B-1816 (8)

INSTRUCTION SHEET

MICROSmart

FC6A Series
CPU module
All-in One type

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 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.
- Cet appareil convient uniquement à l'emploi dans des zones dangereuses de classe 1, groupes A,B,C et D; ou dans des zones non dangereuses.
- WARNING - EXPLOSION HAZARD - DO NOT DISCONNECT EQUIPMENT WHILE THE CIRCUIT IS LIVE OR UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITABLE CONCENTRATIONS.
- Avertissement: risque d'explosion. Ne pas débrancher l'appareil tant que le circuit est sous tension, ou à moins d'être certain que lieu d'utilisation soit exempt de concentrations inflammables.
- 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.
- Cet appareil doit être installé dans un boîtier qui est adapté à l'environnement d'utilisation et uniquement accessible avec un outil d'ouverture ou une clé.
- WARNING - EXPLOSION HAZARD - THE USB PORT IS NOT FOR USE IN HAZARDOUS LOCATIONS.
- Avertissement: risque d'explosion. Le port USB ne doivent pas être utilisés dans des emplacements dangereux.

⚠ 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 of 0.51 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.

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 accordance with each country or local regulation.

1 TYPE

CPU module All-in-One type

Power Supply Type	Output Type	Type No.		
		40-I/O Type	24-I/O Type	16-I/O Type
100-240VAC	Relay	FC6A-C40R*AE	FC6A-C24R*AE	FC6A-C16R*AE
24VDC	Relay	FC6A-C40R*CE	FC6A-C24R*CE	FC6A-C16R*CE
	Transistor Sink	FC6A-C40K*CE	FC6A-C24K*CE	FC6A-C16K*CE
	Transistor Protect Source	FC6A-C40P*CE	FC6A-C24P*CE	FC6A-C16P*CE
12VDC	Relay	FC6A-C40R*DE	-	FC6A-C16R*DE
	Transistor Sink	FC6A-C40K*DE	-	FC6A-C16K*DE
	Transistor Protect Source	FC6A-C40P*DE	-	FC6A-C16P*DE

* 1: Screw fastened type, 4: Push-in type

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

2 Specification

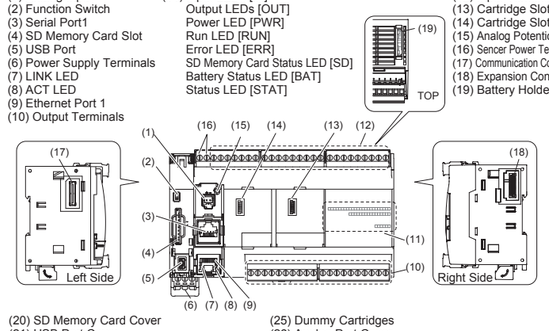
Operating Temperature: -10 to +55°C (no freezing)
Expanded Operating Temperature: -25 to -10°C, +55 to 65°C (no freezing)
* See the user's manual for details on use in Expanded Operating Temperatures.
Storage Temperature: -25 to +70°C (no freezing)
Relative/Storage Humidity: 10 to 95%RH (no condensation),
Altitude or Air Pressure: 1,013 to 795hPa (0 to 2,000 m) during operation
1,013 to 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/s² (1 G), X, Y, Z directions, 2 hours,
Shock Resistance: 147 m/s² (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.

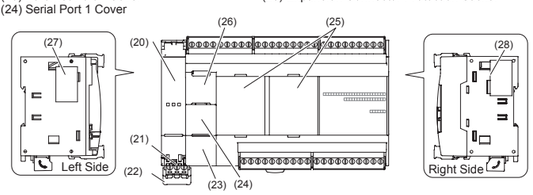
3 Name & Function

Type FC6A-C*1* (Screw fastened type)

(1) Analog Input
(2) Function Switch
(3) Serial Port1
(4) SD Memory Card Slot
(5) USB Port
(6) Power Supply Terminals
(7) LINK LED
(8) ACT LED
(9) Ethernet Port 1
(10) Output Terminals
(11) Input LEDs [IN]
Output LEDs [OUT]
Power LED [PWR]
Run LED [RUN]
Error LED [ERR]
SD Memory Card Status LED [SD]
Battery Status LED [BAT]
Status LED [STAT]
(12) Input Terminals
(13) Cartridge Slot 2
(14) Cartridge Slot 1
(15) Analog Potentiometer
(16) Sencer Power Terminals*1
(17) Communication Connector
(18) Expansion Connector
(19) Battery Holder

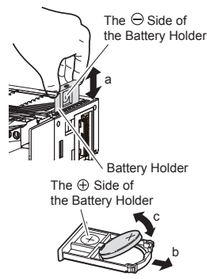


(20) SD Memory Card Cover
(21) USB Port Cover
(22) Power Supply Terminals Cover*2
(23) Ethernet Port 1 Cover
(24) Serial Port 1 Cover
(25) Dummy Cartridges
(26) Analog Port Cover
(27) Communication Connector Protection Sticker
(28) Expansion Connector Protection Sticker



*1 Not used with DC power supply types.
*2 FC6A-C40*4* (Push-in type) do not have a power supply terminal cover.

4 Assembling Modules



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.
- Avertissement: Remplacez uniquement la batterie par BR2032 de PANASONIC, ou par une batterie compatible de la liste ci-dessous. L'utilisation d'une autre piles peut présenter un risque de feu ou d'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.
- La piles peut exploser en cas de mauvais usage. Ne pas recharger, démonter ou jeter la piles au feu.

5 Default Setting of the Function Switch

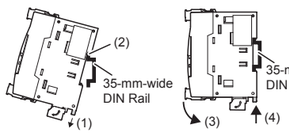


- The default setting of the function switch is 0.
- The PLC will not run if the function switch is 0 when Run/Stop PLC by Function Switch is enabled in WindLDR and a program is downloaded with Automatic start after download enabled. To run the PLC, the function switch must be set to 1.

* 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.

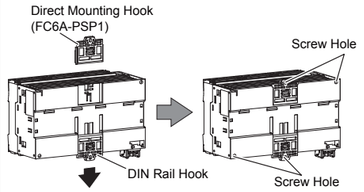
6 Mounting Modules

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.

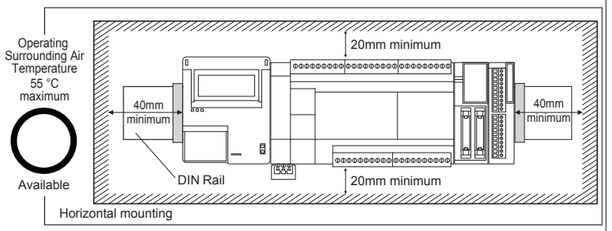
(1) Pull out the DIN Rail Hook.
(2) Put the groove of the module on the DIN Rail.
(3) Press the modules towards the DIN Rail.
(4) Push in the DIN Rail Hook.

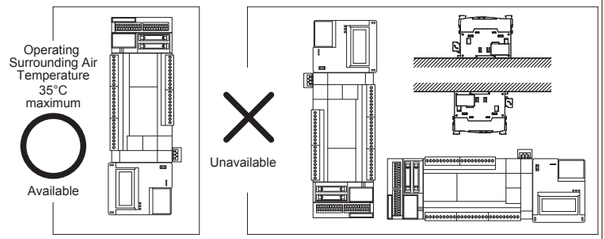


[Direct Mounting on Panel Surface]
Pull out the DIN Rail Hook on the back of the module and insert the direct mounting Hook (FC6A-PSP1) into the slot.
Attach the module to the mounting plate using the screw holes.
Attach the module to the mounting plate using M4 tapping screws, as shown below, or make 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.

7 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.



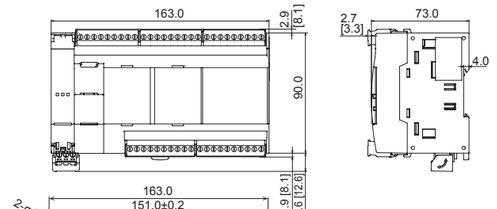


⚠ CAUTION For UL/cUL, Horizontal mounting only.

8 Dimensions

All dimensions in mm.

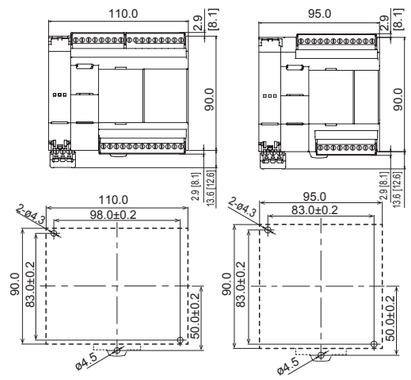
[FC6A-C40R*AE, -C40R*CE, -C40K*CE, -C40P*CE, -C40R*DE, -C40K*DE, -C40P*DE]



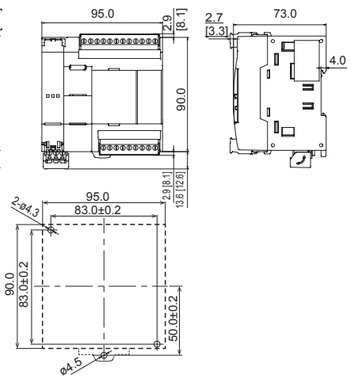
⚠ CAUTION

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

[FC6A-C24R*AE, -C24R*CE, -C24K*CE, -C24P*CE]

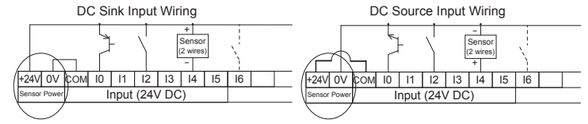


[FC6A-C16R*AE, -C16R*CE,-C16K*CE, -C16P*CE, -C16R*DE, -C16K*DE, -C16P*DE]

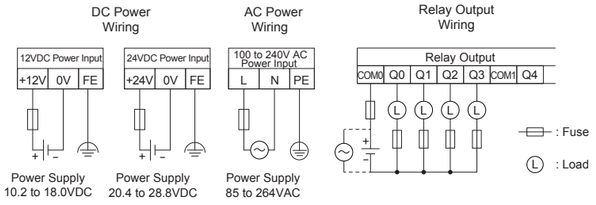


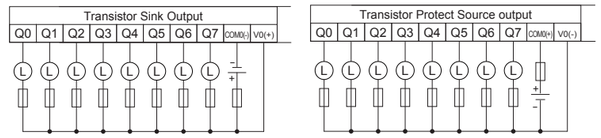
* Dimensions in brackets [ ] are for type numbers FC6A-C*4* (Push-in type).
* See the user's manual for more details on the dimensions.

9 Wiring



100-240V 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 12VDC external power is required.





*See the user'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 terminal.
- Use copper conductor only.
- When the MICROSmart is used in a Surrounding Air Temperature of 65°C, reduce the I/O voltage and I/O utilization. See the user's manual for details.

10 Applicable Cable / Recommended Ferrule / Recommended Screwdriver / Tightening Torque

The recommended ferrule is made by Phoenix Contact or Weidmüller. 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 Weidmüller and tighten terminal screws tightening torque.

Type FC6A-C*1* (Screw fastened type)

Applied cable		Recommended ferrule
UL1007 / UL2464	AWG24	AI 0,25-6 (3203040), AI 0,25-8 (3203037), H0,25/10 HBL(9025740000), H0,25/12T GE (9021020000)
	AWG22	AI 0,34-6 (3203053), AI 0,34-8 (3203066), H0,34/10 TK(9025750000), H0,34/12 TK (9025770000)
	AWG20	AI 0,5-6 (3200687), AI 0,5-8 (3200014), AI-TWIN 2×0,5-8 (3200933), H0,5/12D W(9019000000), H0,5/14D W (9019010000), H0,5/14D ZH W (9037380000)
	AWG18	AI 0,75-6 (3200690), AI 0,75-8 (3200519), AI-TWIN 2×0,75-8 (3200807), H0,75/12D GR (9019030000), H0,75/14D GR (9019040000), H0,75/14D ZH GR (9037410000)
	AWG16	AI 1,5-6 (3200755), AI 1,5-8 (3200043), H1,5/14D SW (9019120000)
UL1015	AWG20	AI 0,5-8 GB (1208966)
	AWG18	AI 1-8 (3200030), H1,0/14D R (9019080000)
	AWG16	AI 1,5-6 (3200755), AI 1,5-8 (3200043), H1,5/14D SW (9019120000)

Type FC6A-C*4* (Push-in type)

Applied cable		Recommended ferrule
UL1007 /UL2464	AWG24	AI 0,25-8 (3203037), H0,25/12T GE (9021020000)
	AWG22	AI 0,34-8 (3203066), H0,34/12 TK (9025770000)
	AWG20	AI 0,5-8 (3200014), H0,5/14D W (9019010000)
	AWG18	AI 0,75-12 (3200849), AI-TWIN 2×0,75-10 (3200975), H0,75/18 W (9025910000), H0,75/16D ZH GR (9037420000)
	AWG16	H1,5/18D SW (9019140000)
UL1015	AWG20	AI 0,5-8 GB (1208966)
	AWG18	AI 1-12 (3200674), H1,0/16 GE (9025950000)
	AWG16	H1,5/18D SW (9019140000)

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

( ) indicates the Type No. of PHOENIX CONTACT GmbH & Co. KG and Weidmüller Interface GmbH & Co. KG.

11 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

IDEC CORPORATION https://www.idec.com

Manufacturer: IDEC CORPORATION, 2-6-64 Nishimiyahara, Yodogawa-Ku, Osaka 532-0004, Japan
EU Authorized Representative: APEM SAS
55, Avenue Edouard Herriot BP1, 82303 Caussade Cedex, France
UK Authorized Representative: APEM COMPONENTS LIMITED
Drakes Drive, Long Crendon, Buckinghamshire, HP18 9BA, UK

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