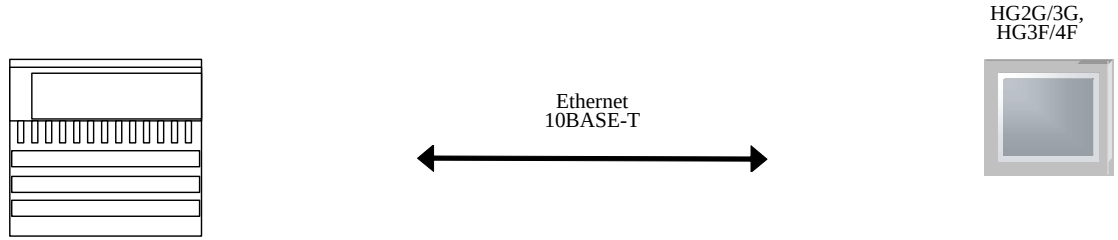


TWD LMDA 20DTK
TWD LMDA 20DUK
TWD LMDA 20DRT
TWD LMDA 40DTK
TWD LMDA 40DUK

TWD XCP ODM (HMI Module)

TWD NAC485T (Communication Adapter)

1.2.6 Momentum (MODUBS/TCP Client)



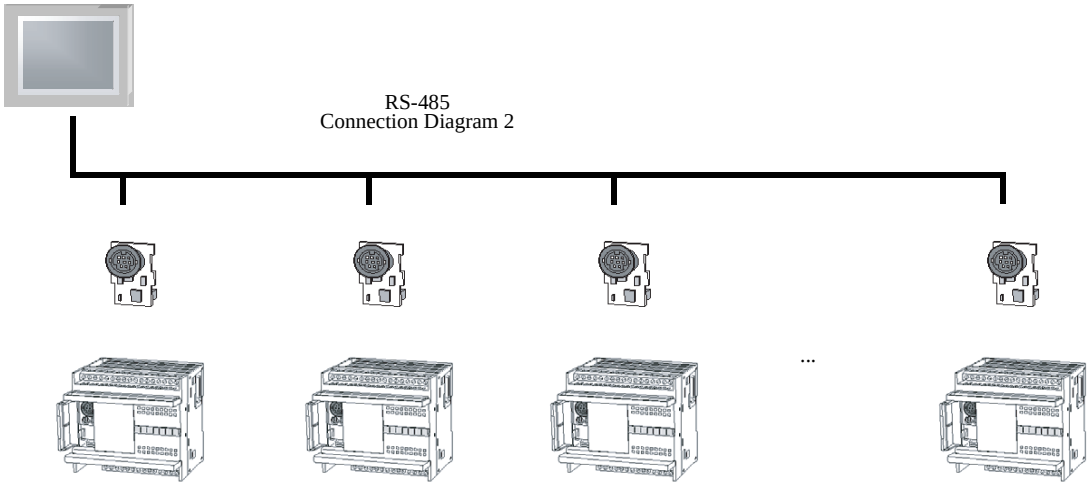
171CCC9602

- Use the direct connection with the cross cable or the hub if you use the Ethernet connection.
- Please avoid using for the long distance communication because this driver may be used in the control network in the same factory only.

1.2.7 1: N Communication-TWDL CAA16DRF/TWDLCAA24DRF +TWDNAC485D (Communication board)

The 1: N communication can be established by using the following connection.

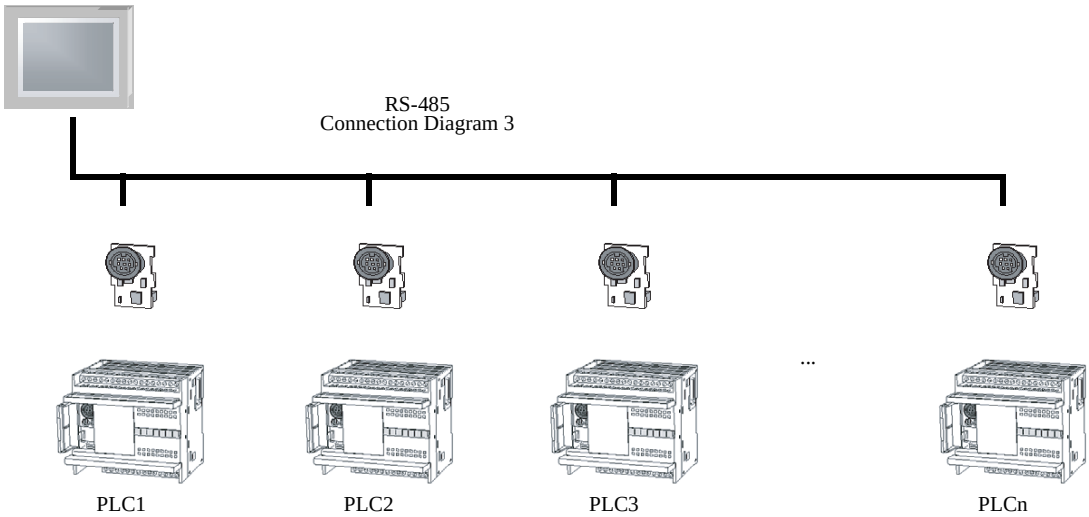
MICRO/I



1.2.8 1: N Communication- TWDLCAA16DRF/TWDLCAA24DRF +TWDNAC485T (Communication board)

The 1: N communication can be established by using the following connection.

MICRO/I

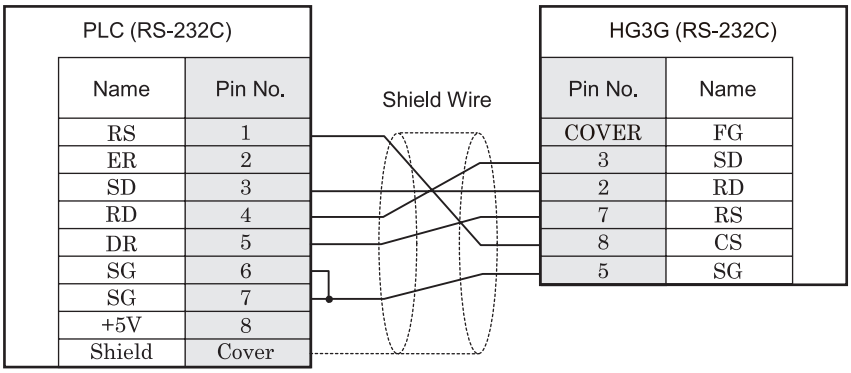


1.3 Connection Diagram

For details regarding wiring and termination resistors, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

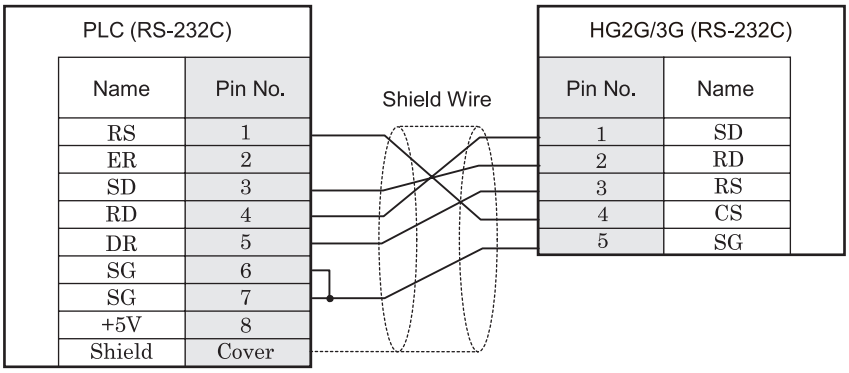
1.3.1 Connection Diagram 1: TWDNAC232D to MICRO/I

HG3G (Connector)



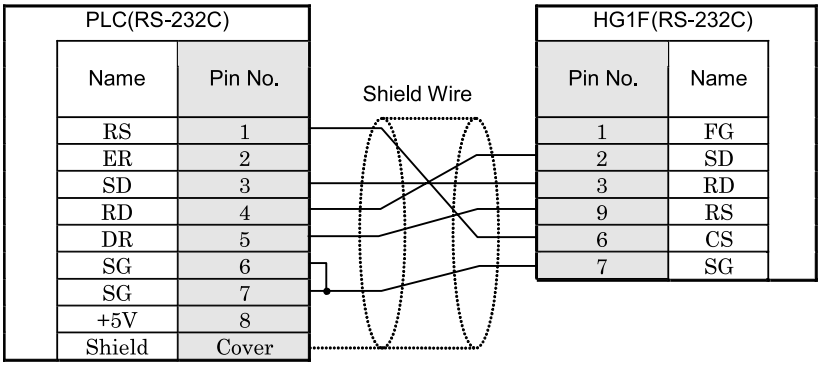
Mini Din 8P D-sub, 9P connector plug type

HG2G/3G (Terminal)



Mini Din 8P Terminal

HG1F (Connector)

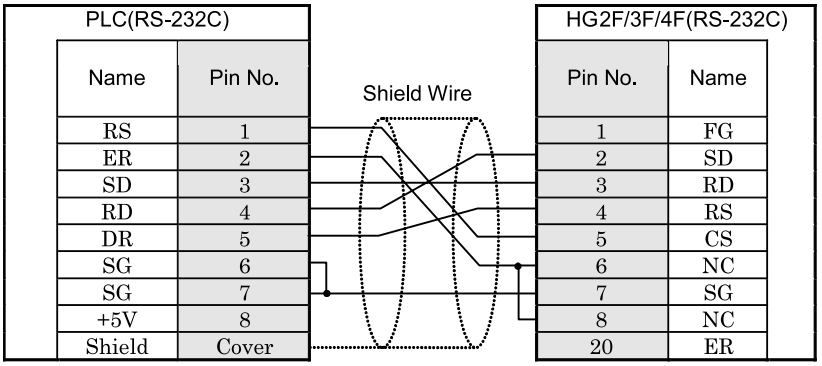


Mini Din 8P

D-sub, 9P connector socket type

In case of HG1F a connection cable is available (part number: HG9Z-XC183).

HG2F/3F/4F

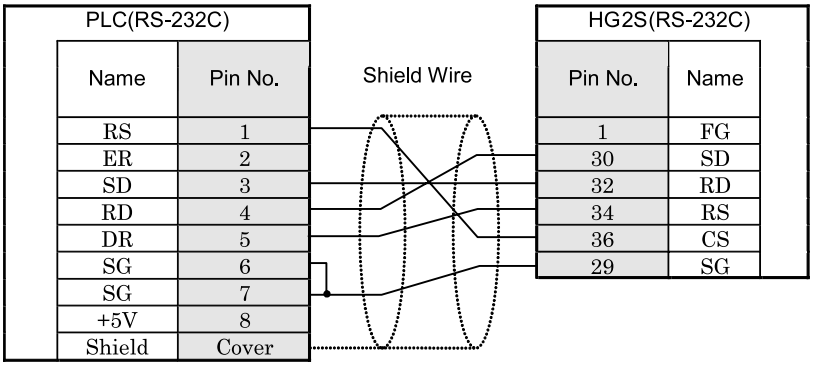


Mini Din 8P

D-sub, 25P connector socket type

- In case of HG2F/3F/4F a connection cable is available (part number: HG9Z-3C125).
- The connection diagram 1 is not same as HG9Z-3C125. But both diagrams are available. Refer to Chapter 7 “1.5 PLC connection cable: HG9Z-3C125” on page 594 about the connection diagram of HG9Z-3C125.

HG2S

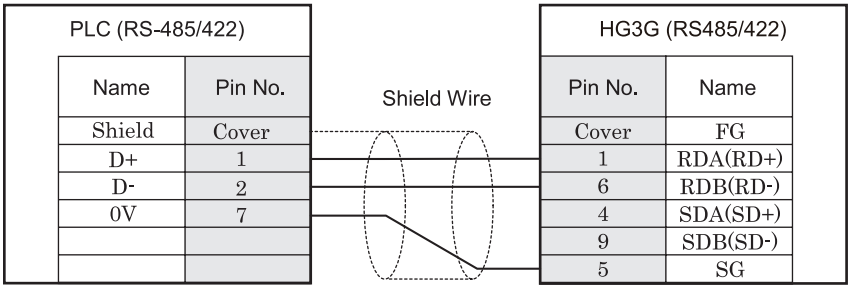


Mini Din 8P

D-sub, 37P connector socket type

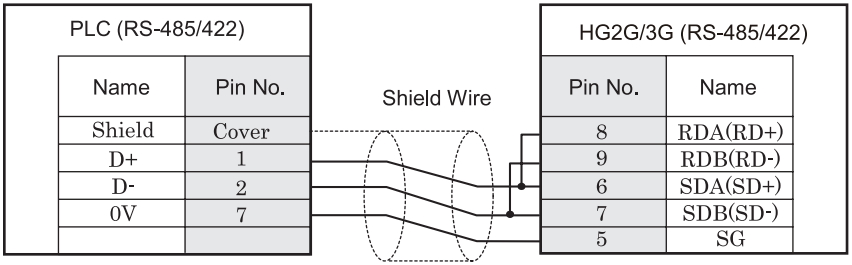
1.3.2 Connection Diagram 2: TWDNAC485D to MICRO/I

HG3G (Connector)



Mini Din 8P D-sub, 9P connector plug type

HG2G/3G (Terminal)

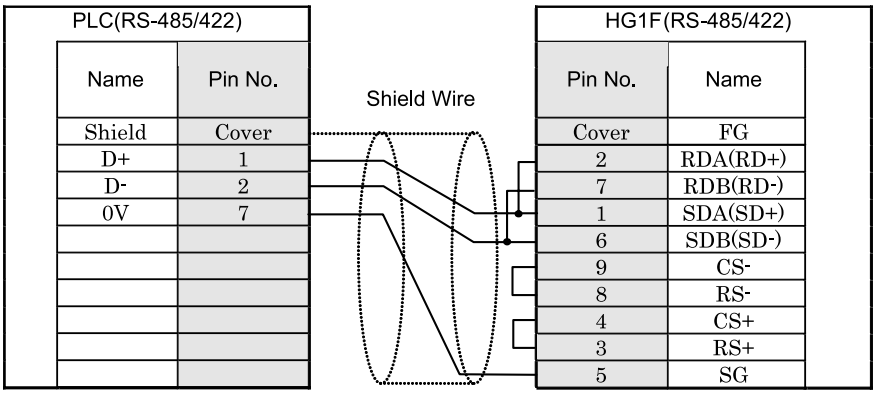


Mini Din 8P Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18

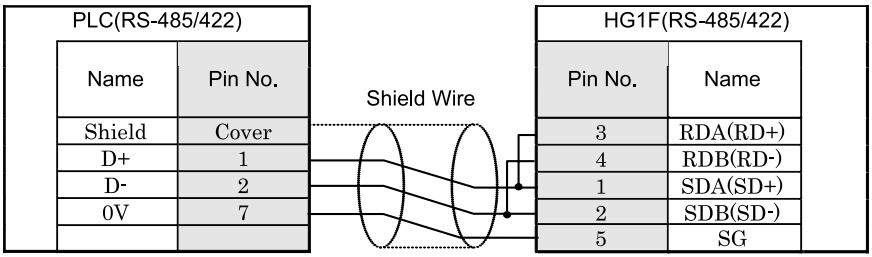
- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB.
  If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

HG1F (Connector)



Mini Din 8P D-sub, 9P connector socket type

HG1F (Terminal)

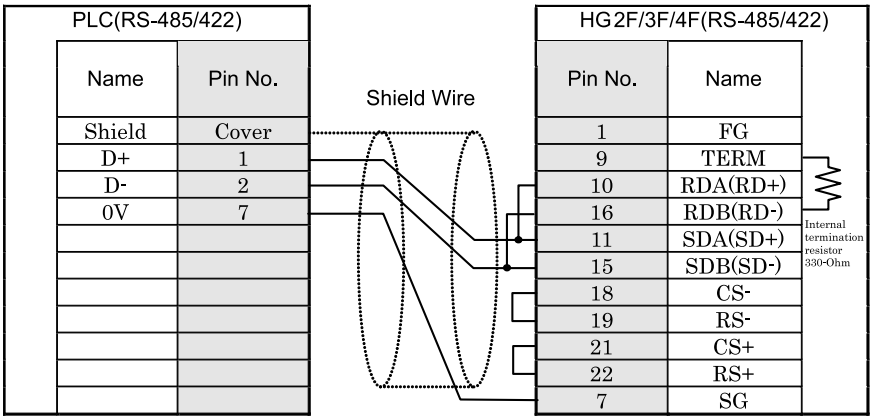


Mini Din 8P Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

HG2F/3F/4F

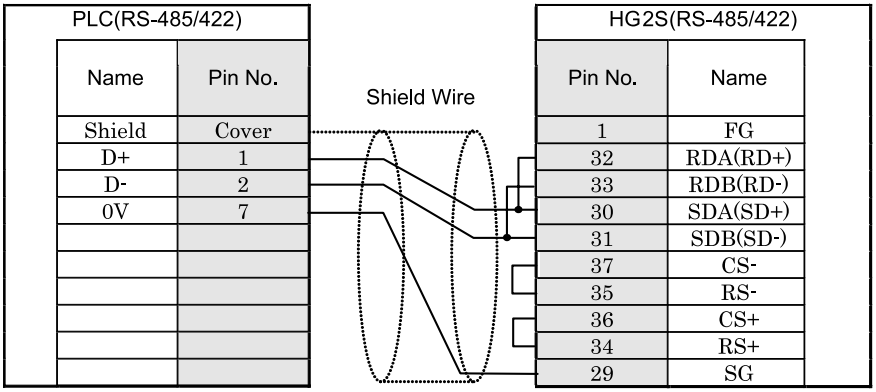


Mini Din 8P

D-sub, 25P connector socket type

In case of HG2F/3F/4F a connection cable is available (part number: HG9Z-3C115).

HG2S



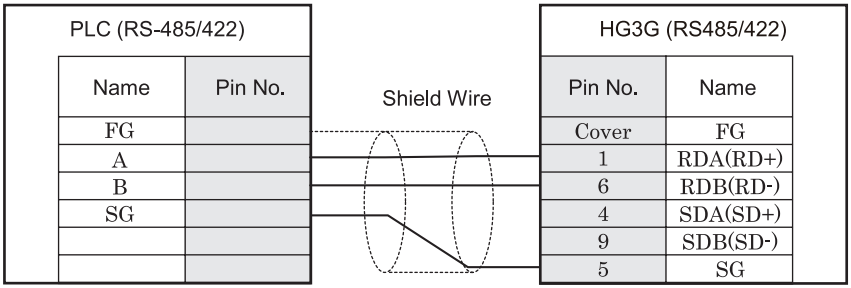
D-sub, 9P connector plug type

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

1.3.3 Connection Diagram 3: TWDNAC485T to MICRO/I

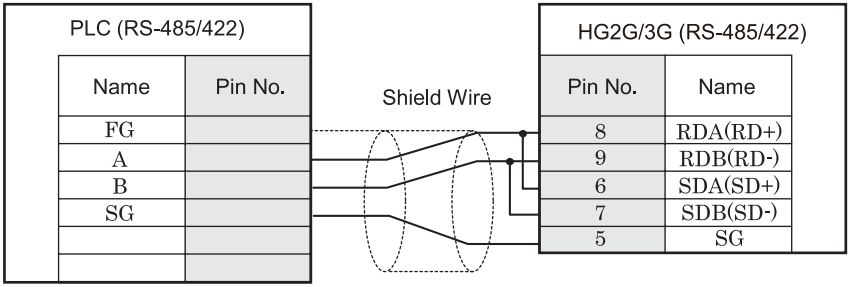
HG3G (Connector)



Screw terminal block

D-sub, 9P connector plug type

HG2G/3G (Terminal)



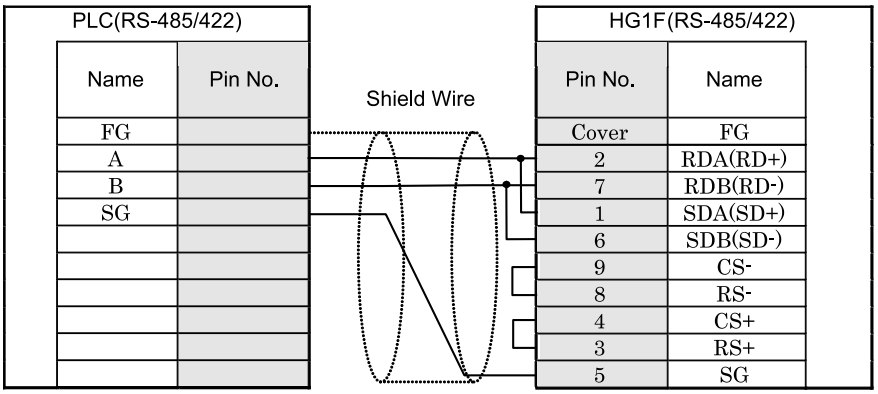
Screw terminal block

Terminal

- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18

- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB.
  If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

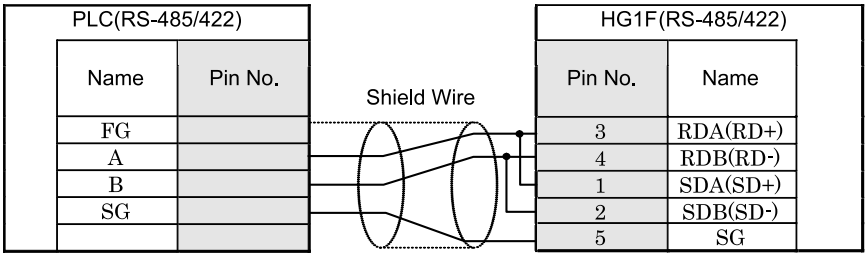
HG1F (Connector)



Screw terminal block

D-sub, 9P connector socket type

HG1F (Terminal)



Screw terminal block

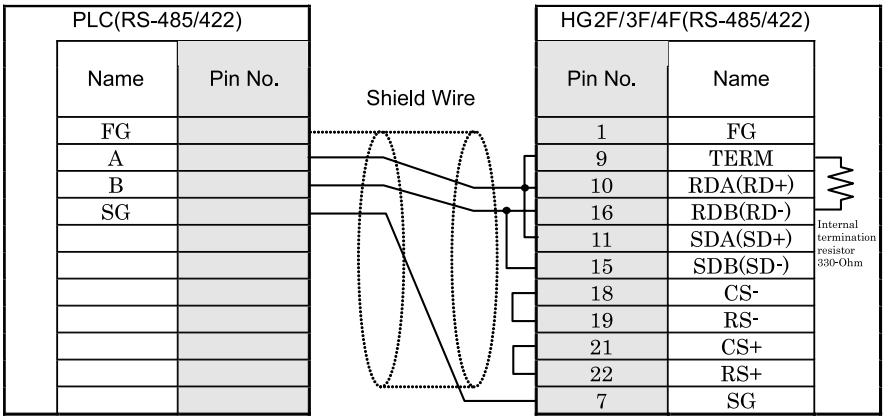
Terminal

There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

WARNING

When you use the Terminal Block type of HG1F, make sure to configure the Hardware Flow control to NONE because the HG1F doesn’t have control lines.

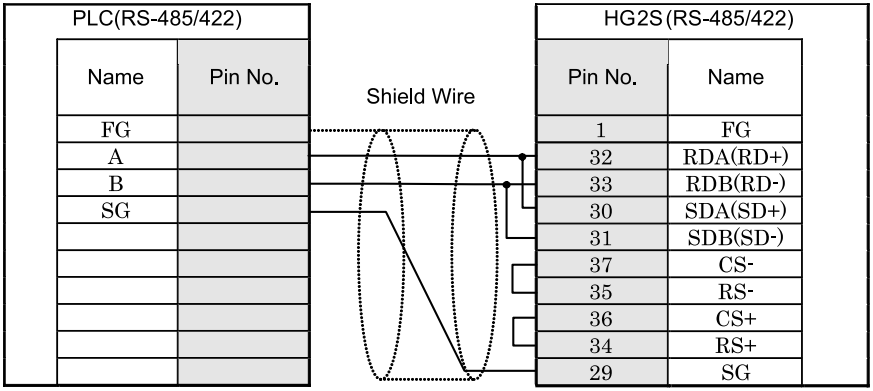
HG2F/3F/4F



Screw terminal block

D-sub, 25P connector socket type

HG2S



Screw terminal block

D-sub, 37P connector socket type

There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

1.4 Environment Settings

1.4.1 Twido

Items	Details
Serial Interface	RS-232C/RS485-2wire
Slave Address	1 - 247(DEC)
Baud Rate (bps)	1200/2400/4800/9600/19200/38400
Data Bits (bit)	7,8
Parity	None, Even, Odd
Stop Bits (bit)	1, 2
Flow Control	ER
Use No.0 as Broadcast	0: Disable, 1: Enable
Use function6 instead of function16	Use function6 for writing to HR

1.4.2 Momentum (MODBUS/TCP Client)

Items	Items	Details
Serial Interface		-- *1
Slave Address		-- *1
Baud Rate (bps)		-- *1
Data Bits (bit)		-- *1
Parity		-- *1
Stop Bits (bit)		-- *1
unit ID	The same setting as MICRO/I	1 - 247(DEC)
Destination Address *2		IPv4 Typed IP address
Port Number*2		0 to 32767 *3

*1. These settings will be ignored since it is using the Ethernet port.
*2. Destination Address and Port Number cannot be changed from the system menu of MICRO/I. Please change it using WindO/I-NV2 software.
*3. If “0” is set, this driver will set “502” (the number of MODBUS/TCP default port) automatically.

1.5 Usable Devices

1.5.1 Modbus RTU Master, Modbus ASCII Master, MODBUS/TCP Client

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Coil	C	C	1 - 65536	R/W	Dec
Inputs Status	I	I	100001 - 165536	R	Dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Holding Registers	HR	HR	400001 - 465536	R/W	Dec
Inputs Registers	IR	IR	300001 - 365536	R	Dec

1.5.2 Twido (Modbus RTU Master)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Coil	C	%M	1 - 256	R/W	Dec
Inputs Status	I	%M	100001 - 100256	R	Dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Holding Registers	HR	%MW	400001 - 401500	R/W	Dec
Inputs Registers	IR	%MW	300001 - 301500	R	Dec

1.5.3 Momentum (MODBUS/TCP Client)

Bit Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Coil	C	-	1 - 65536	R/W	Dec
Inputs Status	I	-	100001 - 165536	R	Dec

Word Device

Device Name	Device Symbol		Address Range	Read /Write	Address Gradual
	HG	PLC			
Holding Registers	HR	-	400001 - 465536	R/W	Dec
Inputs Registers	IR	-	300001 - 365536	R	Dec

1.6 MODBUS/TCP Server

1.6.1 Overview of the MODBUS/TCP Server Communication

1. Overview

The MODBUS/TCP Server communication performs that PC or PLC (refers to as a host device) can read and write the MICRO/I communication devices via the Ethernet.

The read/write of a device is performed using the MODBUS/TCP protocol. Up to 4 host devices can be connected to the MICRO/I at same time.

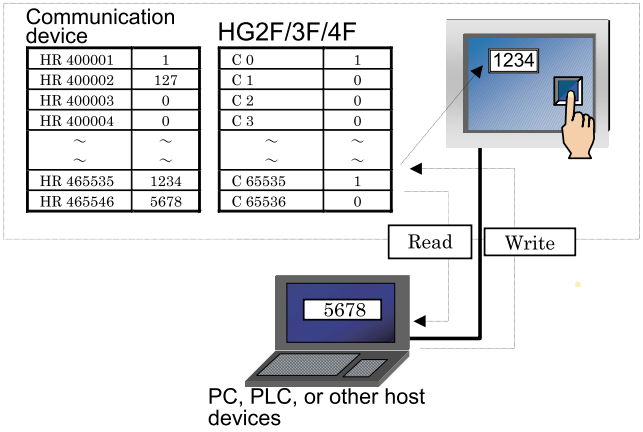
2. Operation of the Communication

The host device is capable of reading/writing to the MICRO/I communication devices. It is also possible to read/write communication devices from the MICRO/I.

3. Read/Write from the Host Device

The host device is capable of reading/writing the data in the data memory at the any timing.

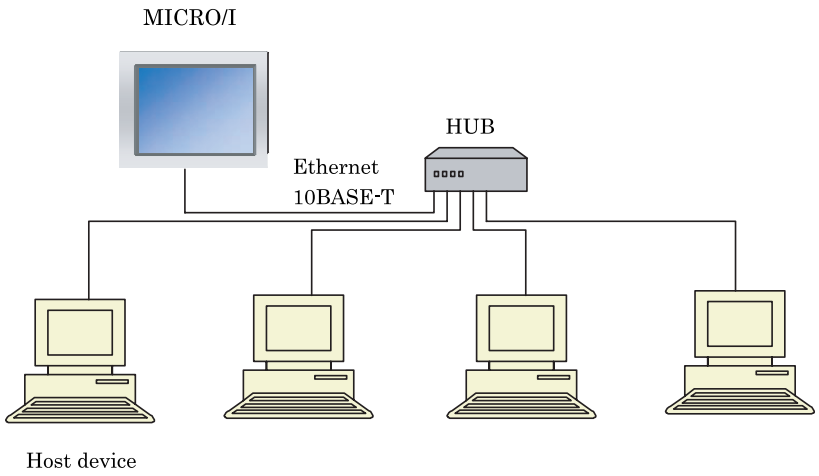
Conceptual Diagram of Communication



MODBUS/TCP communication is the open protocol. For detail information, visit the web site at http://www.modbus.org/.

1.6.2 System Configuration

The following is the system configuration.



- Up to 4 host devices can communicate with a single MICRO/I unit at one time.
- The MICRO/I unit and a host device can be directly connected on a 1:1 basis by bypassing a hub. In this case, use a crossing cable for the connection.

1.6.3 Wiring

Make sure to use commercially available 10BASE-T ready cables for connecting the devices.

Use a straight cable when using a hub, and use a crossing cable when directly connecting to the MICRO/I and a host device.

1.6.4 Devices

The following devices are available for MODBUS/TCP Server communication.

Bit Device

Device Name	Device Symbol	Address Range		MICRO/I Read/Write	Host Read/Write	Address Gradual
		HG2G/3G	HG1F/2F/2S/3F/4F			
Coil Status	C	1 - 4096	1 - 65536	R/W	R/W	Decimal
Input Status	I	100001 - 104096	100001 - 165536	R/W	R	Decimal

Word Device

Device Name	Device Symbol	Address Range		MICRO/I Read/Write	Host Read/Write	Address Gradual
		HG2G/3G	HG1F/2F/2S/3F/4F			
Holding Register	HR	400001 - 404096	400001 - 465536	R/W	R/W	Decimal
Input Register	IR	300001 - 304096	300001 - 365536	R/W	R	Decimal

All devices are general-purpose devices intended for nonspecific purposes.

1.6.5 Settings

The settings of the MODBUS/TCP Server communication can be configured in the [Configuration]-[System Setup]-[Project] dialog boxes in WindO/I-NV2. The following table lists the configurable settings. Configure the settings according to the host device to be used.

[Dialog Box] - [Tab]	Settings	Description
[Change Host I/F Driver]	Manufacturer	Select “Modicon”.
	Protocol	Select “MODSUB/TCP SERVER”.
[Project Settings] - [Host I/F Driver]	O/I Link	When using the O/I Link, select “Enable”.
	Refuse Access From Unknown Clients	Check this box to refuse access from devices other than the specified host device (client).
[Project Settings] - [Host Port Extension]	Time Out	Enter the duration after which timeout occurs if request is not sent from the host device (in units of seconds).
	Port Number	Select the port number used for the communication.
	Processing Interval	Enter the interval in units of milliseconds at which the MICRO/I performs communication processing. When the speed of other operations of the MICRO/I seems slow this is due to a large amount of communications, therefore, set a large value here to maybe increase the communication processing speed.
	Client Address 1- 4	When “Refuse Access From Unknown Clients” is checked, specify the IP address of the host device (client) from which access will be accepted. When the number of accessible host devices is three or less, then “0.0.0.0” to the address for unused client.

1.6.6 Communication Format

This chapter describes the communication format of the MODBUS/TCP Server communication.

The MODBUS/TCP Server communication supports Class 0 and Class 1 functions of the OPEN MODBUS/TCP SPECIFICATION Release1.0. For details about the communication methods, refer to the OPEN MODBUS/TCP SPECIFICATION Release1.0 as well as this manual.

1. Preparations for Communication

The MODBUS/TCP Server performs communications using the TCP. Make sure to establish a connection with the specified port of the MICRO/I with TCP before executing reading/writing of devices.

2. Basic Format

The following table lists the basic format of communications. The same format applies to both requests and responses.
Data is processed as a byte sequences.

Byte	Description
Byte 0	Transaction ID[*1]. The same value is returned from the server. The value is normally “0”.
Byte 1	Transaction ID[*1]. The same value is returned from the server. The value is normally “0”.
Byte 2	Protocol ID[*2]. The value is always “0”.
Byte 3	Protocol ID[*2]. The value is always “0”.
Byte 4	Message length[*3] (high byte). The value is always “0”. (Since the message is 256 bytes at maximum.)
Byte 5	Message length[*3] (low byte). The length of the following message.
Byte 6	Unit ID[*4]

Byte	Description
Byte 7	Function code*5
Byte 8-	Data*6

*1. The data included in a request is returned from the server without changes. The client (host device) sends a different Transaction ID for each request, and identifies the response by checking the Transaction ID of a response. Enter "0" to not check the Transaction ID.
*2. The number indicating the MODBUS/TCP protocol, and is always "0".
*3. Indicates the length of the following message in units of bytes.
*4. ID used for identifying devices. The ID is not used with the MICRO/I. When the ID is used in a request, the returned data is unchanged.
*5. Numbers assigned for functions such as reading and writing.
*6. Data required for each processing.

3. Reference Numbers

Reference numbers are used to specify a device address with the MODBUS/TCP.

The reference number is obtained by subtracting 1 from the 1st to 5th value of the device address, and is expressed in hexadecimal format.

The following table lists the address of each device and the corresponding reference number.

Address	Reference No.	Address	Reference No.	Address	Reference No.	Address	Reference No.
C 1	0001	I 100001	0001	HR 400001	0001	IR 300001	0001
C 2	0002	I 100002	0002	HR 400002	0002	IR 300002	0002
…	…	…	…	…	…	…	…
C 65535	FFFE	I 165535	FFFE	HR 465535	FFFE	IR 365535	FFFE
C 65536	FFFF	I 165536	FFFF	HR 465536	FFFF	IR 365536	FFFF

4. Functions

The MICRO/I supports the following functions.

Function code	Function name	Description
3	Read multiple registers	Reading of Holding Register (HR) consecutively
16 (10Hex)	Write multiple registers	Writing to Holding Register (HR) consecutively
1	Read coils	Reading of Coil (C) consecutively
2	Read discrete inputs	Reading of Input Relay (I) consecutively
4	Read input registers	Reading of Input Register (IR) consecutively
5	Write coil	Writing to a single Coil (C)
6	Write single register	Writing to a single Holding Register (HR)
7	Read exception status	Reading of exception status (0 to 7th bit of HR400001)

The following section describes the details of the functions.
The communication example listed for each function is only for the 7th and later bytes of the data.
Refer to the description of the basic format and add bytes 0 to 6 in the actual communications.

- FC3 Read multiple registers - Reading of Holding Register (HR) consecutively

Request

Byte 7	FC (Function code) = 03
Byte 8-9	Reference No.
Byte 10-11	Number of read words (1 to 125 words)

Normal response

Byte 7	FC (Function code) = 03
Byte 8	Number of bytes of the response (number of read words x 2)
From Byte 9	Read data

Abnormal response

Byte 7	FC (Function code) = 83 (HEX)
Byte 8	Exception code 01 or 02

Example

Reading of HR400001 (1 word). The read value is 1234 (HEX).

03 00 00 00 01 => 03 02 12 34

- FC16 Write multiple registers - Writing to Holding Register (HR) consecutively

Request

Byte 7	FC (Function code) = 10 (HEX)
Byte 8-9	Reference No.
Byte 10-11	Number of write words (1 to 100 words)
Byte 12	Number of write bytes (2 x number of write words)
From Byte 13	Write data

Normal response

Byte 7	FC (Function code) = 10(HEX)
Byte 8	Reference No.
From Byte 9	Number of write words

Abnormal response

Byte 7	FC (Function code) = 90 (HEX)
Byte 8	Exception code 01 or 02

Example

Writing to HR400001 (1 word). The write value is 1234 (HEX).

10 00 00 00 01 02 12 34 => 10 00 00 00 01

- FC1 Read coils - Reading of Coil (C) consecutively

Request

Byte 7	FC (Function code) = 01
Byte 8-9	Reference No.
Byte 10-11	Number of read bits (1 to 2000 bits)

Normal response

Byte 7	FC (Function code) = 01
Byte 8	Number of bytes for the response ((number of read bits +7)/8)
From Byte 9	Read data

Abnormal response

Byte 7	FC (Function code) = 81 (HEX)
Byte 8	Exception code 01 or 02

Example

Reading of C1. 1 bit. The read value is 1.

01 00 00 00 01 => 01 01 01

Data sequence of read value

When two or more data are read out, the read data are arranged starting from the lowest address by 8 bits (1 byte). Within any 1 byte, data in the lower address is set to the lower bit. The data in the unread bit becomes “0”.

For example, when reading an 11-bit data as shown below, the read value becomes 21 03.

Address	Data	Remarks
C 1	1	Data for the 1st byte Bit pattern= 00100001 = 21 (HEX)
C 2	0	
C 3	0	
C 4	0	
C 5	0	
C 6	1	
C 7	0	
C 8	0	
C 9	1	Data for 2nd byte Bit pattern 00000011 = 03 (HEX)
C 10	1	
C11	0	

- FC2 Read discrete inputs - Reading of Input Relay (I) consecutively

Request

Byte 7	FC (Function code)=02
Byte 8-9	Reference No.
Byte 10-11	Number of read bits (1 to 2000 bits)

Normal response

Byte 7	FC (Function code)=02
Byte 8	Number of bytes for the response ((number of read bits+7)/8)
From Byte 9	Read data

Abnormal response

Byte 7	FC (Function code)=82 (HEX)
Byte 8	Exception code 01 or 02

Example

Reading of I100001. 1 bit. The read value is 1.

02 00 00 00 01 => 02 01 01

Data sequence of read value

The data sequence for the read value is similar to that of FC1 Read Coils.

- FC4 Read input registers - Reading of Input Register (IR) consecutively

Request

Byte 7	FC (Function code)=04
Byte 8-9	Reference No.

Request

Byte 10-11	Number of read words (1 to 125 words)

Normal response

Byte 7	FC (Function code)=04
Byte 8	Number of bytes for the response (number of read words x 2)
From Byte 9	Read data

Abnormal response

Byte 7	FC (Function code)=84 (HEX)
Byte 8	Exception code 01 or 02

Example

Reading of IR300001 (1 word). The read value is 1234 (HEX).

04 00 00 00 01 => 04 02 12 34

- FC5 Write coil - Writing to a single Coil (C)

Request

Byte 7	FC (Function code)=05
Byte 8-9	Reference No.
Byte 10	Write value (FF when write value is 1, and 00 when write value is 0)
Byte 11	Fixed value 00

Normal response

Byte 7	FC (Function code)=05
Byte 8-9	Reference No.
Byte 10	Write value (FF when write value is 1, and 00 when write value is 0)
Byte 11	Fixed value 00

Abnormal response

Byte 7	FC (Function code)=85 (HEX)
Byte 8	Exception code 01 or 02

Example

Writing of C1 (1 bit). The write value is 1.

05 00 00 FF 00 => 05 00 00 FF 00

- FC6 Write single register - Writing to a single Holding Register (HR)

Request

Byte 7	FC (Function code) = 06 (HEX)
Byte 8-9	Reference No.
Byte 10-11	Write data

Normal response

Byte 7	FC (Function code) = 06 (HEX)
Byte 8-9	Reference No.
Byte 10-11	Write data

Abnormal response

Byte 7	FC (Function code)=86 (HEX)
Byte 8	Exception code 01 or 02

Example

Writing to HR400001. The write value is 1234 (HEX).

06 00 00 12 34 => 06 00 00 12 34

- FC7 Read exception status -Reading of exception status (Bit 0 to 7 of HR400001)

Request

Byte 7	FC (Function code)=07 (HEX)

Normal response

Byte 7	FC (Function code)=07 (HEX)
Byte 8	Value of exception status

Abnormal response

Byte 7	FC (Function code)= 87 (HEX)
Byte 8	Exception code 01 or 02

Communication example

Reading of exception status. The read value is 34 (HEX).

07 => 07 34

The Read exception status function reads the data from the device holding special status information using the MODBUS/TCP protocol. Since the MICRO/I does not have special registers, the exception status is read by bit 0 to 7 of HR400001.

5. Exception code

The following table describes the exception codes that are sent upon an abnormal response.

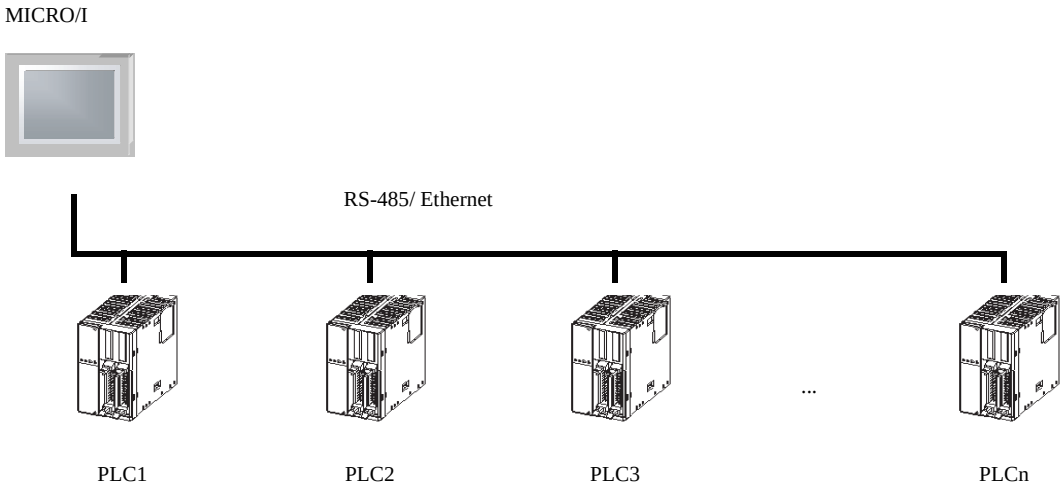
Exception code	Name	Description
01	ILLEGAL FUNCTION	Indicates that a function code that is not defined by the MODBUS/TCP protocol or a function code that is not supported by the MICRO/I is designated.
02	ILLEGAL DATA ADDRESS	The address information included in the data is invalid. For example, when reading the number of read words starting from the starting reference No. for the read, this exception code is sent if the data exceeds the maximum address of the device.
03	ILLEGAL DATA VALUE	The value of the data is invalid. This exception code is also sent when the number of data is invalid.

Chapter 6 1: N Communication (Multi-drop)

1 About 1: N Communication (Multi-drop)

1.1 Outline

Two or more PLC units can be connected to a single MICRO/I to perform PLC Link communication.



2 Host I/F Drivers Supporting 1: N Communication

The table below lists the Host I/F Drivers supporting 1: N communication.

2.1 Compatible Host I/F Drivers

Manufacturer	Host I/F Driver
IDEC	OpenNet (FC3A), MicroSmart (FC4A/FC5A)
	Web Server Unit (FC3A/FC4A/FC5A)
Mitsubishi	MELSEC-Q/QnA (Ethernet)
Omron	SYSMAC-CS1/CJ Series (Ethernet)
Allen-Bradley	Ethernet/IP
Koyo Electronics	KOSTAC SU, SZ
MODICON	MODBUS-RTU, MODBUS-ASCII
	MODBUS/TCP Client

3 Settings of the 1: N Communication

3.1 Initial Setting

When creating a project or converting the Host I/F, set the “Connection Type” to “1: N Communication”.

“Connection Type” can only be changed with the Host I/F Driver supporting 1: N Communication.

3.2 Host Device Settings

3.2.1 Common setting

When 1: N Communication is specified, configure the device setting according to the format below. This applies to the host device settings only.

{Station No.} {Delimiter} {Device Symbol} {Space} {Device Address}
Note: {Delimiter} is a colon “:”

Example) 1: D 1000

3.2.2 Ethernet communication driver

In case of Ethernet communication driver, attach IP address and Port number for PLC to Station number.

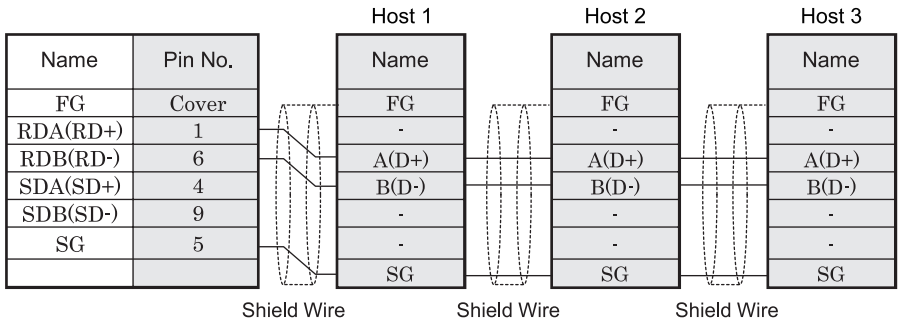
Configure communicated PLC information on [Host I/F Network] in [Project Settings].

3.3 Connection Diagram

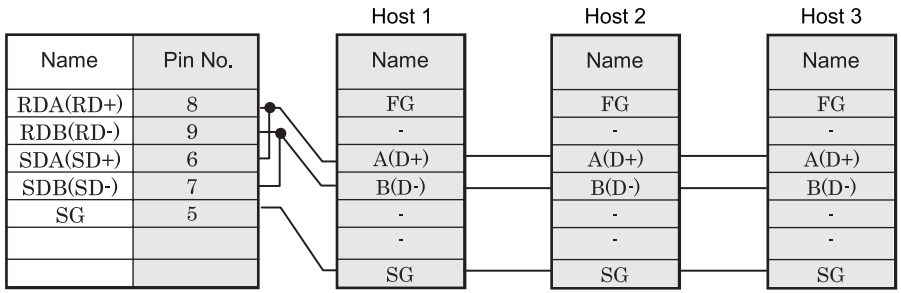
For the wiring diagram between the PLC and MICRO/I, refer to the PLC manual for PLC pin-outs. For connecting two or more PLC units with the MICRO/I, refer to the diagram below.

3.3.1 RS-422/485-Two-line system

HG3G (Connector)



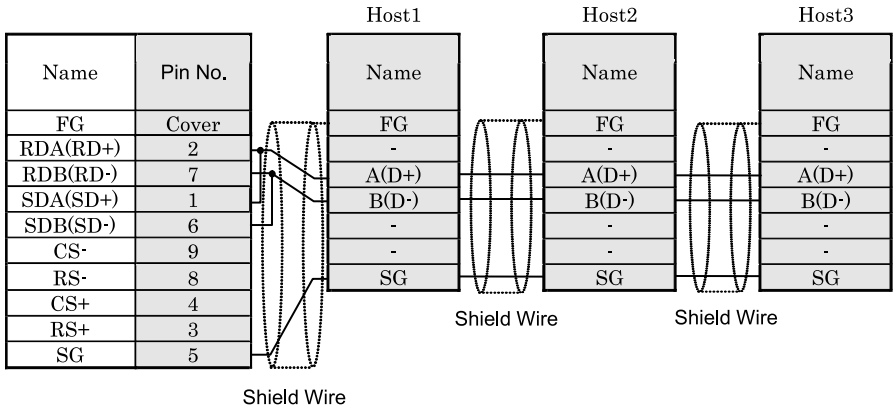
HG2G/3G (Terminal)



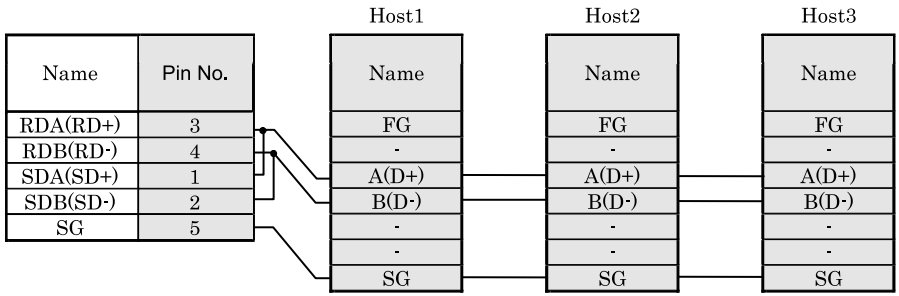
- There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18

- HG3G Series uses only RDA and RDB when using RS-485(422)-2wire, you don’t need to connect SDA or SDB.
  If connecting the COM1 on the HG3G to the host device, do not insert terminating resister to the host device. If terminating resister can not be removed, use the COM2 on the HG3G instead of the COM1.

HG1F (Connector)

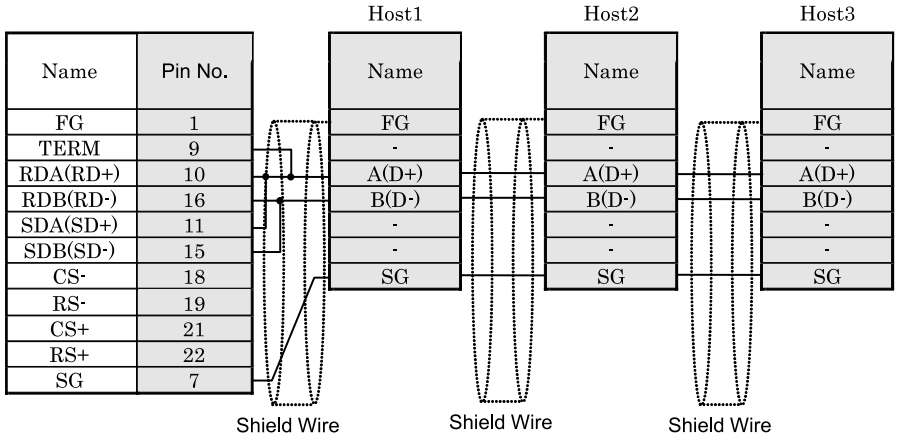


HG1F (Terminal)

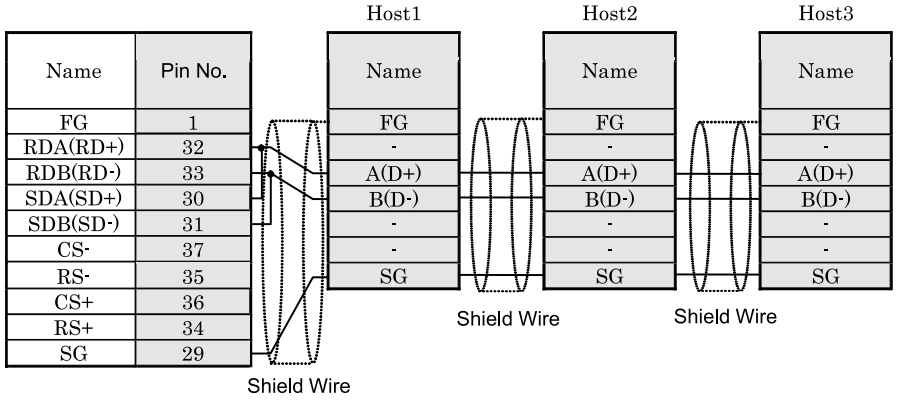


There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG2F/3F/4F



HG2S

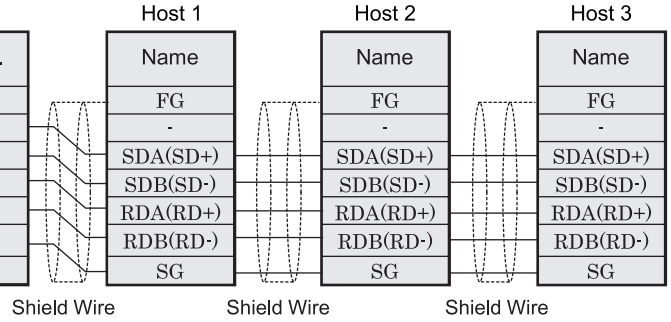


There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

3.3.2 RS-422/485-Four-line system

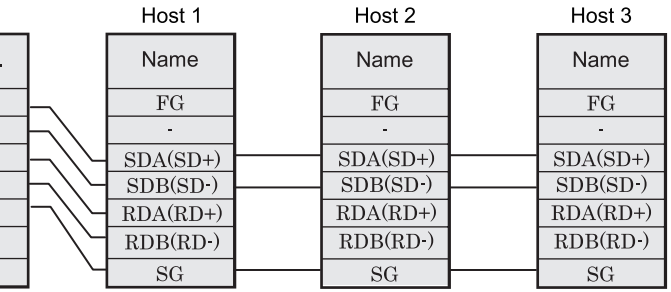
HG3G (Connector)

Name	Pin No.
FG	Cover
RDA(RD+)	1
RDB(RD-)	6
SDA(SD+)	4
SDB(SD-)	9
SG	5



HG2G/3G (Terminal)

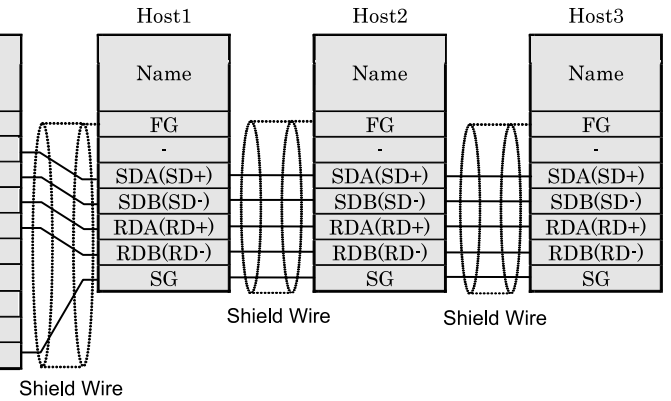
Name	Pin No.
RDA(RD+)	8
RDB(RD-)	9
SDA(SD+)	6
SDB(SD-)	7
SG	5



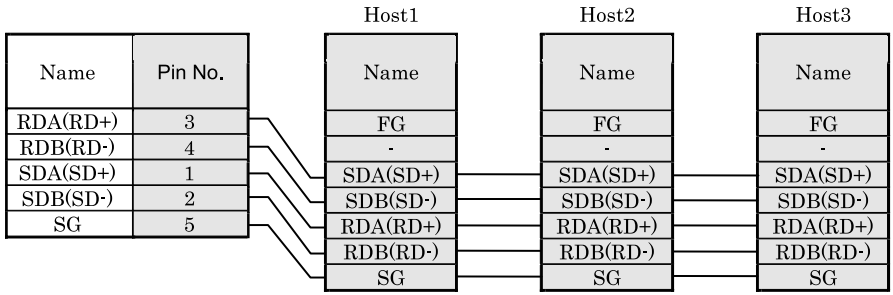
There is no pin No. corresponding to TERM on the HG2G/3G. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG1F (Connector)

Name	Pin No.
FG	Cover
RDA(RD+)	2
RDB(RD-)	7
SDA(SD+)	1
SDB(SD-)	6
CS-	9
RS-	8
CS+	4
RS+	3
SG	5

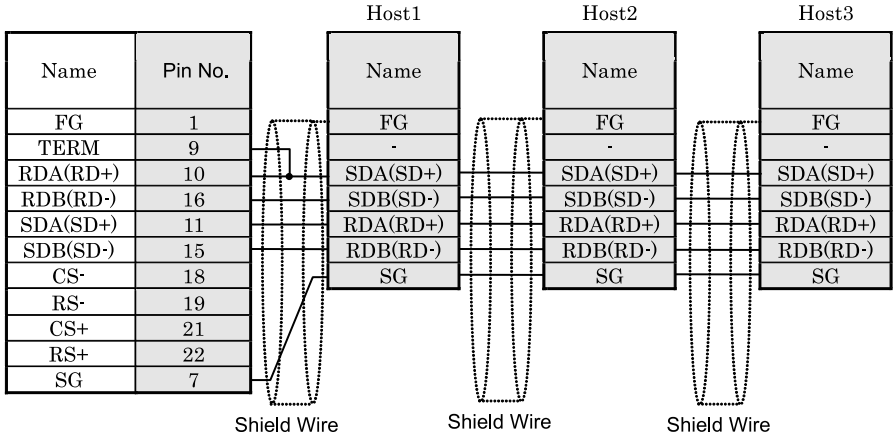


HG1F (Terminal)

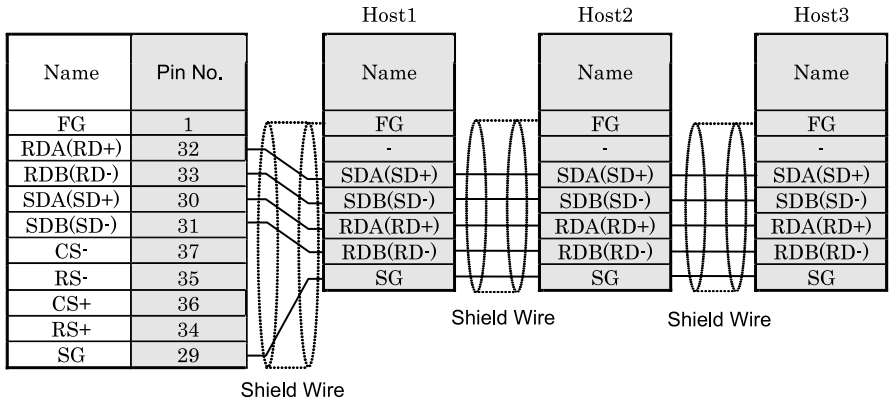


There is no pin No. corresponding to TERM on the HG1F. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

HG2F/3F/4F



HG2S



There is no pin No. corresponding to TERM on the HG2S. When inserting a termination resistor, use a communication switch. For the setting of the switch, refer to Chapter 1 “3 Important Points Regarding Wiring” on page 18.

4 Restrictions

Note the following restrictions when performing 1: N communication.

- Maximum number of units to be connected
  Using RS-485 : 31 units
  Using Ethernet : 16 units
  (May vary depending on the PLC type. Refer to the manual of your PLC for details.)
- Maximum number of source devices at one time
  The maximum number of devices (including O/I Link) that can be read at one time is 8192. Devices exceeding this limit cannot be read out.
- Precautions for using the Simulation Mode

WARNING

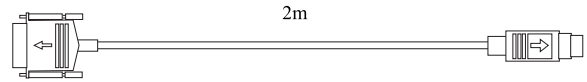
When the communication setting on the HG1F/2F/2S/3F/4F is set to 1:1, the host device values are retained even after the screen is changed. However, if set to 1:N, or when using the HG2G/3G, the host device values are not retained.

Chapter 7 Communication Cables

1 Communication Cables

1.1 Maintenance Cable: HG9Z-XCM22

Connection cable for the HG2G, HG1F/2F/2S/3F/4F maintenance port and DOS/V-family personal computers.



PC
D-sub 9P connector
(socket type)

HG2G, HG2F/2S/3F/4F
Mini DIN connector

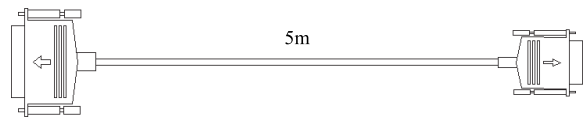
Shield

Name	Pin No.
Shield	Cover
SD	3
RD	2
DR	6
CS	8
CD	1
ER	4
SG	5
RS	7
RI	9

Pin No.	Name
Cover	Shield
3	SD
4	RD
1	RS
8	NC
5	DR
2	ER
7	SG
6	EN

1.2 PLC connection cable: PF3S-KS1

Direct connection cable for the HG2F/3F/4F SIO1 and the IDEC FA-3S SIF2.



HG2F/3F/4F
D-sub 25P connector
(plug type)

FA-3S
D-sub 9P connector
(socket type)

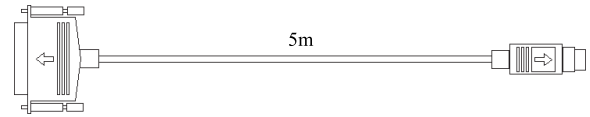
Shield

Pin No.	Name
FG	1
SD	2
RD	3
RS	4
CS	5
NC	6
SG	7
NC	8
ER	20
Shield	Cover

Pin No.	Name
1	CD
2	RD
3	TD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
Cover	Shield

1.3 PLC connection cable: FC4A-KC2C

Direct connection cable for the HG2F/3F/4F SIO1 and the IDEC MICROSmart.



HG2F/3F/4F
D-sub 25P connector
(plug type)

PLC
Mini DIN8P connector

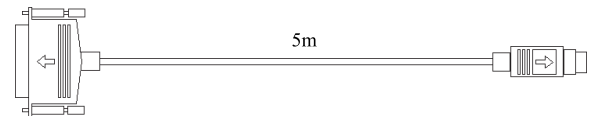
Shield

Name	Pin No.
FG	1
SD	2
RD	3
RS	4
CS	5
NC	6
SG	7
NC	8
ER	20
Shield	Cover

Pin No.	Name
1	NC
2	NC
3	TXD
4	RXD
5	NC
6	CMSW
7	SG
8	NC
Cover	Shield

1.4 PLC connection cable: HG9Z-3C115

Direct connection cable for the HG2F/3F/4F SIO1 and the IDEC MICRO^3.



HG2F/3F/4F
D-sub 25P connector
(plug type)

MICRO^3 Loader Port
Mini DIN8P connector

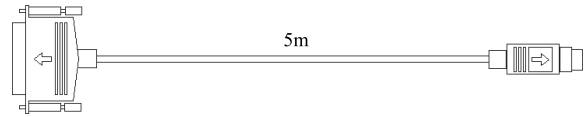
Shield

Name	Pin No.
SDA	11
SDB	15
RDA	10
RDB	16
RS+	22
RS-	19
CS+	21
CS-	18
SG	7
TERM	9
FG	1

Pin No.	Name
1	D+
2	D-
7	0V
Cover	Shield

1.5 PLC connection cable: HG9Z-3C125

Direct connection cable for the HG2F/3F/4F SIO1 and the IDEC MICRO^{3}C and OpenNet Controller, MicroSmart.



HG2F/3F/4F
D-sub 25P connector
(plug type)

PLC
Mini DIN8P connector

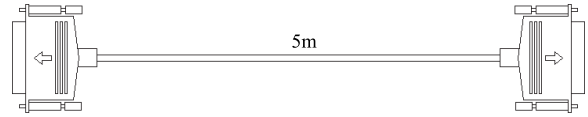
Shield

Name	Pin No.
FG	1
SD	2
RD	3
RS	4
CS	5
NC	6
SG	7
NC	8
ER	20
Shield	Cover

Pin No.	Name
1	RS
2	ER
3	SD
4	RD
5	DR
6	SG
7	SG
8	+5V
Cover	Shield

1.6 PLC connection cable: HG9Z-3C135

Connection cable for the HG2F/3F/4F and PLC (RS-232C, D-sub 25P, Mitsubishi and Omron Link Units).



HG2F/3F/4F
D-sub 25P connector
(plug type)

PLC
D-sub 25P connector
(plug type)

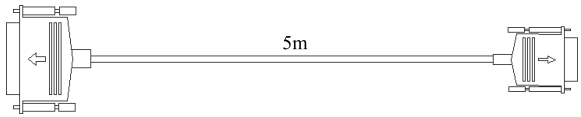
Shield

Name	Pin No.
FG	1
SD	2
RD	3
RS	4
CS	5
NC	6
SG	7
NC	8
ER	20
Shield	Cover

Pin No.	Name
1	FG
2	SD
3	RD
4	RS
5	CS
6	DR
7	SG
8	CD
20	SG
Cover	Shield

1.7 PLC connection cable: HG9Z-3C145

Connection cable for the HG2F/3F/4F and PLC (RS-232C, D-sub 9P, Mitsubishi Link Units).



HG2F/3F/4F
D-sub 25P connector
(plug type)

Name	Pin No.
FG	1
SD	2
RD	3
RS	4
CS	5
NC	6
SG	7
NC	8
ER	20
Shield	Cover

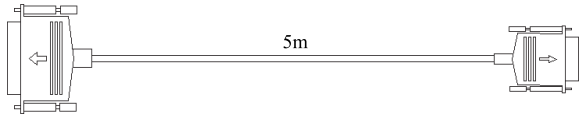
Shield

PLC
D-sub 9P connector
(plug type)

Pin No.	Name
1	RS
2	ER
3	SD
4	RD
5	DR
6	SG
7	SG
8	+5V
Cover	Shield

1.8 PLC connection cable: HG9Z-3C155

Connection cable for the HG2F/3F/4F and PLC (RS-232C, D-sub 9P, Omron CPU Unit RS-232C I/F).



HG2F/3F/4F
D-sub 25P connector
(plug type)

Name	Pin No.
FG	1
SD	2
RD	3
RS	4
CS	5
NC	6
SG	7
NC	8
ER	9
Shield	Cover

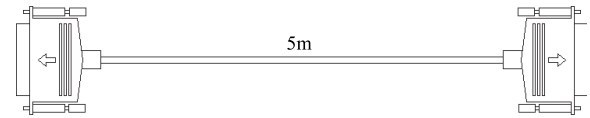
Shield

PLC
D-sub 9P connector
(plug type)

Pin No.	Name
1	FG
2	SD
3	RD
4	RS
5	CS
6	
7	
8	
9	SG
Cover	Shield

1.9 PLC connection cable: HG9Z-3C165

Connection cable for the HG2F/3F/4F and Mitsubishi A and FX Series Programming Port.



HG2F/3F/4F
D-sub 25P connector
(plug type)

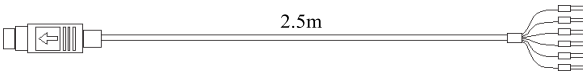
Name	Pin No.
SD+	11
SD-	15
RD+	10
RD-	16
RS+	22
RS-	19
CS+	21
CS-	18
SG	7
TERM	9
FG	1
Shield	Cover

Shield

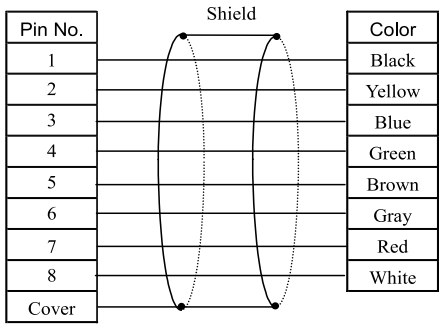
PLC
D-sub 25P connector
(plug type)

Pin No.	Name
2	RD+
15	RD-
3	SD+
16	SD-
4	CS+
17	CS-
5	RS+
18	RS-
7	SG
8	SG
20	
21	
Cover	Shield

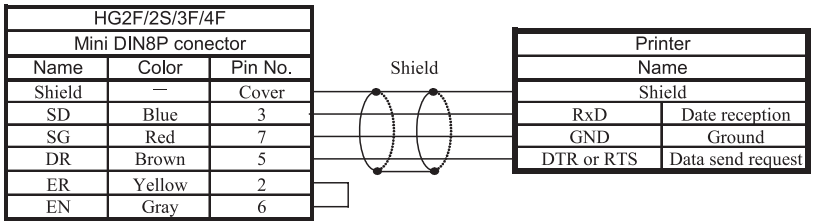
1.10 Printer/ External devices/ PLC connection cable: FC2A-KP1C



Mini DIN8P connector



Please perform the following wiring when HG2F/2S/3F/4F be connected with the printer.
Refer to the printer instruction manual for details.

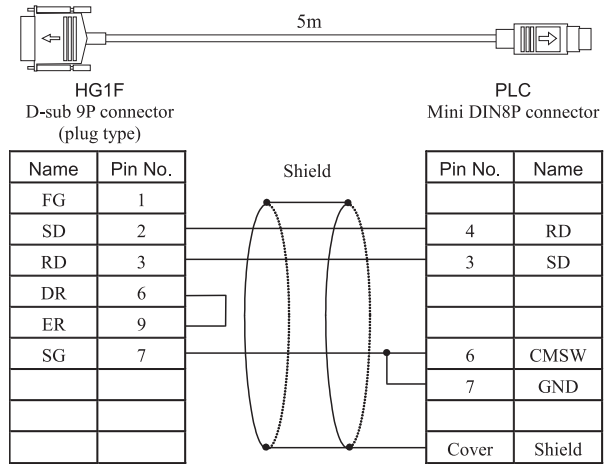


Refer to “1.21 PLC connection cable: HG9Z-XC275” (P.603) in this chapter when the HG2G/3G be connected with the PLC.

WARNING Terminate any unused wires properly to make sure that these wires do not contact other wires or metal parts electrically.

1.11 PLC connection cable: FC4A-KC1C

Direct connection cable for the HG1F(RS-232C type) SIO1 and the IDEC MICROSmart Programming Port.

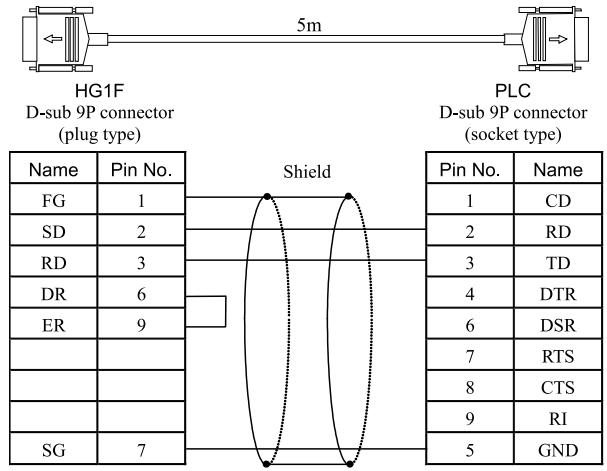


Name	Pin No.
FG	1
SD	2
RD	3
DR	6
ER	9
SG	7

Pin No.	Name
4	RD
3	SD
6	CMSW
7	GND
Cover	Shield

1.12 PLC connection cable: HG9Z-XC115

Direct connection cable for the HG1F(RS-232C type) SIO1 and the IDEC FA-3S SIF2.

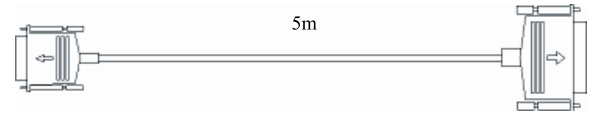


Name	Pin No.
FG	1
SD	2
RD	3
DR	6
ER	9
SG	7

Pin No.	Name
1	CD
2	RD
3	TD
4	DTR
6	DSR
7	RTS
8	CTS
9	RI
5	GND

1.13 PLC connection cable: HG9Z-XC145

Direct connection cable for the HG1F(RS-232C type) SIO1 and PLC (RS-232C, D-sub 25P, Mitsubishi Computer Link Unit).



HG1F
D-sub 9P connector
(plug type)

PLC
D-sub 25P connector
(plug type)

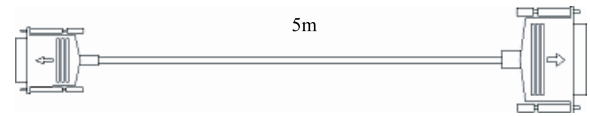
Shield

Name	Pin No.
FG	1
SD	2
RD	3
DR	6
ER	9
SG	7

Pin No.	Name
1	FG
3	RD
2	SD
20	DTR
5	CS
6	DSR
8	CD
4	—
7	SG

1.14 PLC connection cable: HG9Z-XC155

Direct connection cable for the HG1F(RS-232C type) SIO1 and PLC (RS-232C, D-sub 25P, Omron Host Link Unit).



HG1F
D-sub 9P connector
(plug type)

PLC
D-sub 25P connector
(plug type)

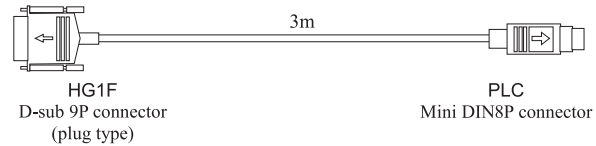
Shield

Name	Pin No.
FG	1
SD	2
RD	3
DR	6
ER	9
SG	7

Pin No.	Name
1	FG
3	RD
2	SD
4	RS
5	CS
6	DR
20	ER
8	—
7	SG

1.15 PLC connection cable: HG9Z-XC183

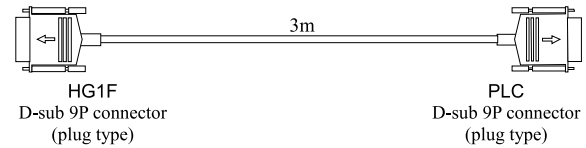
Direct connection cable for the HG1F(RS-232C type) SIO1 and the IDEC OpenNet Controller and MICROSmart Port2.



Name	Pin No.	Shield	Pin No.	Name
Shield	Cover		Cover	Shield
SD	2		4	RD
RD	3		3	SD
DR	6		2	ER
ER	9		5	DR
			6	SG
SG	7		7	SG
			1	RS
FG	1		8	+5V

1.16 PLC connection cable: HG9Z-XC203

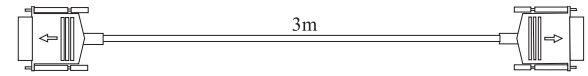
Direct connection cable for the HG1F(RS-232C type) SIO1 and PLC (RS-232C, D-sub 9P, Mitsubishi Computer Link Unit).



Name	Pin No.	Shield	Pin No.	Name
FG	1		1	CD
SD	2		2	RD
RD	3		3	SD
DR	6		4	ER
SG	7		5	SG
ER	9		6	DR
			7	RS
			8	CS
			9	—

1.17 PLC connection cable: HG9Z-XC213

Direct connection cable for the HG1F(RS-232C type) SIO1 and PLC (RS-232C, D-sub 9P, Omron CPU Unit RS-232C I/F except for C20H/28H/40H).



HG1F
D-sub 9P connector
(plug type)

PLC
D-sub 9P connector
(plug type)

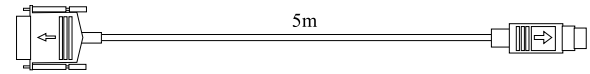
Shield

Name	Pin No.
FG	1
SD	2
RD	3
DR	6
ER	9
SG	7

Pin No.	Name
1	FG
3	RD
2	SD
4	RS
5	CS
9	SG

1.18 PLC connection cable: HG9Z-XC245

Direct connection cable for the HG1F(RS-485/422 type) SIO1 and the Mitsubishi FX Series.



HG1F
D-sub 9P connector
(plug type)

PLC
Mini DIN8P connector

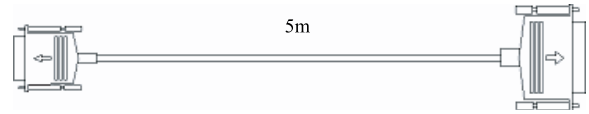
Shield

Name	Pin No.
SDA	1
SDB	6
RDA	2
RDB	7
SG	5
RSA	3
CSA	4
RSB	8
CSB	9
FG	Cover

Pin No.	Name
2	RDA
1	RDB
7	SDA
4	SDB
3	SG
6	SG
Cover	FG

1.19 PLC connection cable: HG9Z-XC255

Direct connection cable for the HG1F(RS-485/422 type) SIO1 and the Mitsubishi A/QnA Series.



HG1F
D-sub 9P connector
(plug type)

PLC
D-sub 25P connector
(plug type)

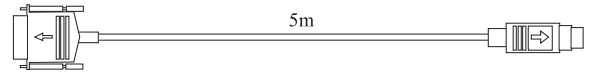
Shield

Name	Pin No.
SDA	1
SDB	6
RDA	2
RDB	7
SG	5
RSA	3
RSB	8
CSA	4
CSB	9
FG	Cover

Pin No.	Name
2	RDA
15	RDB
3	SDA
16	SDB
7	SG
8	SG
4	CSA
17	CSB
5	RSA
18	RSB
20	
21	
Cover	FG

1.20 PLC connection cable: HG9Z-XC265

Direct connection cable for the HG1F(RS-232C type) SIO1 and the Mitsubishi Q Series.



HG1F
D-sub 9P connector
(plug type)

PLC
Mini DIN 6P connector

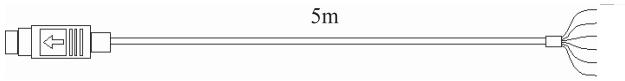
Shield

Name	Pin No.
FG	1
SD	2
RD	3
DR	6
SG	7
ER	9

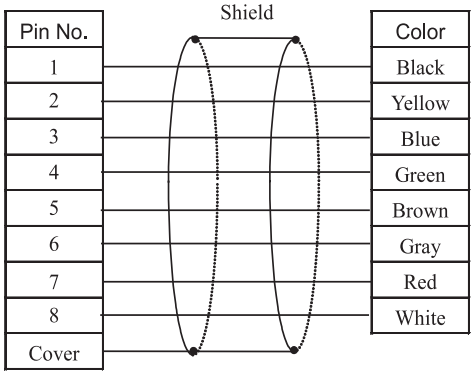
Pin No.	Name
1	RD(RXD)
2	SD(TXD)
6	DTR(ER)
3	SG
5	DSR(DR)

1.21 PLC connection cable: HG9Z-XC275

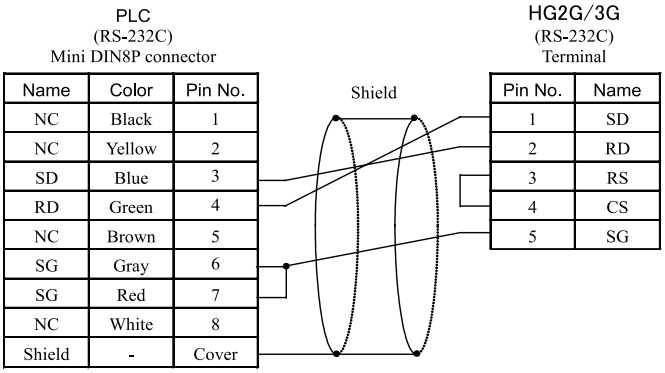
Communication cable for the HG2G/3G (RS-232C type) Serial 1 and the IDEC MICROSmart or the Mitsubishi FX Series.



Mini DIN8P connector



The following wiring is for the HG2G/3G and the IDEC MICROSmart.



The following wiring is for the HG2G/3G and the Mitsubishi FX Series (except the FX3U and FX3UC-32MT-LT).

PLC
(RS-485/422)
Mini DIN8P connector

Name	Color	Pin No.
SDA	Red	7
SDB	Green	4
RDA	Yellow	2
RDB	Black	1
SG	Blue	3
SG	Gray	6
Shield	-	Cover

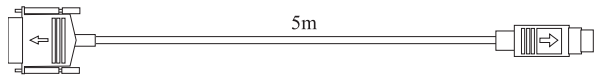
HG2G/3G
(RS-485/422)
Terminal

Pin No.	Name
8	RDA (RD+)
9	RDB (RD-)
6	SDA (SD+)
7	SDB (SD-)
5	SG

- Terminate any unused wires properly to make sure that these wires do not contact other wires or metal parts electrically.
- Please do not use HG9Z-XC275 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.

1.22 PLC connection cable: HG9Z-XC295

Direct connection cable for the HG3G Serial Interface (COM1) and the IDEC MICROSmart Programming Port.



HG3G
D-sub 9P connector
(socket type)

Name	Pin No.
RD	2
SD	3
SG	5
RS	7
CS	8
Shield	Cover

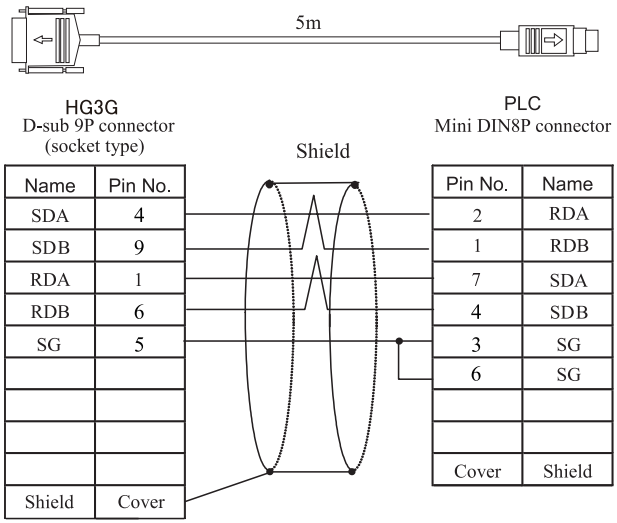
Shield

PLC
Mini DIN8P connector

Pin No.	Name
3	SD
4	RD
6	SG
7	SG
Cover	Shield

1.23 PLC connection cable: HG9Z-XC305

Direct connection cable for the HG3G Serial Interface (COM1) and the Mitsubishi FX Series.



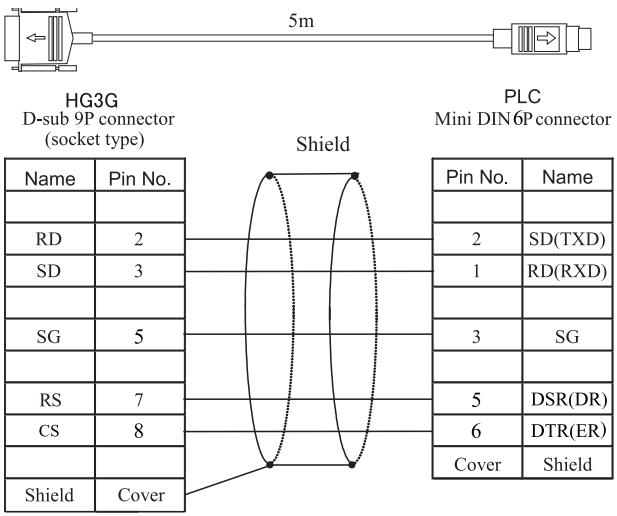
Name	Pin No.
SDA	4
SDB	9
RDA	1
RDB	6
SG	5
Shield	Cover

Pin No.	Name
2	RDA
1	RDB
7	SDA
4	SDB
3	SG
6	SG
Cover	Shield

Please do not use HG9Z-XC305 because there is the case that the housing of FX3U/FX3UC-32MT-LT and a part of it interfere.

1.24 PLC connection cable: HG9Z-XC315

Direct connection cable for the HG3G Serial Interface (COM1) and the Mitsubishi Q Series.



Name	Pin No.
RD	2
SD	3
SG	5
RS	7
CS	8
Shield	Cover

Pin No.	Name
2	SD(TXD)
1	RD(RXD)
3	SG
5	DSR(DR)
6	DTR(ER)
Cover	Shield

Numerics

A

B

C

D

E

F

H

I

M

N

O

P

R

S

T

U

W