IDEC

INSTRUCTION SHEET

MICROSmart

FC6A Series
Expansion Interface module

This sheet provides brief operating instructions of the MicroSmart programmable controller. For details, see the FC6A Series MicroSmart User's Manual.

Safety Precautions

Special expertise is required to use the MicroSmart.
• Read this instruction sheet and the user's manual to make sure of correct operation before starting installation, wiring, operation, maintenance, and inspection of the MicroSmart. Keep this instruction sheet where it can be accessed by the end user.
• All MicroSmart modules are manufactured under IDEC's rigorous quality control system, but users must add backup or failsafe provisions to control systems use the MicroSmart in applications where heavy damage or personal injury may be caused if the MicroSmart should fail.
• Install the MicroSmart according to the instructions described in this instruction sheet and the user's manual. Improper installation will result in falling, failure, or malfunction of the MicroSmart.
• Make sure that the operating conditions are as described in the user's manual. If you are uncertain about the specifications, contact IDEC before using the MicroSmart.
• In this instruction sheet, safety precautions are categorized in order of importance from 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**

• Turn off the power to the MicroSmart before starting installation, removal, wiring, maintenance, or inspection on the MicroSmart.
• Failure to turn off the power may cause electrical shocks or fire hazard. Emergency stop and interlocking circuits must be configured outside the MicroSmart. If such a circuit is configured inside the MicroSmart, failure of the MicroSmart may cause disorder of the control system, damage, or accidents.

⚠ **CAUTION**

• The MicroSmart is designed for installation in equipment. Do not install the MicroSmart outside of equipment.
• Install the MicroSmart in environments as described in the user's manual. If the MicroSmart is used in places where it is subjected to high-temperature, high-humidity, condensation, corrosive gases, excessive vibrations, or excessive shocks it will result in electrical shocks, fire hazard, or malfunction.
• The environment rating for using the MicroSmart is "Pollution degree 2."
• Prevent metal fragments and pieces of wire from dropping inside the MicroSmart housing. Ingress of such fragments and chips may cause fire hazard, damage, or malfunction.
• Use wires of a proper size to meet voltage and current requirements. Tighten terminal screws to the proper tightening torque of 0.49 N·m.
• Use an IEC60127-approved fuse on the power line and output circuit to meet voltage and current requirements.
(Recommended fuse: Littelfuse 5×20mm slow-blow type 218000 series/Type T) This is required when exporting equipment containing MicroSmart to Europe.
• Use an EU-approved circuit breaker. This is required when exporting equipment containing MicroSmart to Europe.
• If relays or transistors in the MicroSmart output modules should fail, outputs may remain on or off. For output signals which may cause heavy accidents, provide a monitor circuit outside of the MicroSmart.
• Do not disassemble, repair, or modify MicroSmart modules.
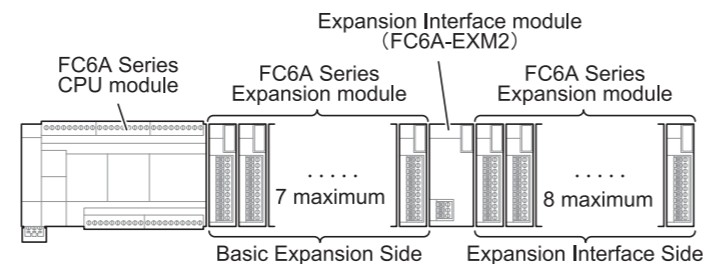
1 TYPE

Expansion Interface module: FC6A-EXM2

2 Specification

Operating Temperature: -10 to +55℃, Storage Temperature: -25 to +70℃ (no freezing)
Relative/Storage Humidity: 10 to 95%RH（no condensation）,
Altitude: 1013 to 795hPa (0 to 2,000 m) during operation 1013 to 701hPa (0 to 3,000 m) during transport,
Vibration Resistance: 5 to 8.4 Hz half amplitude 3.5 mm, 8.4 to 150 Hz, acceleration 9.8 m/s^2 (1 G), X, Y, Z directions, 2 hours,
Shock Resistance: 147 m/s^2 (15 G), 11 ms, X, Y, Z directions, 3 times
See the user's manual for more details on the product specifications.
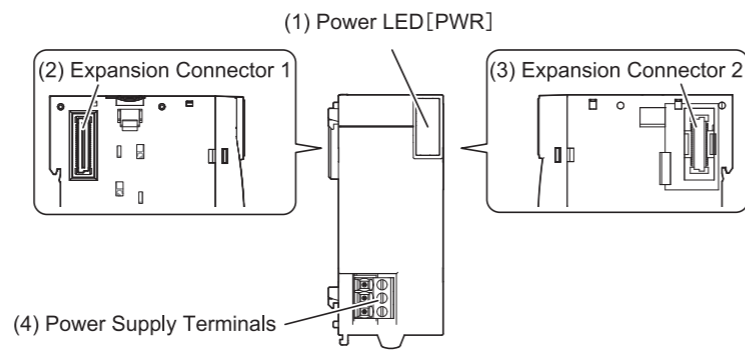
3 Parts Description

Expansion Interface Module

The number of expansion modules that can be connected to the CPU module (basic expansion side) is 7 modules, but this can be increased to 8 additional expansion modules (expansion interface side, maximum 256 I/O points) by installing the expansion interface module.


FC6A Series CPU module
FC6A Series Expansion module
Expansion Interface module （FC6A-EXM2）
FC6A Series Expansion module
7 maximum
8 maximum
Basic Expansion Side
Expansion Interface Side

Only 1 expansion interface module can be connected to 1 CPU module.

(1) Power LED[PWR]
(2) Expansion Connector 1
(3) Expansion Connector 2
(4) Power Supply Terminals

(1) Power LED [PWR]
This LED light when the Expansion Interface module is supplied power.

(2) Expansion Connector 1
Connect to Basic Expansion Side I/O module.

(3) Expansion Connector 2
Connect to Expansion Interface Side I/O module .

(4) Power Supply Terminals
The Expansion Interface module is supplied 24VDC from this terminals.

4 Connecting Modules

Expansion connector Sticker
I/O modules
Expansion connector
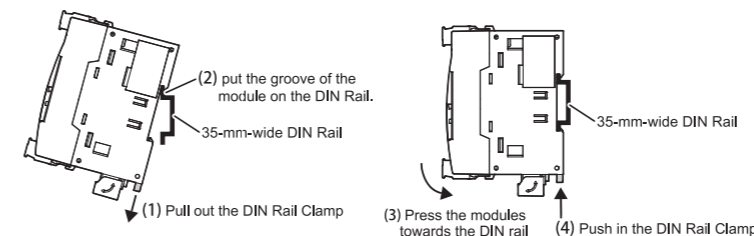Expansion Interface module
Unlatch Button
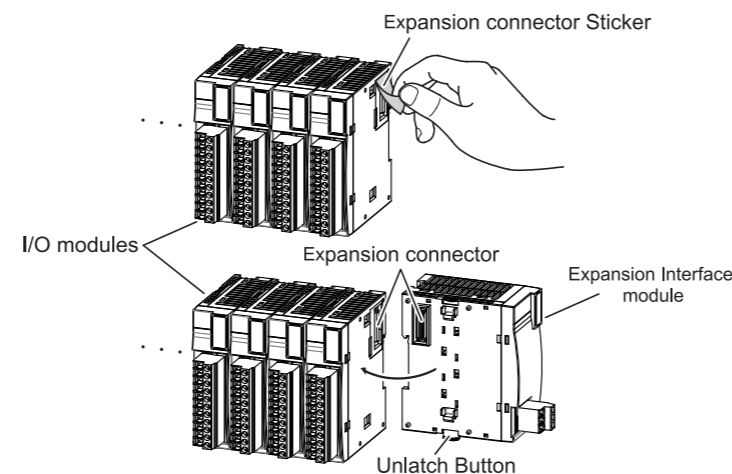
1. When connecting an Expansion interface module, remove the expansion connector sticker from the I/O module.

2. Place the I/O module and Expansion interface module side by side. Put the expansion connectors together for easy alignment.

3. With the expansion connectors aligned correctly and the unlatch button in the up position, press the I/O module and Expansion interface module together until the latches click to attach the modules together firmly.
If the unlatch button is in the up position, push down the button to engage the latches.

5 Mounting Modules

For details about mounting and removing modules, see the user's manual.

［Mounting on DIN Rail］
Use a 35-mm-wide DIN Rail and BNL6 mounting clamps to secure the modules.

(1) Pull out the DIN Rail Clamp
(2) put the groove of the module on the DIN Rail.
35-mm-wide DIN Rail
(3) Press the modules towards the DIN rail
(4) Push in the DIN Rail Clamp
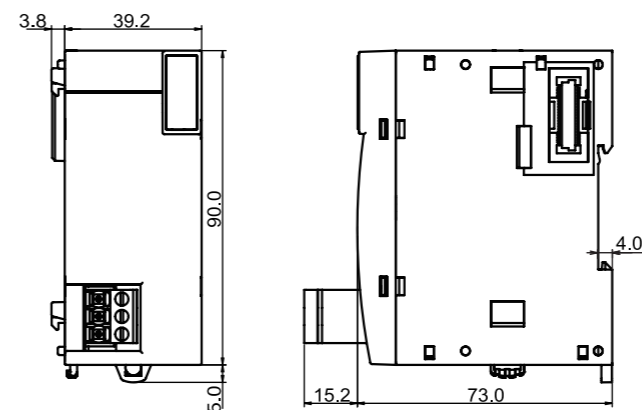
[Direct Mounting on Panel Surface]
Pull out the DIN Rail clamp on the back of the module and insert the direct mounting clamp (FC6A-PSP2PN05) into the slot.
Attach the module to the mounting plate using the screw holes.
Attach the module to the mounting plate using M4 tapping screws, as shown below, or make 5 to 6mm mounting holes and secure the module using M4 pan head screws. Always give sufficient consideration to operability, ease-of-maintenance, and environmental resistance when deciding on the mounting position.
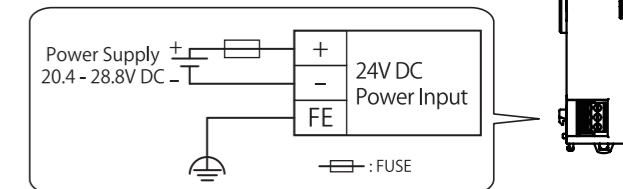

Direct Mounting Clamp （FC6A-PSP2PN05）
Screw Hole
DIN Rail Clamp

39.2
19.7±0.2
2-Φ4.5
90.0±0.2
100.0±0.2
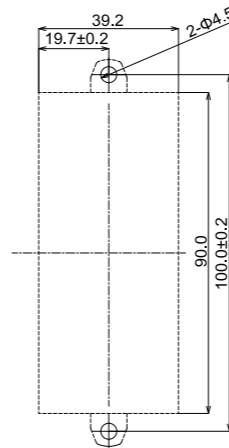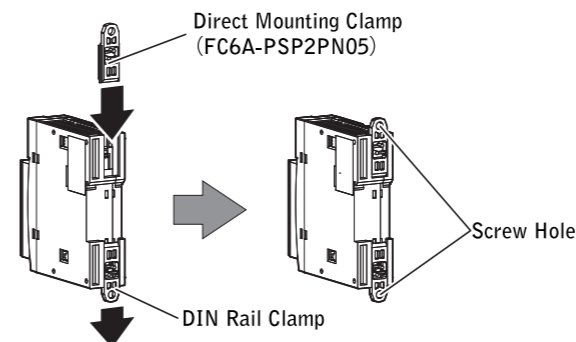
All dimensions in mm.

6 Dimensions

3.8
39.2
90.0
5.0
15.2
73.0
4.0

All dimensions in mm.

7 Wiring

Power Supply Wiring

Power Supply 20.4 - 28.8V DC
+
−
FE
+
−
24V DC Power Input

═▭═ : FUSE
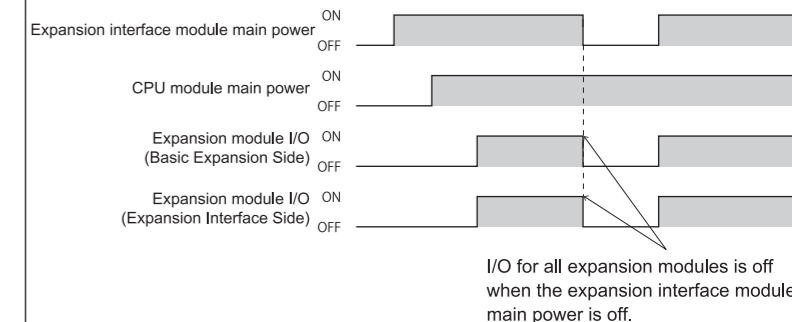
8 Power Supply Precautions

When the CPU module and the expansion interface module are powered by separate power supplies, an error may occur on the CPU module if the power on order or the power off order is mistaken.

Power Supply	Order
Power on	Turn on the expansion interface module and the CPU module at the same time, or in expansion interface module → CPU module order
Power off	Turn off the expansion interface module and the CPU module at the same time, or in CPU module → expansion interface module order

Expansion interface module main power ON / OFF
CPU module main power ON / OFF
0 s or longer   0 s or longer
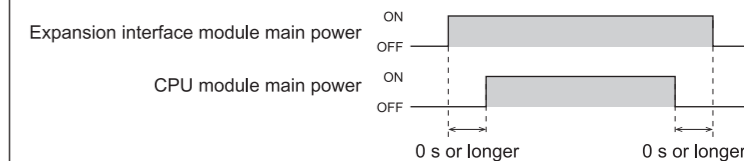
If there is an interruption of the power supply (power off) for the expansion interface module during operation, the outputs for all of the expansion modules (both the basic expansion side and the expansion interface side) during the power interruption will be off (they are automatically reset and the I/O is turned off). When the power recovers from the interruption, the expansion modules (both the basic expansion side and the expansion interface side) are restored to their original statuses.

Expansion interface module main power ON / OFF
CPU module main power ON / OFF
Expansion module I/O (Basic Expansion Side) ON / OFF
Expansion module I/O (Expansion Interface Side) ON / OFF

I/O for all expansion modules is off when the expansion interface module main power is off.

If the expansion interface module main power supply is on and the CPU module main power supply is off, the expansion modules on the expansion interface side are set to the reset status. Please note that during the reset status, the analog module and PID module LED indicators are on. This is not a malfunction.

9 Applicable Ferrule

The recommended ferrule is made by Phoenix Contact. To crimp the ferrules shown below, use a special crimping tool （CRIMPFOX 6（1212034））

FC6A-EXM2
AI 0,5-10 GB（3203150）, AI 1-10（3200182）, AI 1,5-10（3200195）
（) indicates the Type No. of PHOENIX CONTACT GmbH & Co. KG

10 Recommended Screwdriver / Tighting torque

To wire the terminal block, use the recommended screwdriver made by Phoenix Contact and tighten terminal screws to the proper tightening torque.

FC6A-EXM2
Screwdriver：SZS 0,6×3,5（1205053）/ Tighten torque：0.49 N·m
（) indicates the Type No. of PHOENIX CONTACT GmbH & Co. KG

MicroSmart User's manual can be downloaded from http://www.idec.com/download

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