IDEC

B-1994 (4)

INSTRUCTION SHEET

MICROSmart

FC6A Series
Plus CPU 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.

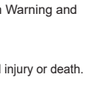
⚠ WARNING

- 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 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.
  (Power supply Terminals: 0.51 N-m, Input Terminals and Output Terminals: 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 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

Plus CPU module

Power Supply Type	Output Type	Type No.	
		32-I/O Type	16-I/O Type
24VDC	Relay	-	FC6A-D16R1CEE FC6A-D16R4CEE
	Transistor Sink	FC6A-D32K3CEE FC6A-D32K4CEE	FC6A-D16K1CEE FC6A-D16K4CEE
	Transistor Protect Source	FC6A-D32P3CEE FC6A-D32P4CEE	FC6A-D16P1CEE FC6A-D16P4CEE

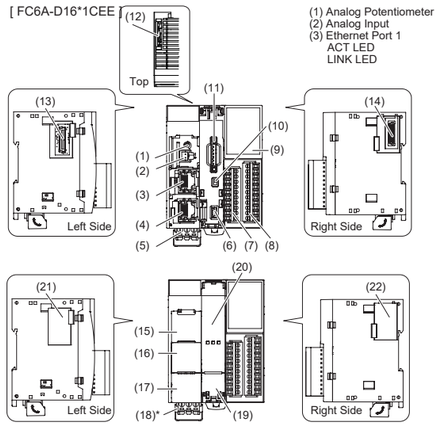
Packing(Pcs/pack): FC6A Unit (1), Connector with analog input cable (1), Battery holder with battery (1) Instruction Sheet (this manual) (1).

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 to 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/s^2 (1 G), X, Y, Z directions, 2 hours,
Shock Resistance: 147 m/s^2 (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: T4
* See the user's manual for more details on the product specifications.

3 Name & Function

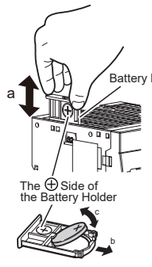
[FC6A-D16*1CEE]



(1) Analog Potentiometer
(2) Analog Input
(3) Ethernet Port 1
ACT LED
LINK LED
(4) Ethernet Port 2
ACT LED
LINK LED
(5) Power Supply Terminals
(6) USB Port
(7) Input Terminals
(8) Output Terminals
(9) LEDs
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]
(10) Function Switch
(11) SD Memory Card Slot
(12) Battery Holder
(13) Communication Connector
(14) Expansion Connector
(15) Analog Port Cover
(16) Ethernet Port 1 Cover
(17) Ethernet Port 2 Cover
(18) Power Supply Terminals Cover
(19) USB Port Cover
(20) SD Memory Card Cover
(21) Communication Connector Protection Sticker
(22) Expansion Connector Protection Sticker

* [ ] indicates the display of LED on FC6A
* FC6A-D*4* dose not have Power Supply Terminals 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.

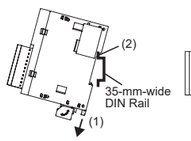
5 Default Setting of the Function Switch

- 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.

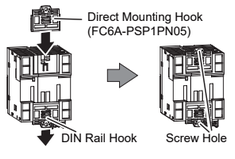
6 Mounting Modules

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.



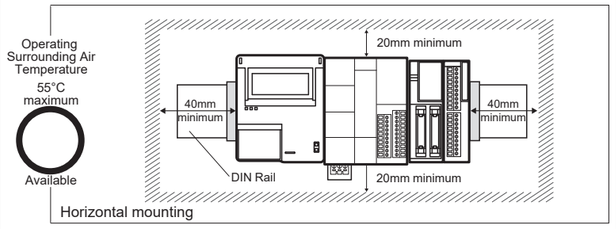
[Direct Mounting on Panel Surface]
Pull out the DIN Rail hook on the back of the module and insert the direct mounting hook (FC6A-PSP1PN05) into the slot. Attach the module to the mounting plate using the screw holes. Attach the module to the mounting plate using M4 tapping screws, as shown below, or 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.

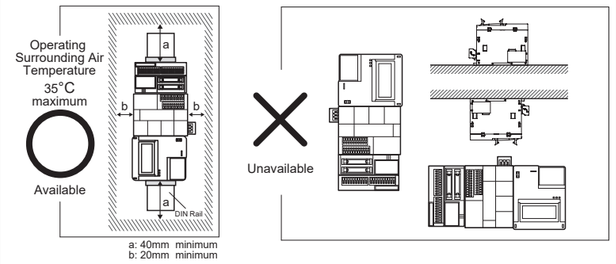
⚠ CAUTION

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

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.



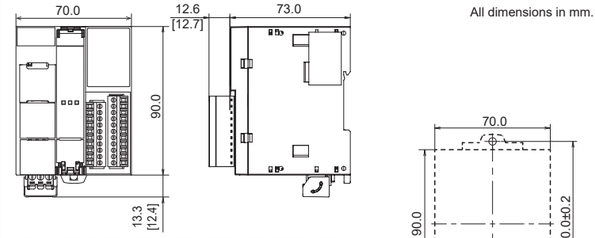


⚠ CAUTION For UL/cUL, Horizontal mounting only.

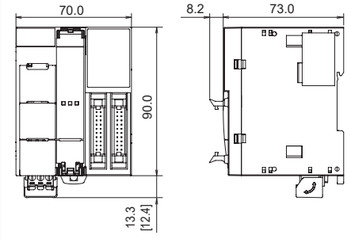
8 Dimensions

[FC6A-D16R1CEE, -D16R4CEE, -D16K1CEE, -D16K4CEE, -D16P1CEE, -D16P4CEE]

All dimensions in mm.



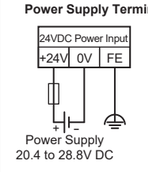
[FC6A-D32K3CEE, -D32K4CEE, -D32P3CEE, -D32P4CEE]



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

9 Wiring

Power Supply Terminals



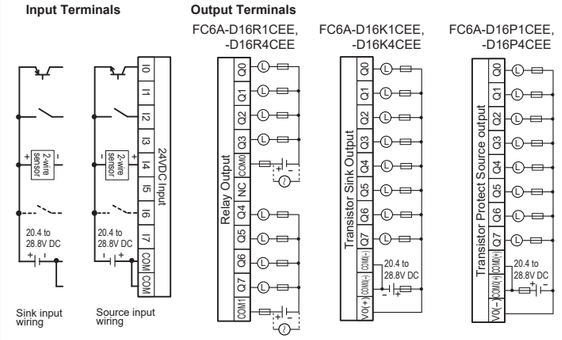
: Fuse
: Load

⚠ CAUTION

- Use an isolated type or SELV power supply source when power supply voltage less than 30V DC is required to power the terminal.
- For UL/cUL, use transistor outputs under resistive load and Limited energy.
- 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.

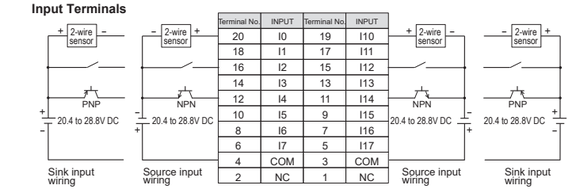
[FC6A-D16R1CEE, -D16R4CEE, -D16K1CEE, -D16K4CEE, -D16P1CEE, -D16P4CEE]

Input Terminals **Output Terminals**



[FC6A-D32K3CEE, -D32K4CEE, -D32P3CEE, -D32P4CEE]

Input Terminals

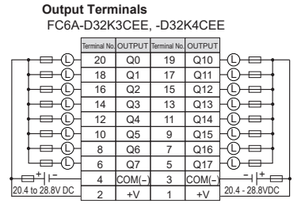


Terminal No.	INPUT	Terminal No.	INPUT
20	I0	19	I10
18	I1	17	I11
16	I2	15	I12
14	I3	13	I13
12	I4	11	I14
10	I5	9	I15
8	I6	7	I16
6	I7	5	I17
4	COM	3	COM
2	NC	1	NC

Applicable connector: FC4A-PMC20P (20-Pin MIL Connector)

Output Terminals

FC6A-D32K3CEE, -D32K4CEE



Terminal No.	OUTPUT	Terminal No.	OUTPUT
20	Q0	19	Q10
18	Q1	17	Q11
16	Q2	15	Q12
14	Q3	13	Q13
12	Q4	11	Q14
10	Q5	9	Q15
8	Q6	7	Q16
6	Q7	5	Q17
4	COM(-)	3	COM(-)
2	+V	1	+V

FC6A-D32P3CEE, -D32P4CEE

Terminal No.	OUTPUT	Terminal No.	OUTPUT
20	Q0	19	Q10
18	Q1	17	Q11
16	Q2	15	Q12
14	Q3	13	Q13
12	Q4	11	Q14
10	Q5	9	Q15
8	Q6	7	Q16
6	Q7	5	Q17
4	COM(+)	3	COM(+)
2	-V	1	-V

Applicable connector: FC4A-PMC20P (20-Pin MIL Connector)

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

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.

Power supply Terminals :
• FC6A-D*1*

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), H0,5/16D W (9019020000), 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)

• FC6A-D*4*

Applied cable		Recommended ferrule
UL1007 / UL2464	AWG24	AI 0,25-10 (3241128)
	AWG22	AI 0,34-10 (3241129)
	AWG20	AI 0,5-10 (3201275), AI-TWIN2×0,5-10 (3203309), H 0,5/16D W (9019020000), H 0,5/16D ZH W (9037390000)
	AWG18	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	AWG20	AI 0,5-10 GB (3203150), H 0,5/16 DS W (9202910000)
	AWG18	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)	0.51 N-m

Input Terminals and Output Terminals :

Applied cable		Recommended ferrule
UL1007 / UL2464	AWG24	AI 0,25-8 (3203037), AI 0,25-10 (3241128), H 0,25/12T GE (9021020000)
	AWG22	AI 0,34-8 (3203066), AI 0,34-10 (3241129), H 0,34/12 TK (9025770000)
	AWG20	AI 0,5-8 (3200014), AI 0,5-10 (3201275), AI-TWIN2×0,5-10 (3203309), H 0,5/16D W (9019020000), H 0,5/16D ZH W (9037390000)
UL1015	AWG20	AI 0,5-8 GB (1208966), AI 0,5-10 GB (3203150) H 0,5/14D W (9019010000), H 0,5/16 DS W (9202910000)

Screwdriver	Tighten torque
SZS 0,4×2,5 (1205037) , SDS 0,4×2,5×75 (9009030000)	0.28 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

http://www.idec.com
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