

INSTRUCTION SHEET

MICROSmart

FC6B Series
CPU module
All-in One type

This sheet provides brief operating instructions of the MICROSmart programmable controller. For details, see the FC6B 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 using 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, Cet 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 EQUIPMENT IS AN OPEN -TYPE DEVICE MEANT TO BE INSTALLED IN AN ENCLOSURE SUITABLE FOR THE ENVIRONMENT THAT IS ONLY ACCESSIBLE WITH 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 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 0.51 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 accordance with each country or local regulation.

1 TYPE

Power Supply Type	Output Type	Type No.		
		40-I/O Type	24-I/O Type	16-I/O Type
100-240VAC	Relay	FC6B-C40R*A	FC6B-C24R*A	FC6B-C16R*A
	Relay	FC6B-C40R*C	FC6B-C24R*C	FC6B-C16R*C
	Transistor Sink	FC6B-C40K*C	FC6B-C24K*C	FC6B-C16K*C
24VDC	Transistor Sink	FC6B-C40K*C	FC6B-C24K*C	FC6B-C16K*C
	Transistor Protect Source	FC6B-C40P*C	FC6B-C24P*C	FC6B-C16P*C

* 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).

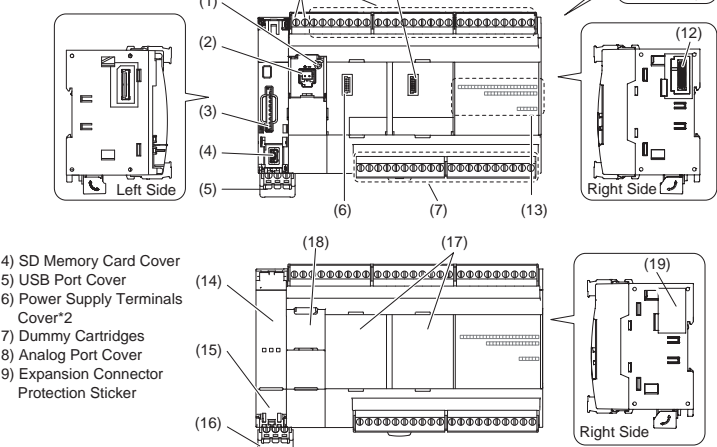
2 Specification

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 FC6B-C40*1* (Screw fastened type)

- | | | |
|----------------------------|-------------------------------|--------------------------------|
| (1) Analog Potentiometer | (9) Input Terminals | (13) Input LEDs [IN] |
| (2) Analog Input | (10) Sencer Power Terminals*1 | Output LEDs [OUT] |
| (3) SD Memory Card Slot | (11) Battery Holder | Power LED [PWR] |
| (4) USB Port | (12) Expansion Connector | Run LED [RUN] |
| (5) Power Supply Terminals | | Error LED [ERR] |
| (6) Cartridge Slot 1 | | SD Memory Card Status LED [SD] |
| (7) Output Terminals | | Battery Status LED [BAT] |
| (8) Cartridge Slot 2 | | Status LED [STAT] |



(14) SD Memory Card Cover
(15) USB Port Cover
(16) Power Supply Terminals Cover*2
(17) Dummy Cartridges
(18) Analog Port Cover
(19) Expansion Connector Protection Sticker

*1 Not used with DC power supply types.
*2 FC6B-C*4* (Push-in type) does not have Power Supply Terminals Cover.

4 Assembling Modules

- Grasp the battery holder and remove it from the module.* (a)
 - Remove the old back up battery from the battery holder (c) by pulling the outside hook. (b)
 - Install a new back up battery in the battery holder. Push the battery in until the outside hook (b) clicks.
 - 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

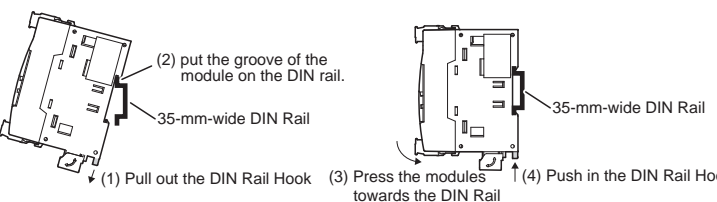
CAUTION

- 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.

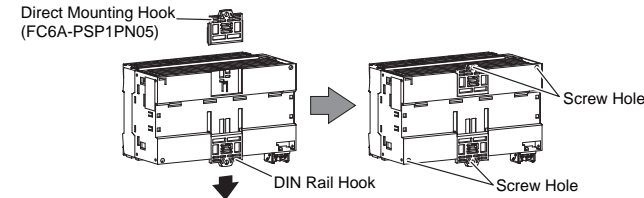
5 Mounting Modules

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.

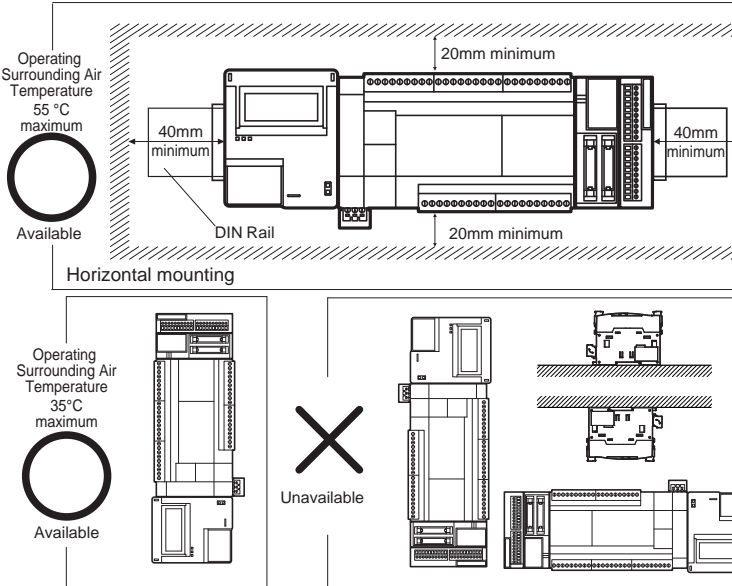


[Direct Mounting on Panel Surface]
Pull out the DIN Rail Hook on the back of the module and insert the direct mounting Hook (FC6A-PSP1PN05) into the slot. Attach the module to the mounting plate using the screw holes. Attach the module to the mounting plate using M4 tapping screws, as shown below, or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



6 Installation in Control Panel & Mounting Direction

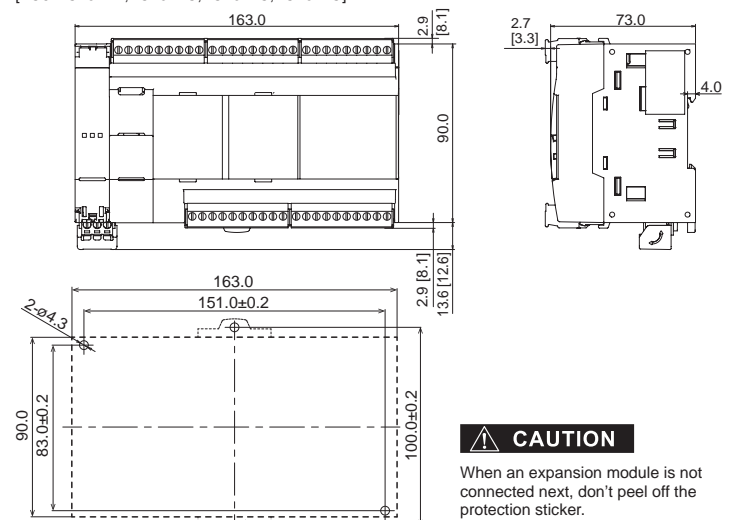
Mount the FC6B MICROSmart as follows. To provide ample ventilation, ensure that there is sufficient space between the FC6B MICROSmart and other devices, heat sources, and panel surfaces.



CAUTION For UL/cUL, Horizontal mounting only.

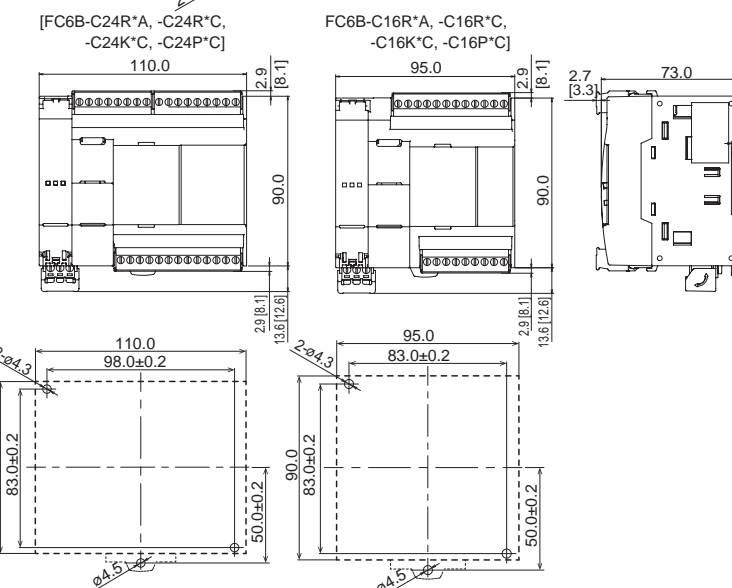
7 Dimensions

[FC6B-C40R*A, -C40R*C, -C40K*C, -C40P*C] All dimensions in mm.



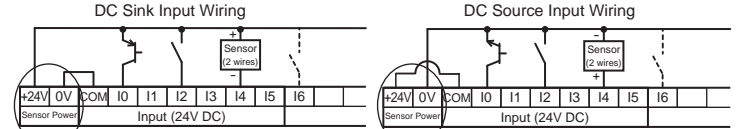
CAUTION

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

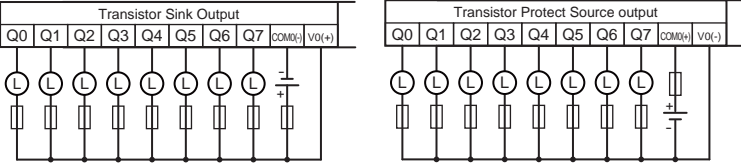
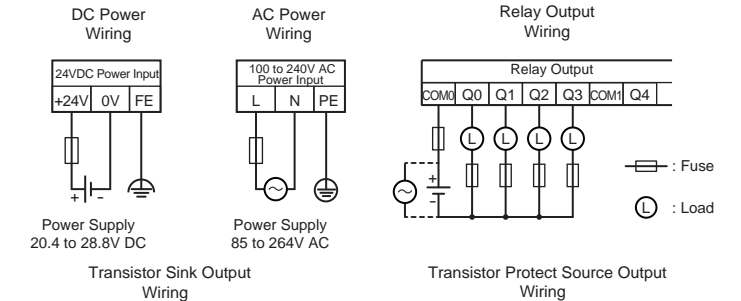


*Dimensions in brackets [] are for type numbers FC6B-C*4* (Push-in type).
*See the user's manual for more details on the dimensions.

8 Wiring



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.



*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.

9 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, Input Terminals and Output Terminals :

Applied cable	Recommended ferrule
UL1007 /UL2464	AWG24 AI 0,25-6 (3203040), AI 0,25-8 (3203037), H0,25/10 HBL(9025740000), H0,25/12 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 2x0,5-8 (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 2x0,75-8 (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

Applied cable	Recommended ferrule
UL1007 /UL2464	AWG24 AI 0,25-8 (3203037), H0,25/12 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 2x0,75-10 (3200975), H0,75/18 W (9025910000), H0,75/16D ZH GR (9037420000)
UL1015	AWG16 H1,5/18D SW (9019140000)
	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 0,6x3,5 (1205053) , SDS 0,6x3,5x100 (9008330000)	0.51 N-m

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

10 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>

使用说明书

MICROSmart

FC6B型 All-in-One CPU模块

非常感谢您购买本公司的产品。为了确保您安全、正确地使用本产品，请仔细阅读本使用说明书及FC6B MICROSmart用户手册。请将本使用说明书交由最终用户保管。

安全注意事项

- 使用本产品需要专门的知识。
在安装、接线、操作、维护和检查本产品前，请仔细阅读本使用说明书及用户手册以确保操作正确。
本产品是在IDEC严格的质量管理体系下制造而成，在可能因本产品故障而导致重大故障或损害的用途中使用本产品时，请在系统中做好备份或故障保护功能。
请按照使用说明书及用户手册所记载的指示进行安装。
如果安装不完备，则可能导致跌落、故障及误动作。
请务必确认使用条件与使用说明书及用户手册的内容是否相符。
内容如有不明之处，请在使用前咨询本公司。
在本使用说明书中，将操作不当可能引发的危险程度区分为“警告”和“注意”两类。各自的含义如下所示。

警告

警告提示用于强调操作不当会导致严重的人身伤亡。

注意

在疏忽会导致人身伤害或设备损坏的地方会有注意提示。

警告

- 在安装，拆卸，配线，维护以及检查前，请务必关闭电源。如果不关闭电源，可能导致破损，致触电或火灾危险。
请在MICROSmart以外的外部电路中设置紧急停止电路或联锁电路等。
如果在MICROSmart的系统中设置这些电路，当MICROSmart发生故障时，可能会导致机械失控，破损或事故。

注意

- 本产品是为安装在装置内部而专门设计的。无法安装在装置外部。
请在产品目录，用户手册中记载的环境下使用。
在高温，多湿，结露，存在腐蚀性气体，或剧烈摇晃震动的场所使用时，将导致触电，火灾或误动作。
本产品的标准操作条件污染等级为“污染等级2”。
安装和配线时，请注意不要使配线的电缆片段或钻孔加工产生的金属碎片落入本产品内部。配线的电缆片段等进入本产品内部时，可能导致火灾，故障或误动作。
接线用导线的尺寸必须适用于所采用的电压和电流。必须按照规定的紧固力矩将接线螺钉拧紧。有关详情，请参见“9. 对应接线/推荐管状压接端子/推荐螺丝刀/紧固扭矩”。
本产品的电源线，输出模块的输出线请使用符合施加电压和通电电流的IEC60127认证保险丝。(推荐:力特5×20mm慢断型218000系列/T型)
(适用于将组装MICROSmart的设备出口到欧洲时)
使用断路器时，请使用经欧盟认证的产品。
(适用于将组装MICROSmart的设备出口到欧洲时)
因输出模块的继电器或晶体管等故障，有时输出会维持ON或OFF的状态。对可能引发重大事故的输出信号，请在外部设置状态监控电路。
请勿擅自分解，修理或改装等。
请勿将传感器电源用于供给连接MICROSmart的传感器电源以外的用途。

有关使用欧盟国家的电池及电池组设备时的注意事项
注) 右侧符号标记仅在欧盟区域内的国家有效。

此符号标记表示废弃电池及蓄电池时，需要分类为一般垃圾处理。如果在上述的符号标记下方显示元素符号，表示电池或蓄电池中含有超标的重金属。浓度标准如下所示。
Hg: 水银 (0.0005%) Cd: 镉 (0.002%) Pb: 铅 (0.004%)
电池及蓄电池的废弃要依据各国，各区域的相关条例正确合理废弃。

1 型号构成

All-in-One CPU模块

Table with columns: 电源规格, 输出规格, 型号, I/O 40点, I/O 24点, I/O 16点. Lists various power and output configurations.

* 端子规格 1: 螺丝端子、4: Push-in 式端子

梱包内容 (数量) : 主体 (1), 模拟量输入用附带电缆的连接器 (1), 电池支架 (含电池 1), 使用说明书 (本书 1)

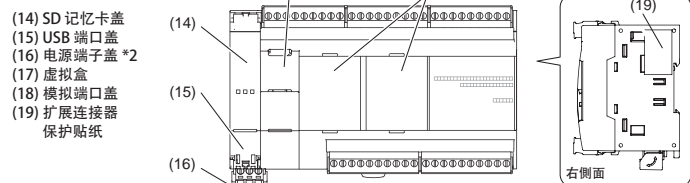
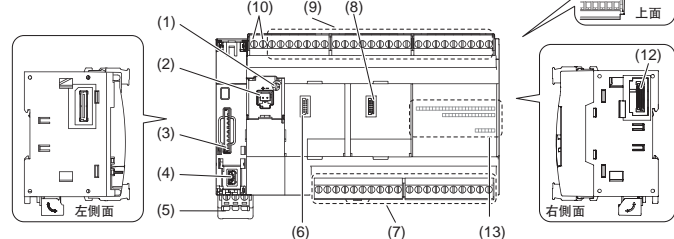
2 规格

工作环境温度: -10~+55°C (无结冰)
扩展工作环境温度: -25~+10°C, +55~+65°C (无结冰)
※有关在扩展工作环境温度中使用的详情, 请参见用户手册。
存储环境温度: -25~+70°C (无结冰)
相对/保存环境湿度: 10~95%RH (无结露)
标高或大气压: 动作时: 1,013~795hPa (0~2,000m)
运输时: 1,013~701hPa (0~3,000m)
耐振动: 5~8.4Hz半振幅3.5mm 8.4~150Hz加速度9.8m/s² (1G) XYZ各方向 2小时
耐冲击: 147m/s² (15G) 11ms XYZ 3轴, 6个方向, 各3次
※有关电气规格的细节, 请参见用户手册。

3 名称和功能

型号 FC6B-C40*1* (螺丝端子型)

- (1) 模拟量 (7) 输出端子 (13) 输入显示 LED [IN]
(2) 模拟量输入 (8) 盒插槽 2 输出显示 LED [OUT]
(3) SD 记忆卡槽 (9) 输入端子 电源 LED [PWR]
(4) USB 端口 (10) 传感器电源端子 *1 运行显示 LED [RUN]
(5) 电源端子 (11) 电池支架 错误显示 LED [ERR]
(6) 盒插槽 1 (12) 扩展连接器 SD 记忆卡状态显示 LED [SD]
(11) 上面 电池状态 LED [BAT]
(12) 右侧面 状态 LED [STAT]



*1 无法在DC电源类型中使用。
*2 型号FC6B-C*4* (Push-in端子型) 的无电源端子盖。

4 备份电池的更换步骤

1. 夹住电池支架的两端拔出。(a)
2. 从电池支架上拆下使用完的备份电池。一边拉拔外侧的卡爪(b), 一边从下往上推压(c)备份电池。
3. 将新的备份电池安装到电池支架中。将外侧卡爪(b)推压至原处, 直到发出“咔嚓”声为止。
4. 将电池支架插入(a)到原来位置, 并牢牢推入到最里面。

Table listing compatible battery models: BR2032, CR2032X, CR2032W, CR2032A, CR2032B. Manufacturers: Murata, Panasonic.

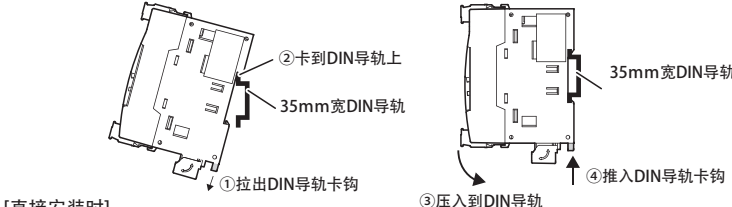
注意

- 电池余量用尽前, 请更换备份电池。
• 更换备份电池时, 请在切断电源后的1分钟之内进行操作。如果更换作业时间较长, 则设备值将会恢复为初始值。
• 通电状态下请勿进行作业。否则可能导致产品破损。

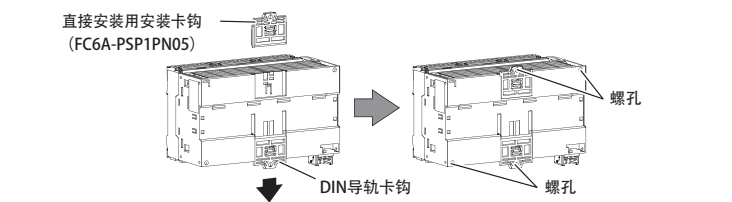
5 安装

有关详细的安装、拆卸方法, 请参见用户手册。

[安装DIN导轨时]
请务必使用DIN导轨安装, 并用固定夹(BNL6)进行固定。

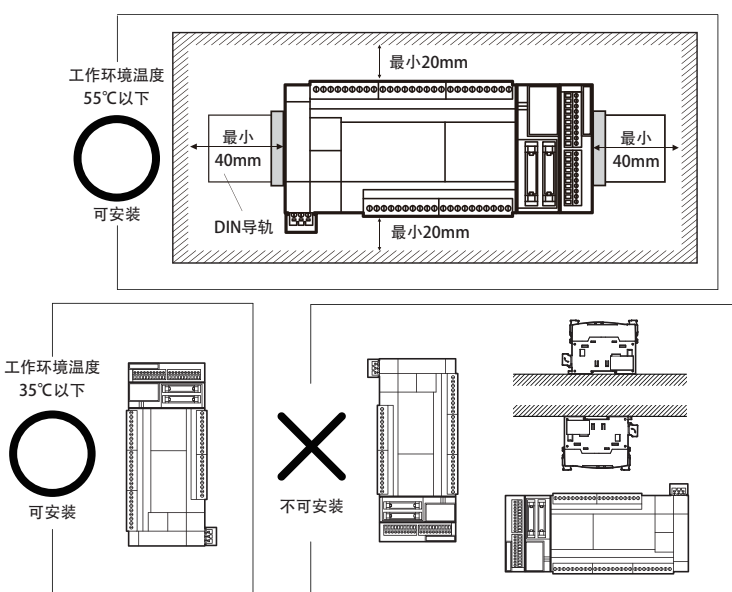


[直接安装时]
拉出本体背面的DIN导轨卡钩, 将直接安装用安装卡钩(维护部件: FC6A-PSP1PN05)安装至本体, 使用螺钉安装至安装板。
如下图所示, 用M4自攻螺钉将FC6B MICROSmart安装至安装板。
决定安装位置时务必充分考虑可操作性, 维护的简便性以及环境耐受性。



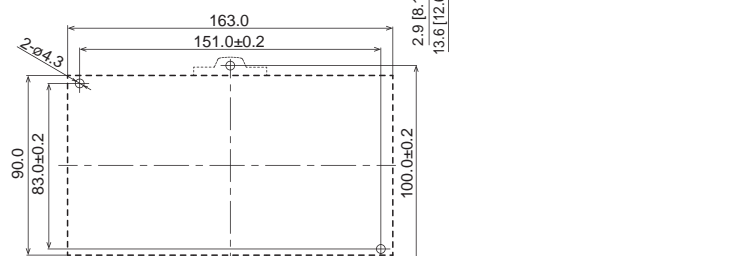
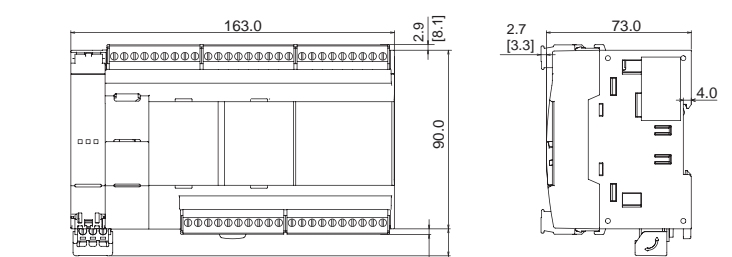
6 安装方向

请如下所示安装FC6B MICROSmart。为了保持主体良好的通风环境, 应确保FC6B MICROSmart与其他设备, 热源以及面板表面之间留有充足的空间。

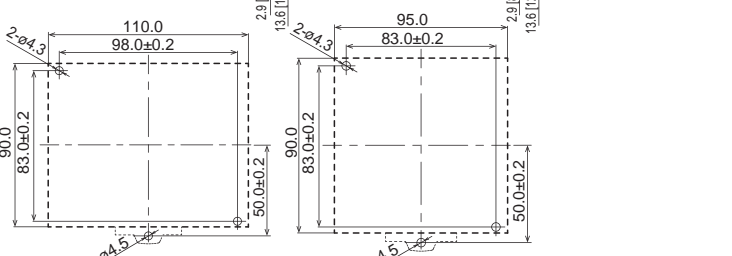
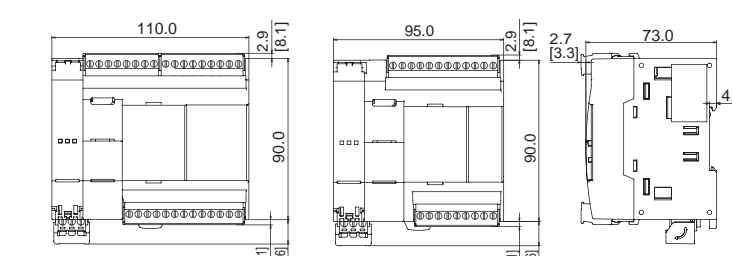


7 外形尺寸

[FC6B-C40R*A, -C40R*C, -C40K*C, -C40P*C] (单位: mm)

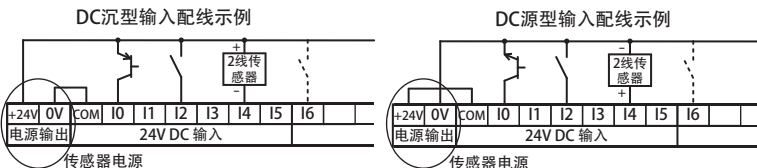


[FC6B-C24R*A, -C24R*C, -C24K*C, -C24P*C] [FC6B-C24R1A, -C24R1C, -C24K1C, -C24P1C]

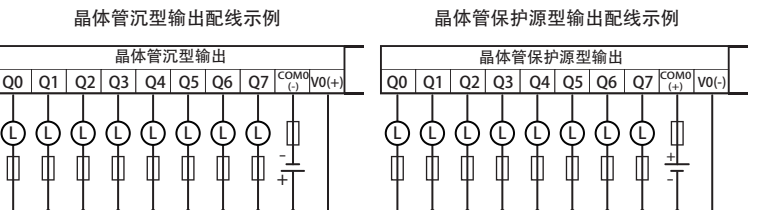
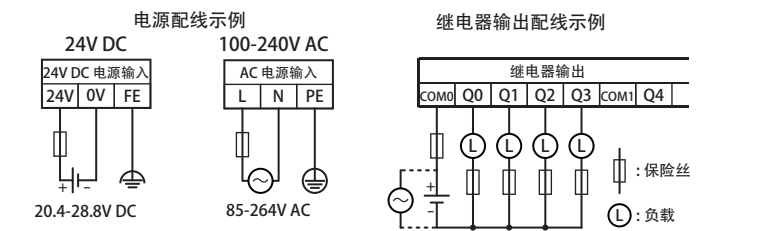


* [] 内为型号FC6B-C*4* (Push-in端子型) 的尺寸。
* 有关输入输出配线的详情, 请参见用户手册。

8 输入/输出接线



100-240V AC电源型: 无需外部24V DC电源, 可将上图圆形部分给传感器提供电源。
24V DC电源型: 不存在上图圆形部分给传感器提供电源。需要外部24V DC电源。



* 有关输入输出配线的详情, 请参见用户手册。

9 对应接线/推荐管状压接端子/推荐螺丝刀/紧固扭矩

推荐管状压接端子为Phoenix Contact或Weidmüller公司产品。压接下述推荐管状压接端子时, 请使用专用的压接工具(CRIMPFOX 6 (1212034) 或PZ 6 Rote L (1444050000))。连接至端子台时, 请使用下述推荐螺丝刀。另, 需拧紧螺丝时, 请按推荐的紧固扭矩拧紧。

电源端子、输入端子、输出端子
型号FC6B-C*1* (螺丝端子型)

Table mapping wire gauges (AWG) to recommended Phoenix Contact or Weidmüller terminal types.

型号FC6B-C*4* (Push-in端子型)

Table mapping wire gauges (AWG) to recommended Phoenix Contact or Weidmüller terminal types for push-in models.

Table showing recommended screwdriver sizes and tightening torques for different screw types.

括号内为Phoenix Contact或Weidmüller公司产品的订货型号

10 极度处理时的注意

• 本产品的极度处理, 须作为工业废品处理。

请通过下列网址下载最新的用户手册。
http://www.idec.com/cnzh/downloads/fc6a

合格证
本产品经检验合格, 可编程控制器, 对应标准: IEC/EN61131-2
台湾爱德克股份有限公司 台湾高雄市仁武区竹仔寮村水管路87号
This marking based on Law of China on Product Quality

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