IDEC FC6A Series MicroSmart CPU Module Instructions

IDEC FC6A Series MicroSmart CPU Module

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

Contents

Safety Precautions

Special expertise is required to use the MICROSmart.

- Read this instruction sheet and the use~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 I DEC'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**

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

⚠ **WARNING**

- Turnoff the power to the MICROSmart before starting installation, removal, wiring, maintenance, or inspection on the MICROSmart. Failure to tum off the power may cause damage, 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.
- SUITABLE FOR USE IN CLASS 1, DIVISION 2, GROUPS A,B,C AND D HAZARDOUS LOCATIONS, OR NONHAZARDOUS LOCATIONS ONLY.
- WARNING – EXPLOSION HAZARD – DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS.
- THIS EQUIOMENT IS AN OPEN -TYPE DEVICE MEANT TO BE INSTALLED IN AN ENCLOSURE SUITABLE FOR THE ENVIRONMENT THAT IS ONLY ACCESSIBLE WIHT THE USE OF A TOOL OR KEY
- WARNING – EXPLOSION HAZARD – THE USB PORT IS NOT FOR USE IN HAZARDOUS LOCATIONS

⚠ 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 itwill 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.
  (Power supply Temninals: 0.51 N-m, Input Temninals and Output Temninals: 0.28 N-m)
- Use an IEC60127-approved fuse on the power line and output circuit to meet voltage and current requirements.(Recommended fuse: Littelfuse 5x20mm 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

This symbol mark means that batteries and accumulators, at their end-of life, should be disposed of separately from your household waste.
If a chemical symbol is printed beneath the symbol shown above,this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows:
Hg : Mercury (0.0005%) Cd : Cadmium (0.002%) Pb : Lead (0.004%)
In the European Union there are separate collection systems for used batteries and accumulators.
Please dispose of batteries and accumulators correctly in acoordance with each country or local regulation.

TYPE

CPU module CAN J1939 All-in-One type (40-110 Type)

Power Supply Type	Output Type	Type No.
100-240VAC	Relav	FC6A-C40R1AEJ
24VDC	Relav	FC6A-C40R1CEJ
	Transistor Sink	FC6A-C40K1CEJ
	Transistor Protect Source	FC6A-C40P1CEJ
12VDC	Relav	FC6A-C40R1 DEJ
	Transistor Sink	FC6A-C40K1DEJ
	Transistor Protect Source	FC6A-C40P1DEJ

Packing(Pcs/pack): FC6A Unit (1), Connector with analog input cable (1), Battery holder with battery (1) ~ Instruction Sheet (this manual) (1).

Specification

Operating Temperature: -10 to +55″C(no freezing)
Expanded Operating Temperature: -25 to -10″C, +55 to 65″C (no freezing)

- See the use~s manual for details on use in Expanded Operating Temperatures.

  Storage Temperature: -25 to +70″C(no freezing)

  Relative/ Storage Humidity: 10 to 95%RH (no condensation)

  Altitude or Air Pressure: 1,013 to 795hPa (0 to 2,000 m) during operation 1,013 to 701 hPa (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 mis' (1 G), X, Y, Z directions, 2 hours,
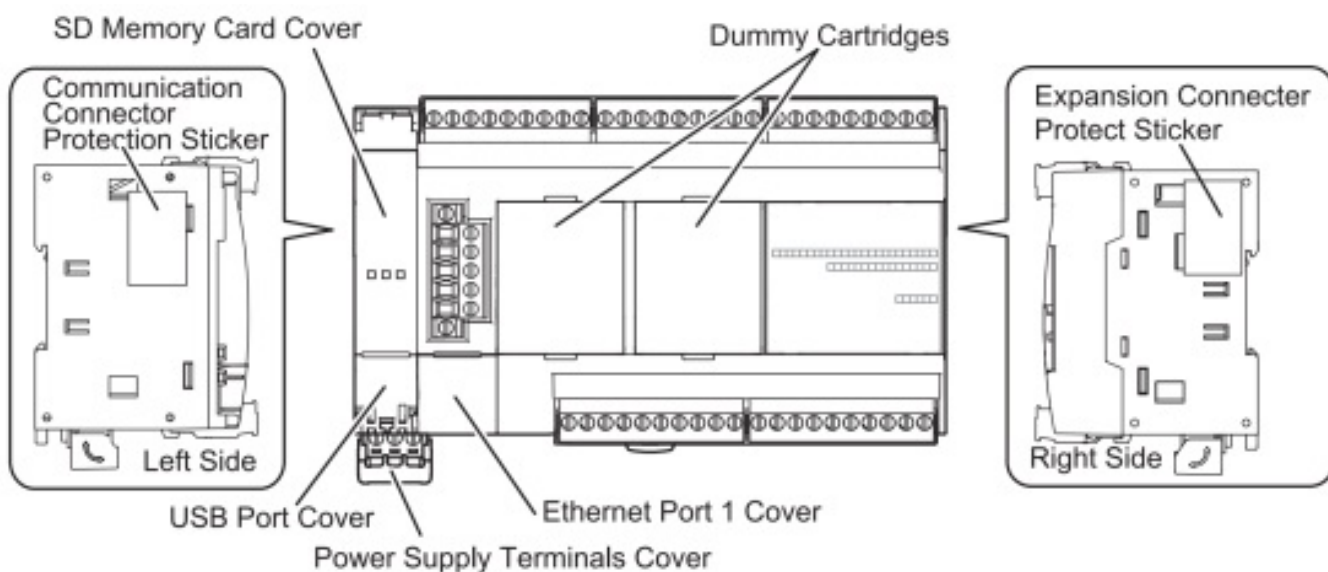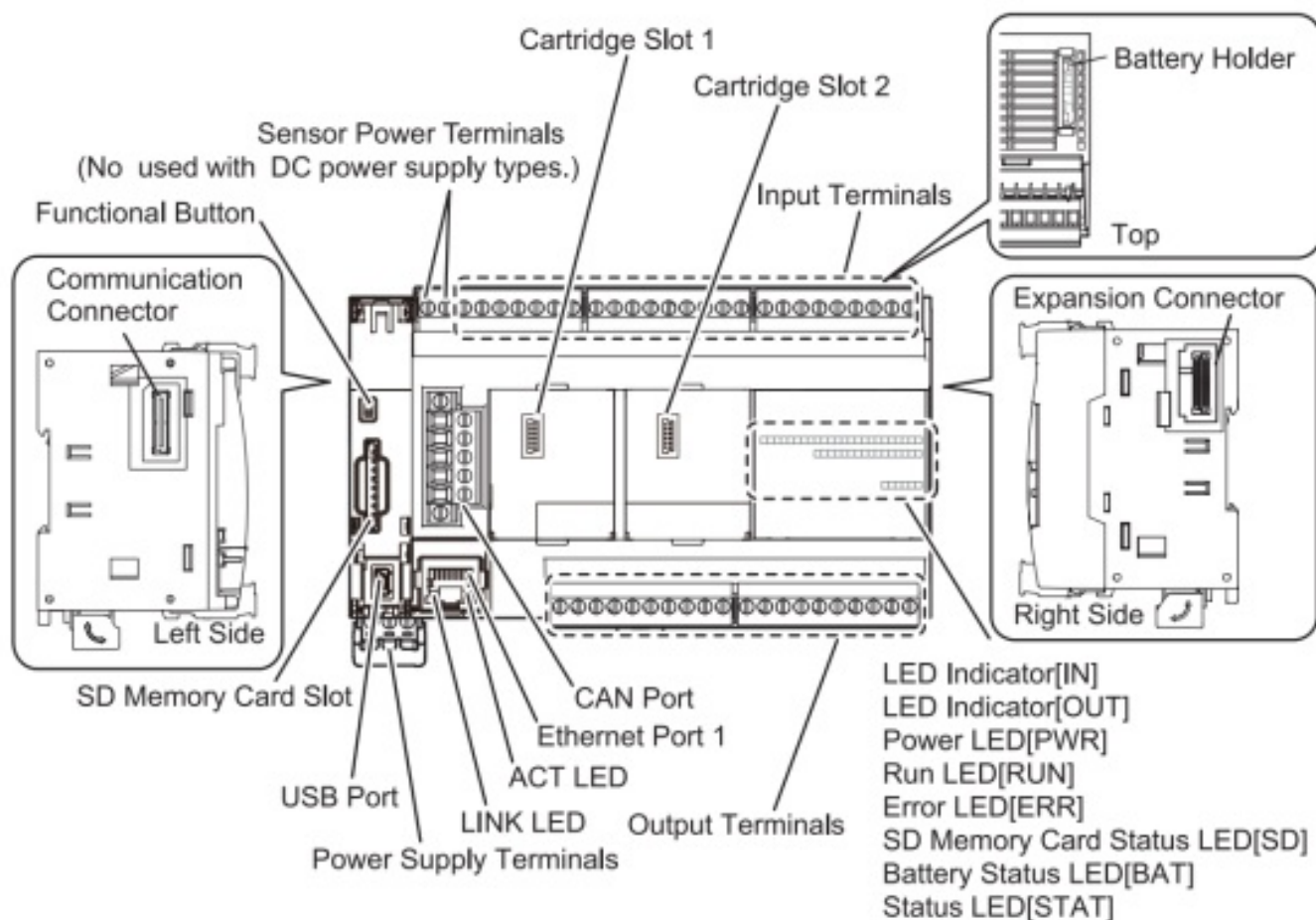
  Shock Resistance: 147 mis' (15 G), 11 ms, X, Y, Z, 3 axes, 6 directions, 3 times each Installation Location : Inside cabinet (indoor use)

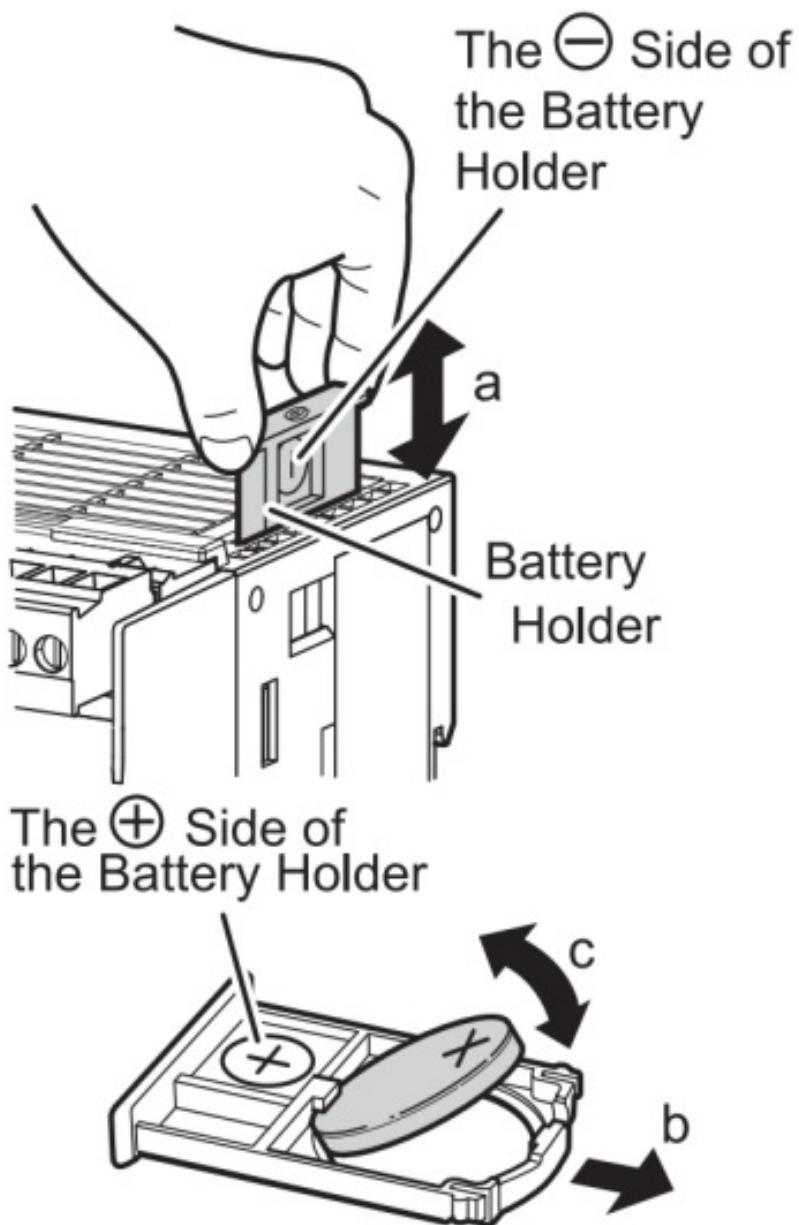 Maximum Surrounding Air Temperature: 55″C / 65°C

  Temperature Code: T4A
- See the user's manual for more details on the product specifications.

Name & Function

Cartridge Slot 1

Cartridge Slot 2

Sensor Power Terminals
(No used with DC power supply types.)

Input Terminals

Functional Button

Battery Holder

Communication Connector

Top

Expansion Connector

Left Side

Right Side

SD Memory Card Slot

CAN Port

Ethernet Port 1

ACT LED

USB Port

LINK LED   Output Terminals

Power Supply Terminals

LED Indicator[IN]
LED Indicator[OUT]
Power LED[PWR]
Run LED[RUN]
Error LED[ERR]
SD Memory Card Status LED[SD]
Battery Status LED[BAT]
Status LED[STAT]

SD Memory Card Cover

Dummy Cartridges

Communication
Connector
Protection Sticker

Expansion Connecter
Protect Sticker

Left Side

Right Side

USB Port Cover

Ethernet Port 1 Cover

Power Supply Terminals Cover

Assembling Modules

The ⊖ Side of
the Battery
Holder

a

Battery
Holder

The ⊕ Side of
the Battery Holder

c

b

1. Grasp the battery holder and remove it from the module." (a)

2. Remove the old back up battery from the battery holder (c) by pulling the outside hook. (b)

3. Install a new back up battery in the battery holder.
   Push the battery in until the outsite hook (b) clicks.

4. Insert the battery holder into the module. (a)
   • The length of the battery holder is 36 mm.

⚠ **WARNING**

- Warning: Replace Only The Battery With Panasonic BR2032, Or The
  Alternative Batteries Compatible On The List As Below. Use of Another Battery May Present A Risk of Fire Or
  Explosion.

| Alternative Batteries Compatible with BR2032	
CR2032X or CR2032W	Murata
CR2032A or CR2032B	Panasonic

⚠ CAUTION

- Change the battery before the old battery expires.
- Do not change the battery when the MICROSmart is power ON. Doing so may damage the product.
- Change the battery within 1 minute of turning off the power supply, or the device value will be reset to its initial values.
- Battery May Explode If Mistreated. Do Not Recharge,Disassemble Or Dispose Of In Fire.

Default Setting of the Function Switch

- The default setting of the function switch is 0.
- The PLC will not run if the function switch is O when Run/Stop PLC by Function Switch is enabled in WindLDR and a program is downloaded with Automatic start after download enabled.
  To run the PLC, the function switch must be set to 1.
- Enabled is the default setting for Run/Stop PLC by Function Switch in WindLDR.
- For details on the function switch, see the user's manual.

Mounting Modules

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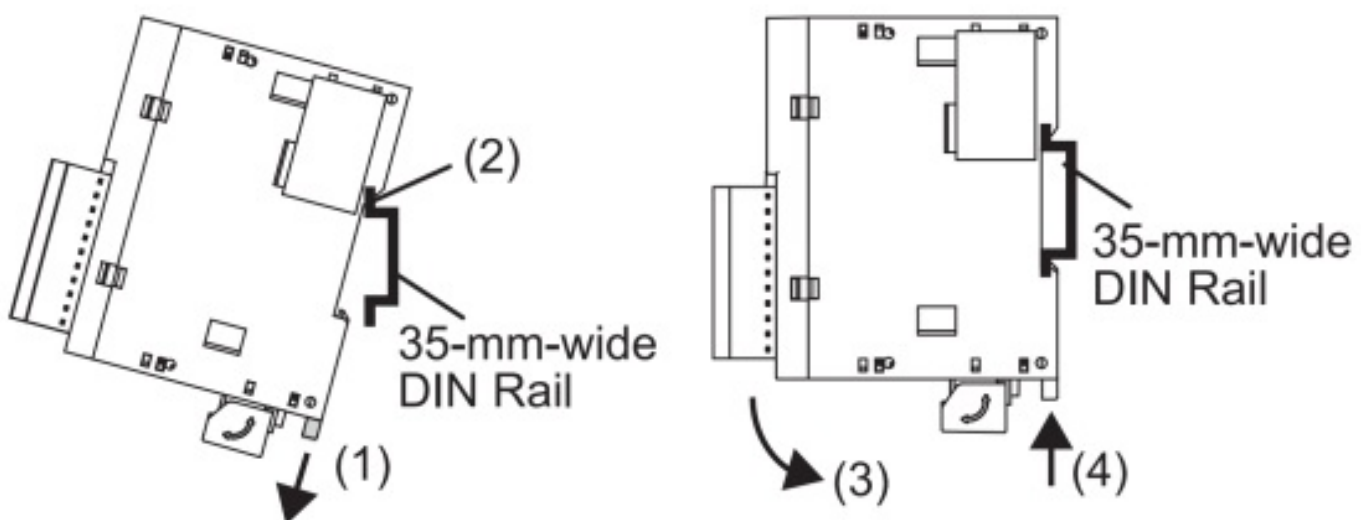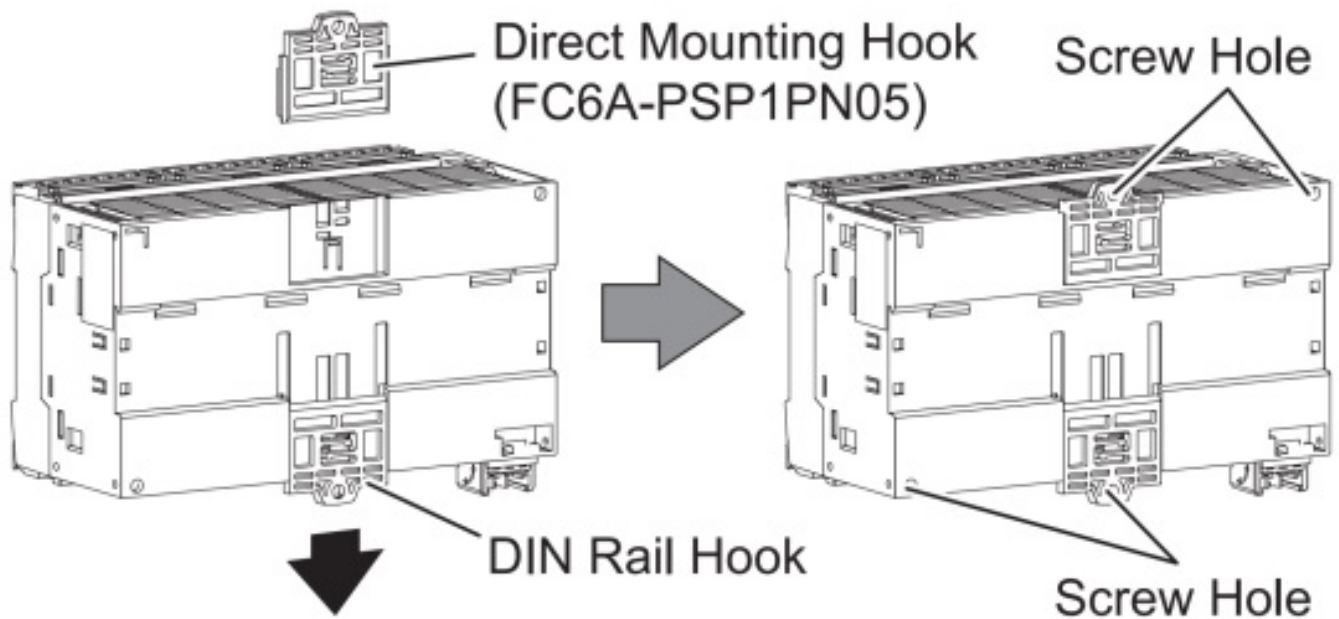

[Mounting on DIN Rail]
Use a 35-mm-wide DIN Rail and BNL6 mounting clips to secure the modules.

1. Pull out the DIN Rail Hook.

2. Put the groove of the module on the DIN Rail.

3. Press the modules towards the DIN Rail.

4. Push in the DIN Rail Hook.

[Direct Mounting on Panel Surface]
Pull out the DIN Rail Hook on the back of the module and insert the direct mounting Hook (FC6A-PSP1 PN05) 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-mainlenance, and environmental resistance when deciding on the mounting position.
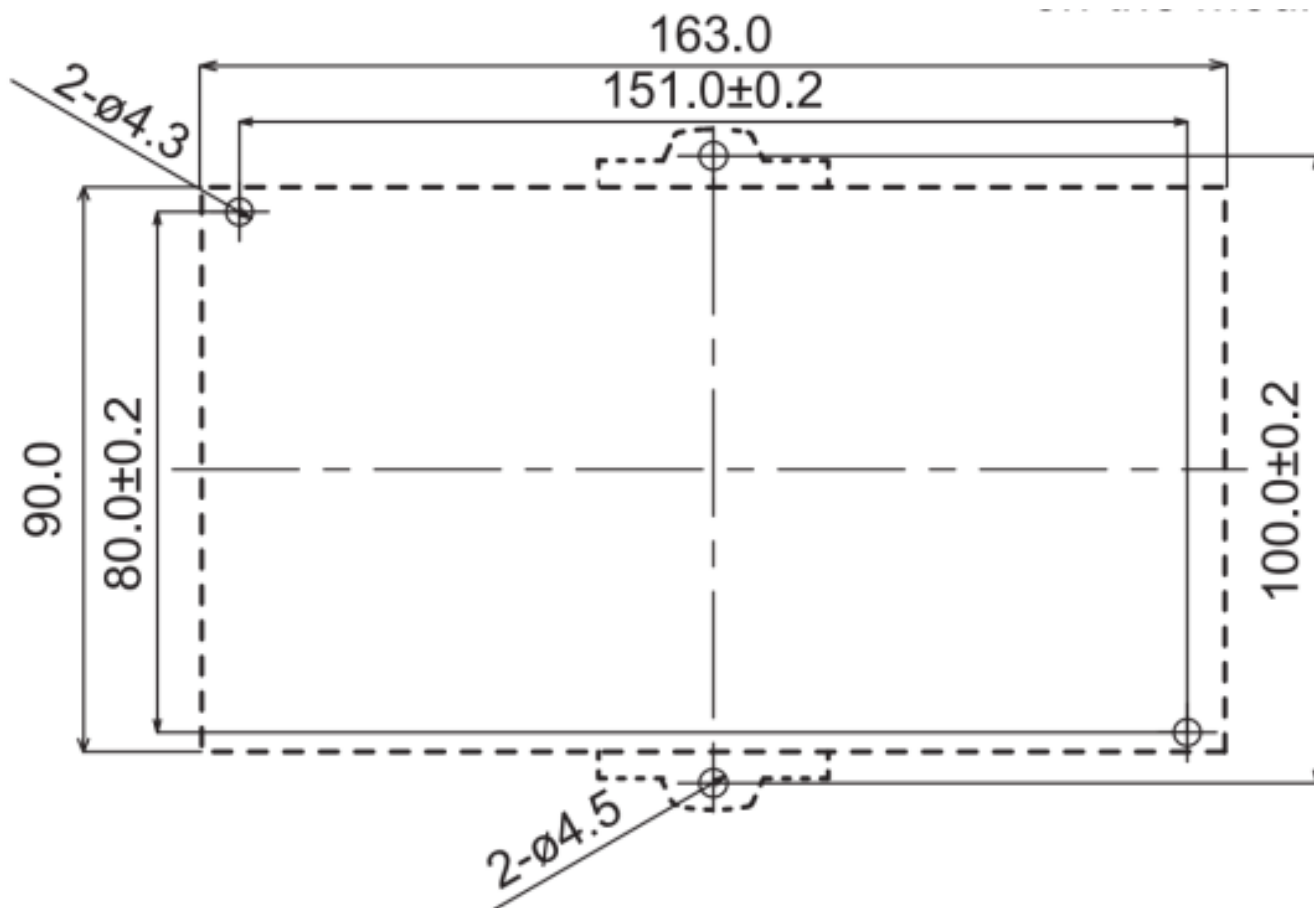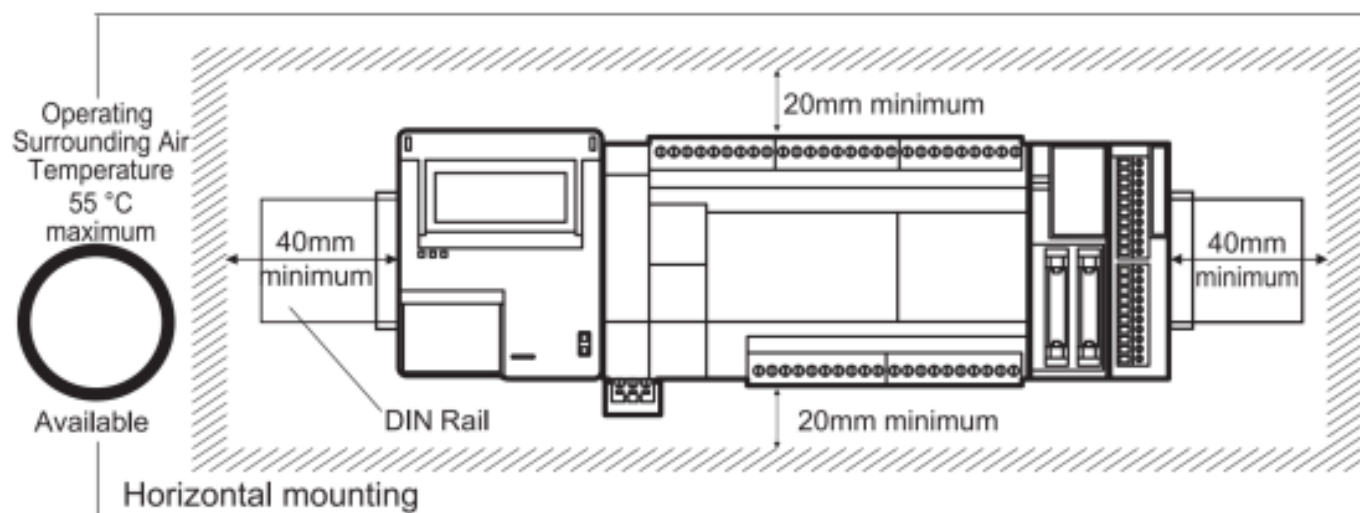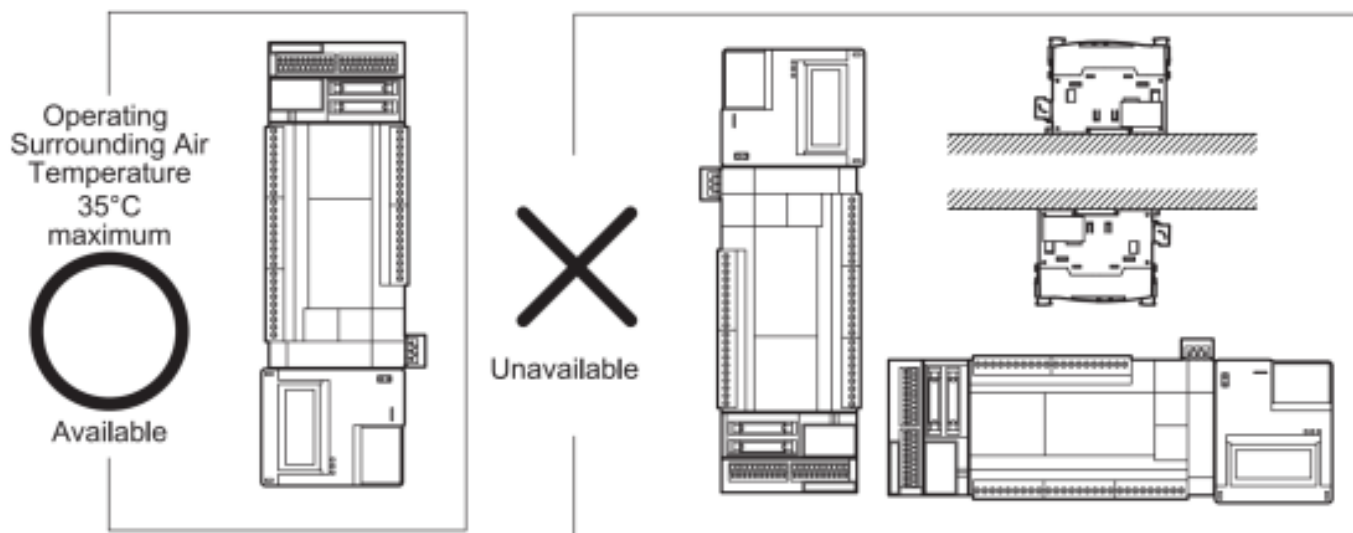
![CAUTION]

When an expansion module is not connected next, don't peel off the protection sticker.

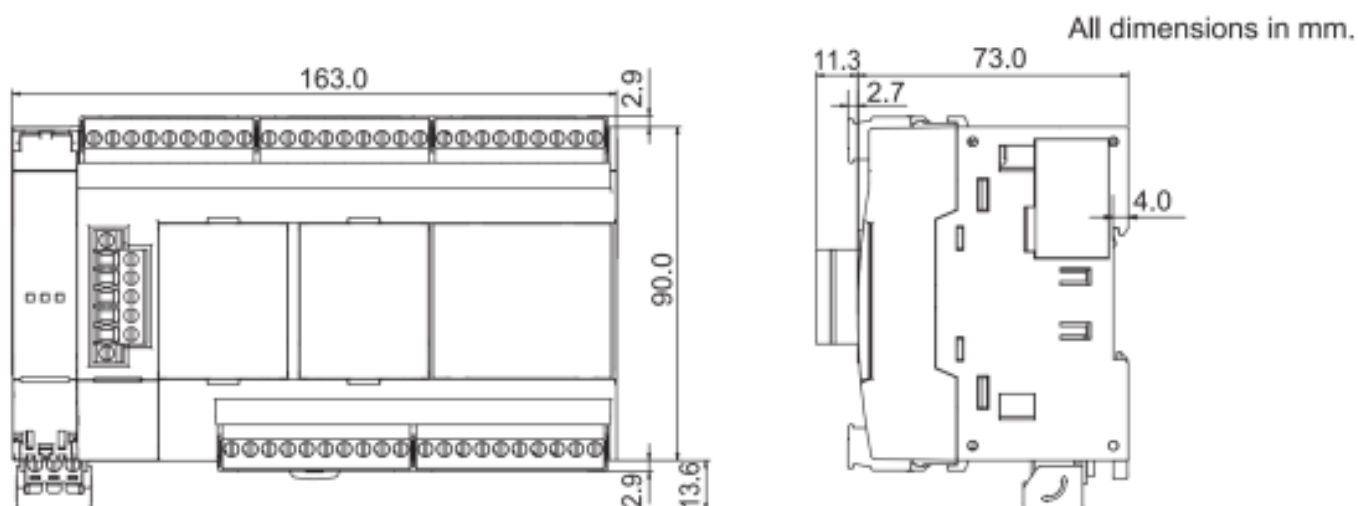## Installation in Control Panel & Mounting Direction

Mount the FC6A MicroSmart as follows. To provide ample ventilation, ensure that there is sufficient space between the FC6A MicroSmart and other devices, heat sources, and panel surfaces.

Horizontal mounting

Operating Surrounding Air Temperature 35°C maximum

○ Available

✕ Unavailable

CAUTION

For UL/cUL, Horizontal mounting only.

Dimensions

All dimensions in mm.

163.0

2.9

90.0

2.9

13.6

11.3

2.7

73.0

4.0

*See the user's manual for more details on the dimensions.

Wiring

DC Sink Input Wiring

Sensor (2 wires)

+24V | 0V | COM | I0 | I1 | I2 | I3 | I4 | I5 | I6

Sensor Power

Input (24V DC)

DC Source Input Wiring

Sensor (2 wires)

+24V | 0V | COM | I0 | I1 | I2 | I3 | I4 | I5 | I6

Sensor Power

Input (24V DC)
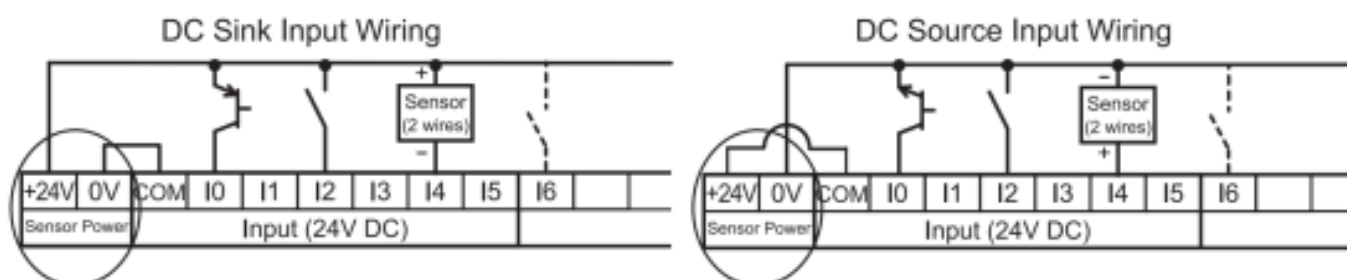
100 to 240V AC power supply type: Support of sensor power which is in the circle area of above figure is able to be used instead of 24V DC external power.

24V DC power supply type: No support of sensor power. Therefore 24V DC external power is required.

12V DC power supply type: No support of sensor power. Therefore 12V DC external power is required.

DC Power Wiring

12VDC Power Input		
+12V	0V	FE

Power Supply
10.2 to 18.0VDC

24VDC Power Input		
+24V	0V	FE

Power Supply
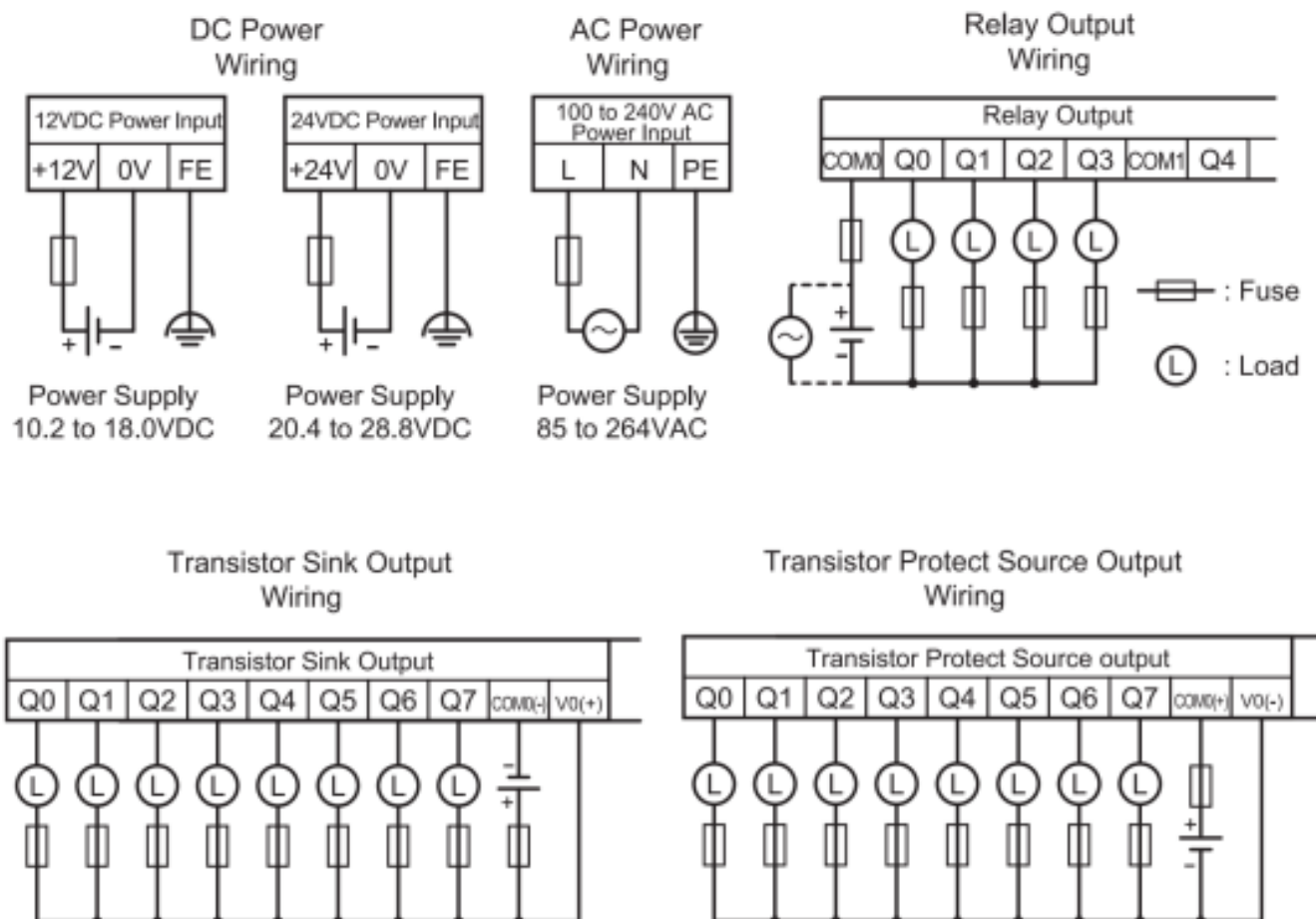20.4 to 28.8VDC

AC Power Wiring

100 to 240V AC Power Input		
L	N	PE

Power Supply
85 to 264VAC

Relay Output Wiring

Relay Output						
COM0	Q0	Q1	Q2	Q3	COM1	Q4

: Fuse
(L) : Load

Transistor Sink Output Wiring

Transistor Sink Output									
Q0	Q1	Q2	Q3	Q4	Q5	Q6	Q7	COM0(-)	V0(+)

Transistor Protect Source Output Wiring

Transistor Protect Source output									
Q0	Q1	Q2	Q3	Q4	Q5	Q6	Q7	COM0(+)	V0(-)

* See the use~s manual for more details on the wiring.

⚠ CAUTION

- Use a Class 2 power supply source when power supply voltage less than 30V DC is required to power the temninal.
- Use copper conductor only.
- When the MICROSmart is used in a Surrounding Air Temperature of 65°C, reduce the 1/0 voltage and 110 utilization. See the users manual for details.

CAN Port (SAE J1939)

No.	Signal wire
1	SG
2	CAN_L
3	CAN_SHLD*1
4	CAN_H
5	(V+)*2

		J1939-11	J1939-15
Cable	Cable Type	Twisted pair Cable	
		Shielded	Unshielded
		0.3mm² - 0.82mm² (AWG22-18)	
	Standards	ISO 11898/1993	
	Characteristic impedance	120Ω	

- 1 This port is connected to SG inside via resistor and capacitor connected in series (R=1Q, C=0.68µF)

- 2 This port is N.C. Not connect to inside.
- 3 Use Termination resistors (1200, 0.5W or higher) at the both ends of the network.

The recommended ferrule is made by Phoenix Contact or Weidmiiller. To crimp the ferrules shown below, use a special crimping tool. (CRIMPFOX6 (1212034) or PZ 6 Rote L (1444050000)) To the terminal block, use the recommended screwdriver made by Phoenix Contact or Weidmiiller and lighten terminal screws tightening torque. Power supply Terminals, Input Temninals and Output Temninals :

Applied cable		Recommended ferrule
UL1007 / UL 2464	AWG24	Al 0,25-6 (3203040). Al 0.25-8 (3203037). H0.25/10 HBL(9025740000). H0.25/12T GE (9021020000)
	AWG22	Al 0,34-6 (3203053), Al 0,34-8 (3203066), H0,34/10 TK(9025750000), H0,34/12 TK (9025770000)
	AWG20	Al 0,5-6 (3200687), Al 0,5-8 (3200014), Al-TWIN 2×0,5-8 (3200933), H0.5/12D W(9019000000). H0.5/16D W (9019020000). H0,5/14D ZH W (9037380000)
	AWG18	Al 0,75-6 (3200690). Al 0,75-8 (3200519), Al-TWIN 2×0.75-8 (3200807), H0.75/12D GR (9019030000). H0.75/14D GR (9019040000). H0,75/14D ZH GR (9037410000)
	AWG16	Al 1,5-6 (3200755). Al 1.5-8 (3200043). H1.5/14D SW (9019120000)
UL1015	AWG20	Al 0,5-8 GB (1208966)
	AWG18	Al 1-8 (3200030), H1,0/14D R (9019080000)
	AWG16	Al 1,5-6 (3200755), Al 1,5-8 (3200043), H1,5/14D SW (9019120000)

Screwdriver	Tighten torque
SZS 0,6×3,5 (1205053). SDS 0.6×3.5×100 (9008330000)	0.51 N-m

CAN Port·

Applied cable		Recommended ferrule
UL1007 / UL 2464	AWG24	AI 0.25-10 (3241128)
		AI 0,34-10 (3241129)
	AWG20	AI 0,5-10 (3201275), AI-TWIN2x0,5-10 (3203309), H 0,5/16D W (9019020000). H 0,5/16D ZH W (9037390000)
		AI 0.75-10 (3201288). AI-TWIN 2×0,75-10 (3200975). H 0,75/16D GR (9019050000), H 0,75/16D ZH GR(9037420000)
	AWG16	AI 1,5-10 (3200195), H 1,5/16D SW (9019130000)
UL1015		AI 0.5-10 GB (3203150). H 0.5/16 DS W (9202910000)
		AI 1-10 (3200182), H 1,0/16D R (9019100000)
	AWG16	AI 1.5-10(3200195). H 1.5/16D SW (9019130000)

Screwdriver	Tighten torque
SZS 0,6×3,5 (1205053), SDS 0,6×3,5×100 (9008330000)	0.49 N-m

( ) indicates the Type No. of PHOENIX CONTACT GmbH & Co. KG and Weidmiiller Interface GmbH & Co. KG.
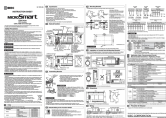
Precaution for Disposal

- Dispose of the FC6A Series MICROSmart as an industrial waste.

MicroSmart User's manual can be downloaded from http://www.idec.com/FC6Amanuals

www.idec.com

Documents / Resources

IDEC FC6A Series MicroSmart CPU Module [pdf] Instructions
FC6A Series, MicroSmart CPU Module, FC6A Series MicroSmart CPU Module