

mitsubishi

QnA Series CPU Compatible High-Speed Accessing Basic Base Unit
Additional Explanation for Product Conforming to EMC Standard



Mitsubishi Programmable Controller

● SAFETY PRECAUTIONS ●

(Read these precautions before using.)

When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in the manual. Also pay careful attention to safety and handle the module properly.

These precautions apply only to Mitsubishi equipment. Refer to the CPU module user's manual for a description of the PC system safety precautions.


These ● SAFETY PRECAUTIONS ● classify the safety precautions into two categories: "DANGER" and "CAUTION".



Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.



Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by  CAUTION may also be linked to serious results.

In any case, it is important to follow the directions for usage.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

[INSTALLATION PRECAUTIONS]

CAUTION

- Use this module in the environment given in the general specifications of the CPU manual.
Using this module outside the range of the general specifications may result in electric shock, fire or malfunction, or may damage or degrade the module.
- Do not directly touch the base unit's conductive parts or electronic components.
Doing so could cause malfunction or trouble in the module.
- When installing the case unit to each module, insert the tabs at the bottom of the module into the mounting holes in the base unit. (The Q2AS series module shall be fastened by screws in the base unit at the specified torque.)
If the module is not properly installed, it may result in malfunction, breakdowns, or the module may fall off.
- Tighten the base unit installation screws within the range of specified torque.
If the screws are loose, it may result in fallout and malfunction.
Tightening the screws too far may cause damage to the screw and /or the module, resulting in fallout and malfunction.
- Make sure the extension cables are installed securely to the base unit. After installing, check to make sure they are securely tightened and not loose.
Defective contact could cause a false input and output.

[WIRING PRECAUTIONS]

CAUTION

- Be careful not to let foreign matter such as fillings or wire chips get inside the base unit.
These can cause fire, breakdown and malfunction.
- Be sure to secure the extension cables connected to the base unit is stored in the conduct or fixed with cramps.
Failure to do so may cause a damage to the module or cables due to dangling, shifting or inadvertent handling of cables, or misoperation because of bad cable contacts.
- Do not grab on the cable when removing the extension cables connected to the base unit. When removing the cable with a connector, hold the connector on the side that is connected to the module.
Pulling the cable that is still connected to the module may cause a damage to the module or cable, or misoperation due to bad cable contacts.

[STARTING AND MAINTENANCE PRECAUTIONS]

CAUTION

- Do not remove the base unit's printed wiring board from the base.
It may lead to a failure, malfunction or fire.
- Because the base unit is a printed wiring board, do not drop or exert a huge impact on it.
Doing so may lead to defective contacts caused by wire breakage of the printed wiring board, or damages in installed components.

[DISPOSAL PRECAUTIONS]

CAUTION

- When disposing of this product, treat it as industrial waste.

About This Manual

The following table lists manuals regarding this product.

Request for the manuals as needed according to the chart below.

Related Manuals

Manual Name	Manual No. (Model Code)
Q2A(S1)/Q3A/Q4ACPU USER'S MANUAL It describes items related to the performance, functions and handling of Q2ACPU(S1), Q3ACPU and Q4ACPU, as well as operation and handling of the power supply, memory card and base unit. (Sold separately)	IB-66608
Model Q2AS(H)CPU(S1) User's Manual It describes items related to the performance, functions and handling of Q2ASCPU, Q2ASCPU-S1, Q2ASHCPU and Q2ASHCPU-S1, as well as the specifications and handling of the power supply, memory card and base unit. (Sold separately)	SH-3599

Introduction

Thank you for choosing a Mitsubishi MELSEC-QnA Series General Purpose Programmable Controller.

Before using your new PC, please read this manual thoroughly to gain an understanding of its functions so you can use it properly.

Please forward a copy of this manual to the end user.

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1. OVERVIEW

This manual describes the specifications, part identifications, handling, installation, etc., of the A38HBEU and A1S38HBEU type high-speed access basic base units (hereinafter abbreviated as "A38HBEU" and "A1S38HBEU"), which enable the MELSEC-QnA series PCs to conform to EMC directive.

1.1 Features

(1) Enables MELSEC-QnA series PC CPUs to conform to EMC directive

The A38HBEU and A1S38HBEU can enable MELSEC-QnA series PC CPUs to conform to EMC commands.

To conform to EMC commands, load the PC CPU onto A38HBEU and A1S38HBEU. A system configuration with an extension base connected may also be applied to EMC commands.

A MELSEC-QnA series PC CPU in a system configuration in which an A3□B, A38HB, A1S3□B or A1S38HB is used as the basic base unit cannot be applied to EMC commands.

(2) High-speed access from a PC CPU to the buffer memory of a special function module

The A38HBEU and A1S38HBEU increases access speed for the PC CPU loaded on A38HBEU or A1S38HBEU to the buffer memory of the special function module.

Point
(1) Only the buffer memory of a special function module can be accessed at a high speed using A38HBEU and A1S38HBEU. The I/O devices of an I/O module and those of a special function module are not accessed at a high speed, but rather at the same speed as with the conventional basic base.
(2) When an extension base is connected to A38HBEU or A1S38HBEU, the buffer memory of the special function module on the extension base is not accessed at high speed. It is accessed at the same speed as when a conventional basic base and extension base are connected.
(3) A38HBEU and A1S38HBEU are dedicated for the use with MELSEC-QnA series PC CPUs, and cannot be used for ACPU or AnSCPU.
(4) When using the simulation module A6SIM-X64Y64 for A38HBEU or A1S38HBEU, the A6SIM-X64Y64 does not operate if the base unit specification on the A6SIM-X64Y64 is set to "0." When it is set to "1" or after, the A6SIM-X64Y64 can be used along with A38HBEU and A1S38HBEU.

1.2 Applicable PC CPUs

Base unit	Applicable PC CPU
A38HBEU	Q2ACPU(S1), Q3ACPU, Q4ACPU, Q4ARCPU*1
A1S38HBEU	Q2ASCPU(S1), Q2ASHCPU(S1)

*1 Q4ARCPU does not conform to EMC commands when it is used as a duplex system (i.e., when a Q4AR is installed to the A37RHB, A32RB or A33RB).

2. EMC AND LOW-VOLTAGE DIRECTIVE

2.1 Requirements for EMC Directive Compliance

EMC directives, which are among the European directive sets, are now enforced.

The EMC directives regulate "emission (electromagnetic interference)," which requires that a device not emit strong electromagnetic waves externally, and "immunity (electromagnetic sensitivity)," which requires that a device have the ability to resist external electromagnetic waves.

The precautionary items when configuring a machine device using a MELSEC-QnA series PC to conform to EMC directives are described in Sections 2.1.1 through 2.1.7.

Although we tried very hard to document these materials according to the requirements for regulation and the standards we have researched, this document is intended to guarantee the compliance of each module to EMC directives, and does not guarantee the compliance of the entire machine device composed of multiple modules. The methods to enable a device to conform to the directives and the compatibility must be determined by the manufacturer who produces the machine device.

2.1.1 EMC directive

The standards relating to EMC directives are listed in the table below:

Specifications	Test item	Test description	Standard values
EN50081-2 : 1995	EN55011 Radiated noise	Measure the electric wave released by the product.	30 M-230 M Hz QP : 30 dB μ V/m (30 m (98.43 in. measurement) *1 230 M-1000 M Hz QP : 37 dB μ V/m (30 m (98.43 in. measurement)
	EN55011 Conduction noise	Measure the noise released by the product to the power line.	150 K-500k Hz QP: 79 dB, Mean : 66 dB *1 500 K-30M Hz QP : 73 dB, Mean : 60 dB
PrEN50082-2: 1991	IEC801-2 Static electricity immunity *2	Immunity test by applying static electricity to the module enclosure.	4 k V contact discharge 8 k V air discharge
	IEC801-3 Radiated electromagnetic field *2	Immunity test by radiating an electric field to the product.	10 V/m, 27-500 M Hz
	IEC801-4 First transient burst noise	Immunity test by applying burst noise to the power line and signal cable.	2 k V
EN50082-2 : 1995	EN61000-4-2 Static electricity immunity *2	Immunity test by applying static electricity to the module enclosure.	4 k V contact discharge 8 k V air discharge
	EN61000-4-4 First transient burst noise	Immunity test by applying burst noise to the power line and signal cable.	2 k V
	ENV50140 Radiated electromagnetic field AM modulation *2	Immunity test by radiating an electric field to the product.	10 V/m, 80-1000 M Hz, 80 % AM modulation@1 k Hz
	ENV50204 Radiated electromagnetic field Pulse modulation *2	Immunity test by radiating an electric field to the product.	10 V/m, 900 M Hz, 200 Hz pulse modulation, 50 % duty
	ENV50141 Conduction noise	Immunity test by inducing electromagnetic field to the power line signal cable.	10 Vrms, 0.15-80 M Hz, 80 % modulation@1 k Hz

(*1) QP: Quasi-peak value, Mean : Average value

(*2) The PC is an open type device (device installed to another device) and must be installed in a conductive control panel.

The tests for the corresponding items were performed while the PC was installed to inside the control panel.

2.1.2 Installation to the control panel

A PC is an open-type device (a device which has to be built into other equipment to use), and it has to be installed on a control panel when used. This has a considerable effect not only in securing safety but also in shutting down the noise generated from the PC by the control panel.

(1) Control panel

- (a) Use an electrically conductive control panel.
- (b) A control panel must have such a structure that the coating can be removed when fastening the control panel's top or bottom panel with bolts in order to make surface contact.
- (c) To ensure the electrical contact between the inside panel of the control panel and the main control panel, remove any coating around the installation bolts connecting to the main module to secure conductivity in the largest surface area possible.
- (d) Ground the control panel main module using a thick ground cable so that a low impedance can be secured even with a high frequency.
- (e) Make the holes on the control panel less than 10 cm (3.94 in.) in diameter. A hole larger than 10 cm (3.94 in.) may leak electric waves.

(2) Layout of power supply cable and ground cable

The layout of power supply cable and ground cable for a PC should be performed as described below.

- (a) Lay out a grounding point that enables grounding of the control panel close to the power supply module, and ground the power supply module's LG and FG terminals (LG: line ground, FG: frame ground) using the thickest, shortest cable possible (about 30 cm (11.81 in.) or less in length). Since the LG and FG terminals play a role in grounding the noise generated in the PC, it is necessary to ensure the lowest possible impedance. Because the power line is used to allow the noise to escape, it actually contains a great deal of noise. Therefore, shortening the wire length prevents the power line from becoming an antenna.
Note: A long conductive material can become an antenna that emits noise more efficiently.
- (b) Twist the FG and LG ground cables leading to the ground point with the power supply cable. By twisting them with the ground cable, the noise leaking out of the power supply cable may be grounded at a higher rate. However, when a noise filter is installed to the power supply cable, twisting with the ground cable may not be necessary.

2.1.3 Cables

The cables led from the control cabinet contain a high frequency noise element and outside the control panel these cables act as antennae and radiate noise. The cables connected to input/output modules or special modules which leave the control panel must always be shielded cables.

Mounting of a ferrite core on the cables is not required (excluding some models) but if a ferrite core is mounted, the noise radiated through the cable can be suppressed further.

Use of a shielded cable is also effective for increasing the noise immunity level. The PC system's input/output and special function module provide a noise immunity level of equivalent to that stated in IEC801-4/EN61000-4-4: 2 k V when a shielded cable is used. If a shielded cable is not used or if the shield earthing treatment is not suitable even when used, the noise immunity level is less than 2 k V.

Note: EN50082-2 specifies the noise resistance level based on the signal wire application.

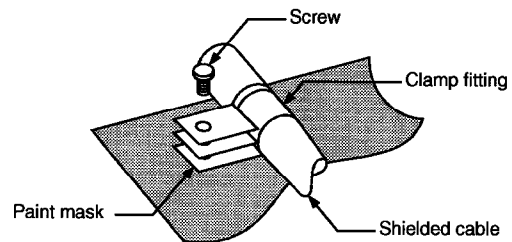
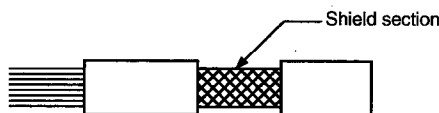
Signals involved in process control : 2 k V

Signals not involved in process control : 1 k V

The meaning of "involved in process control" is not defined in EN50082-2. However, when the purposes of the EMC Directive are considered, the signals that could cause personal injury or risks in the facility if a malfunction occurs should be defined as "signals involved in process control". Thus, it is assumed that a high noise immunity level is required.

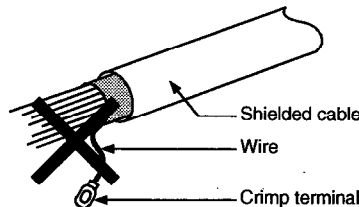
(1) Grounding treatment for shields

- (a) Perform shielding processing at a position near the exit of the control panel. If the grounding point is far from the exit position, the cable portion after the grounding point will cause electromagnetic induction and generates high-frequency noise.
- (b) Use a grounding method that allows the shield a surface grounding in a large area against the control panel. A clamping fixture as shown below may alternatively be used. When such a fixture is used, peel off the coating in the area inside the control panel where the fixture contacts.



Use a shielded cable for the cable to a special module, and position the shielded ground within 30 cm (11.81 in.) from the module. Exercise caution when performing terminal processing on the shield. Otherwise, the effect obtained from transmission impedance of the shielded cable cannot be obtained.

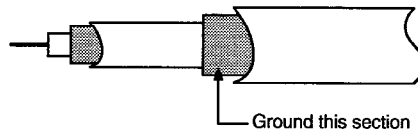
Note: The method of grounding by soldering a wire onto the shield section of the shielded cable as shown below is not recommended. The high frequency impedance will increase and the shield will be ineffective.



The following describes the measures for specific modules.

(2) MELSECNET(II), MELSECNET/10 module

- (a) Always use a double-shield coaxial cable (Mitsubishi cable 5C-2V-CCY) for the MELSECNET modules that use coaxial cables, such as A1SJ71AR21/AJ71AR21 and A1SJ71QBR11/AJ71QBR11. Use of double-shield coaxial cable suppresses noise emitted in the range of 30 MHz or more. Grounding processing should be performed on the outer shield. The precautionary items on shield processing are the same as explained in (1).

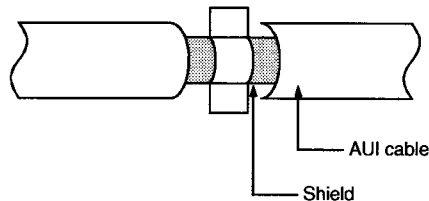


- (b) Always mount a ferrite core to the double-shield coaxial cable connected to the MELSECNET module. The mounting position of the ferrite core should be on the cable near the exit of the control panel. The TDK-made ZCAT3035-1330 is recommended as the ferrite core. (Install the ferrite core within 30 cm (11.81 in.) from the module's connector.)

(3) Ethernet module

The following describes the precautions when using AUI cables or coaxial cables.

- (a) Always ground the AUI cable that connects to the 10BASE5 connector of AJ71QE71(-B5) or A1SJ71QE71-B5. Since the AUI is shielded, peel away part of the outer coating and ground the exposed shield using the largest available area.



- (b) Always use a double-shield coaxial cable as the coaxial cable to connect to the 10BASE2 connector of AJ71QE71 and A1SJ71QE71-B2. The precautionary items on grounding are the same as those for the MELSECNET module.
- (c) For AJ71QE71 and A1SJ71QE71-B2/B5, always mount a ferrite core in addition to the above mentioned (a) and (b). The TDK-made ZCAT3035-1330 is recommended as the ferrite core.

(4) I/O signal cables and other communication cables (AJ71QC24(N)-R2/-R4, A1SJ71QC24/-R2, etc.)

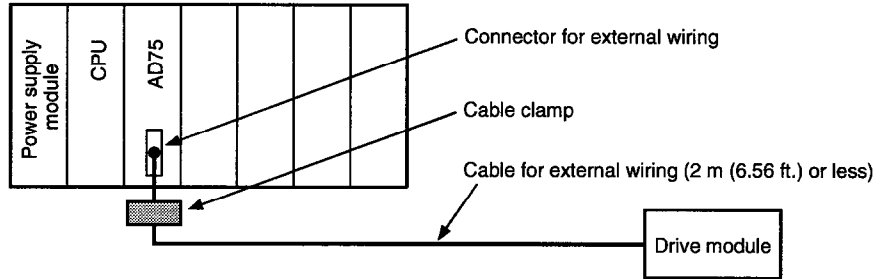
As for I/O signal cables and other communication cables, the shielded area of cables leading outside the control panel should always be grounded, as described in (1).

Ethernet is a registered trademark of Xerox Corporation, U.S.

(5) AD75P□-S3 module

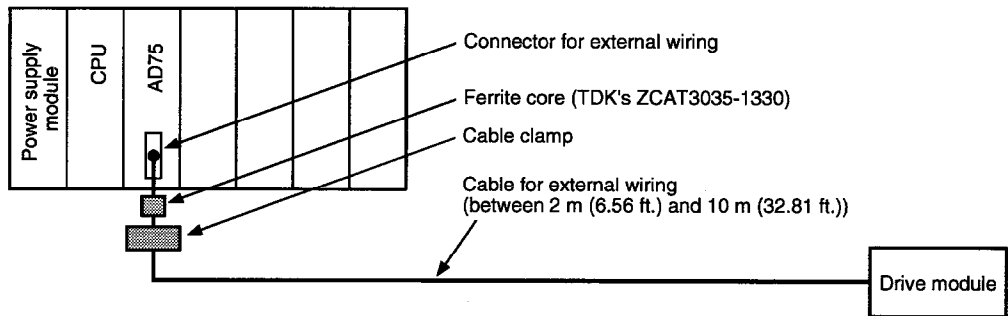
(a) When wiring using a cable of 2 m (6.56 ft.) or less

- Wire the cables for external wiring between a drive module and an external device using the shortest possible distance.
- Install the drive module on the same panel.



(b) When wiring using a cable between 2 m (6.56 ft.) and 10 m (32.81 ft.)

- Install a ferrite core.
- Wire the cables for external wiring between a drive module and external device using the shortest possible distance.



Remark

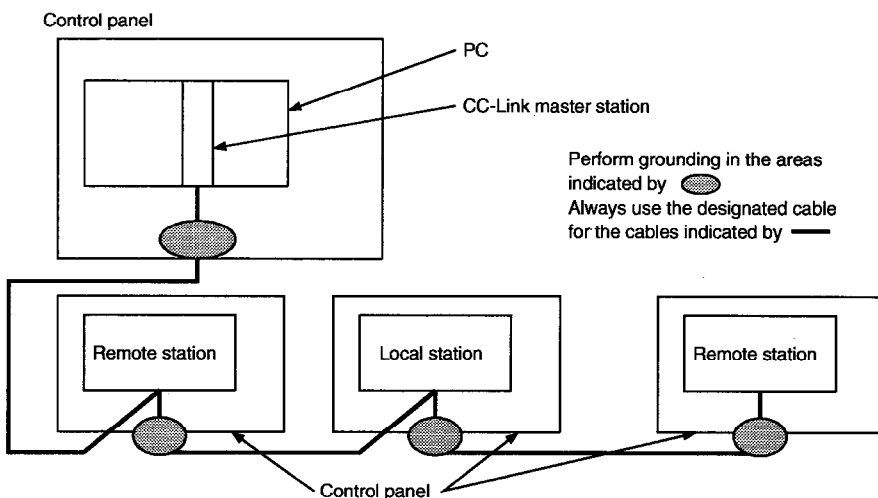
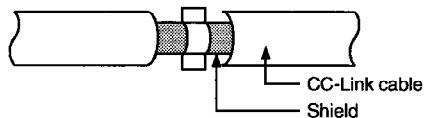
Cable clamp

Type: AD75CK (manufactured by Mitsubishi Electric)

(6) CC-Link module

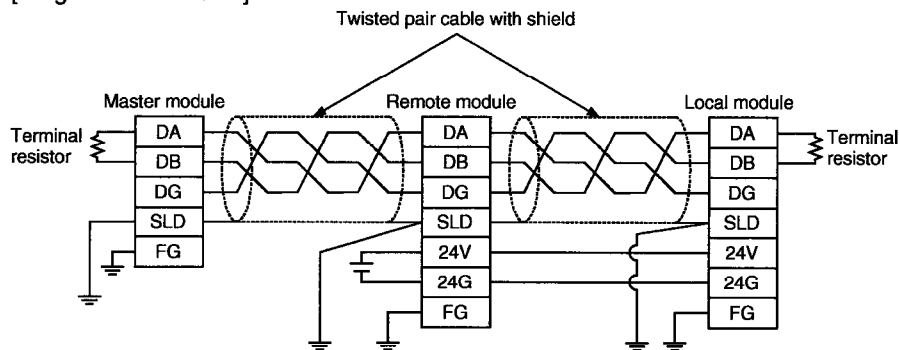
The precautionary items when using a twisted pair cable are described below.

- (a) Always ground the twisted pair cable (FANC-CB, 0.5 mm² (0.00077 in²) × 3) that is connected to the master station, local station or remote station on the CC-Link. Since the twisted pair cable is a shielded cable, remove a part of the outer coating as shown in the figure below and perform grounding of the exposed shield in the largest area possible.



Also, perform grounding near the exit of the control panel and within 30 cm (11.81 in.) from the module terminal area.

- (b) Do not use a ferrite core for the link cable from each module.
 - (c) Ground both the FG and SLD terminals of each CC-Link module.
- [Diagrammatic sketch]



Remark

Twisted pair cable (FANC-CB)

2.1.4 Power supply module

The table below shows the precautionary items for each power supply module. Always follow the items listed as precautionary items.

Model	Precautionary item
A61P, A62P, A1S61P, A1S62P	Unusable
A63P, A1S63P*1	Use a CE compatible product as the 24 V DC in-panel power supply device.
A61PEU, A62PEU, A1S61PEU, A1S62PEU, A1S61PN, A1S62PN	None

*1 For the A63P and A1S63P products of version (F) or later, filter installation to the power supply cable is not mandatory. However, be sure to use a CE conforming product for the 24 V DC in-panel power supply device.

2.1.5 Base unit

The table below shows the base units that can be used for the sake of EMC directive compliance:

Type	Model	Usability
Basic base unit	A38HBEU, A1S38HBEU	Usable
	A3□B, A1S3□B A38HB, A1S38HB	Unusable
Extension base unit	A5□B, A6□B, A1S5□B, A1S6□B	Usable

2.1.6 Ferrite core

The ferrite core is effective in reducing noise emitted in the range of 30 MHz to 100 MHz. Except for a few models, installation of the ferrite core to the cable is not mandatory. However, the installation of a ferrite core is recommended when the shielding effect of the shielded cables leading outside the panel is insufficient. The model of ferrite core used in our tests is the TDK-made ZCAT3035.

Install the ferrite core immediately before pulling the cables out of the panel. If the installation position is not appropriate, the effect of ferrite may be diminished.

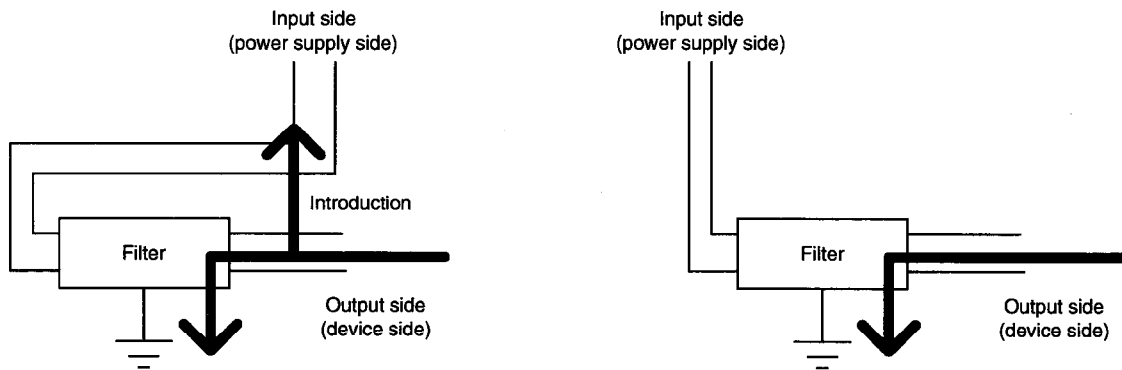
2.1.7 Noise filter (power supply line filter)

A noise filter is a part that has a considerable effect in preventing conductive noise. Except for a few models, installation of a noise filter to the power supply line is not mandatory. However, the installation of a noise filter can suppress noise at a higher rate (a noise filter is effective for reducing noise emitted in the range below 10 MHz). Use a noise filter equivalent to the models shown below. Installation of a power supply line filter is especially recommended for AJ71QBR11 and AJ71QE71, whose communication speeds are high.

Model name	FN343-3/01	FN660-6/60	ZHC2203-11	MBW1205
Manufacture	SCHAFFNER	SCHAFFNER	TDK	Nemic Lambda
Rated current	3 A	6 A	3 A	5 A
Rated voltage	250 V			

The precautions required when installing a noise filter are described below.

- (1) Do not bundle the wires on the input side and output side of the noise filter. When bundled, the output side noise will be induced into the input side wires from which the noise was filtered.



(a) The noise will be included when the input and output wires are bundled.

(b) Separate and lay the input and output wires.

- (2) Earth the noise filter earthing terminal to the control panel with the shortest wire possible (approx. 10 cm (3.94 in.)).

2.2 Requirement to Conform to the Low-Voltage Directive

The low-voltage directive, one of the European Instructions, is now regulated.

The low-voltage directive require each device which operates with power supply ranging from 50 to 1000 V AC and 75 to 1500 V DC to satisfy necessary safety items.

In the Sections from 2.2.1 to 2.2.8, cautions on installation and wiring of the MELSEC series PC to conform to the low-voltage directive regulation are described.

We have put the maximum effort to develop this material based on the requirements and standards of the regulation that we have collected. However, compatibility of the devices which are fabricated according to the contents of this manual to the above regulation is not guaranteed. Each manufacturer who fabricates such device should make the final judgement about the application method of the low-voltage directive and the product compatibility.

2.2.1 Standard applied for MELSEC-QnA

The standard applied for MELSEC-QnA is EN61010-1 safety of devices used in measurement rooms, control rooms, or laboratories.

For the modules which operate with the rated voltage of 50 V AC/75 V DC or above, we have developed new models that conform to the above standard. (See Appendix 4.)

For the modules which operate with the rated voltage under 50 V AC/75 V DC, the conventional models can be used, because they are out of the low-voltage directive application range.

2.2.2 Precautions when using the MELSEC-QnA series PC

Module selection

(1) **Power supply module**

For a power supply module with rated input voltage of 100/200 V AC, select a model in which the internal part between the first order and second order is intensively insulated, because it generates hazardous voltage (voltage of 42.4 V or more at the peak) area.

For a power supply module with 24 V DC rated input, a conventional model can be used.

(2) **I/O module**

For I/O module with rated input voltage of 100/200 V AC, select a model in which the internal area between the first order and second order is intensively insulated, because it has hazardous voltage area.

For I/O module with 24 V DC rated input, a conventional model can be used.

(3) **CPU module, memory cassette, base unit**

Conventional models can be used for these modules, because they only have a 5 V DC circuit inside.

(4) **Special module**

Conventional models can be used for the special modules including analog module, network module, and positioning module, because the rated voltage is 24 V DC or smaller.

(5) **Display device**

Use an A870GOT CE compatible model.

2.2.3 Power supply

The insulation specification of the power supply module was designed assuming installation category II. Be sure to use the installation category II power supply to the PC.

The installation category indicates the durability level against surge voltage generated by a thunderbolt. Category I has the lowest durability; category IV has the highest durability.

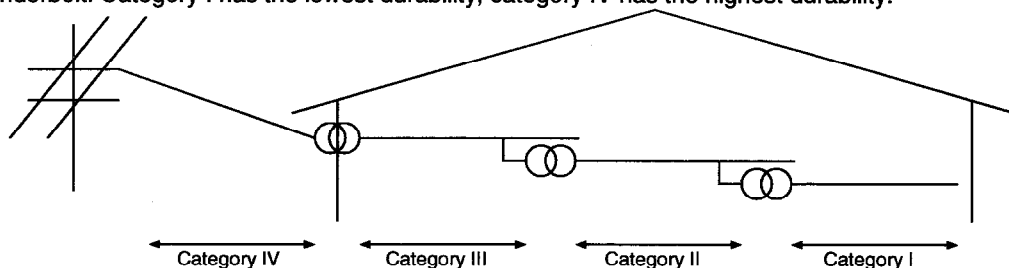


Fig. 1. Installation category

Category II indicates a power supply whose voltage has been reduced by two or more levels of isolating transformers from the public power distribution.

2.2.4 Control panel

Because the PC is an open device (a device designed to be stored within another module), be sure to use it after storing in the control panel.

(1) Electrical shock prevention

In order to prevent persons who are not familiar with the electric facility such as the operators from electric shocks, the control panel must have the following functions :

- (a) The control panel must be equipped with a lock so that only the personnel who has studied about the electric facility and have enough knowledge can open it.
- (b) The control panel must have a structure which automatically stops the power supply when the panel is opened.

(2) Dustproof and waterproof features

The control panel also has the dustproof and waterproof functions. Insufficient dustproof and waterproof features lower the insulation withstand voltage, resulting in insulation destruction. The insulation in our PC is designed to cope with the pollution level 2, so use in an environment with pollution level 2 or below.

Pollution level 1 : An environment where the air is dry and conductive dust does not exist.

Pollution level 2 : An environment where conductive dust does not usually exist, but occasional temporary conductivity occurs due to the accumulated dust. Generally, this is the level for inside the control panel equivalent to IP54 in a control room or on the floor of a typical factory.

Pollution level 3 : An environment where conductive dust exists and conductivity may be generated due to the accumulated dust. An environment for a typical factory floor.

Pollution level 4 : Continuous conductivity may occur due to rain, snow, etc. An outdoor environment.

As shown above, the PC can realize the pollution level 2 when stored in a control panel equivalent to IP54.

2.2.5 Module installation

In QnA series PCs, the left side of each I/O module is left open. When installing an I/O module to the base, do not make any open slots between any two modules. If there is an open slot on the left side of a module with 100/200 V AC rating, the printed board which contains the hazardous voltage circuit becomes bare. When it is unavoidable to make an open slot, be sure to install the blank module (AG60/A1SG60).

When using the A5□B and A1S5□B expansion base with no power supply, attach the cover packaged with the expansion base to the side of the leftmost module.

2.2.6 Grounding

There are two kinds of grounding terminals as shown below. Either grounding terminal must be used grounded.

Be sure to ground the protective grounding for the safety reasons.

Protective grounding : Maintains the safety of the PC and improves the noise resistance.

Functional grounding : Improves the noise resistance.

2.2.7 External wiring

(1) 24 V DC external power supply

For special modules that require a 24 V DC I/O module or external power supply, use a model whose 24 V DC circuit is intensively insulated from the hazardous voltage circuit.

(2) External connecting devices

When a device with a hazardous voltage circuit is externally connected to the PC, use a model whose circuit section of the interface to the PC is intensively insulated from the hazardous voltage circuit.

(3) Intensive insulation

Intensive insulation refers to the insulation with the dielectric withstand voltage shown in Table 2.

Table 2 : Intensive insulation withstand voltage (installation category II, source : IEC664)

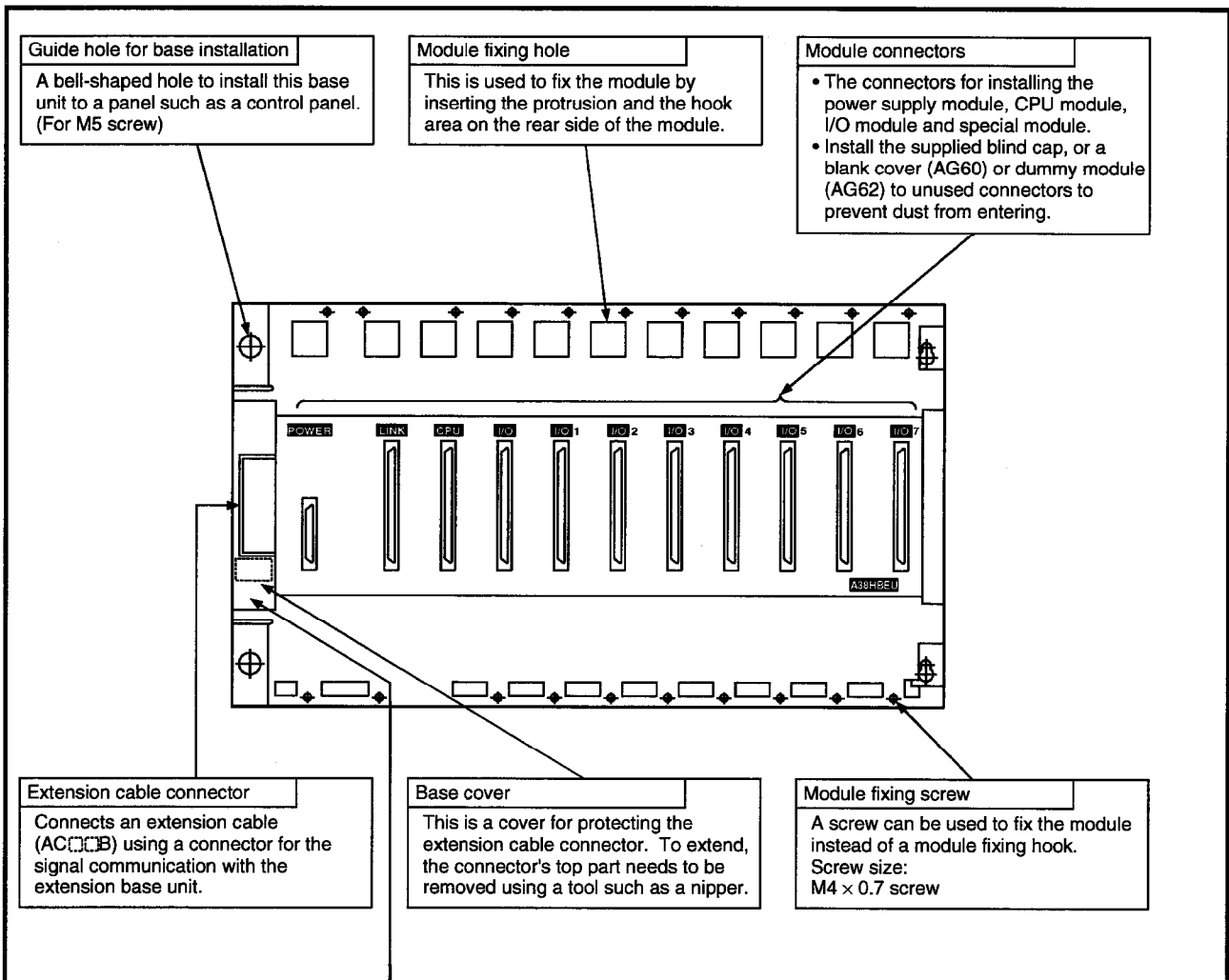
Rated voltage of hazardous voltage area	Surge withstand voltage (1.2/50 μs)
150 V AC or less	2500 V
300 V AC or less	4000 V

3. SPECIFICATIONS

Item	Model name	A38HBEU	A1S38HBEU
I/O module mounting range		8 modules enabled	
Extension connection enabled/disabled		Extension connection enabled	
Installation hole size [mm (in.)]		φ 6-mm (0.24 in) bell-shaped hole (for M5 screw)	
Applicable DIN rail		Disabled	TH35-7.5Fe, TH35-7.5Al, TH35-15Fe
External dimensions [mm (in.)]		480 × 250 × 29 (18.9 × 9.8 × 1.1)	430 × 130 × 28 (16.9 × 5.1 × 1.1)
Weight [kg (lb.)]		2.2 (4.84)	1.0 (2.20)
Accessory			Four installation screws (M5 × 25)

4. NAME OF EACH PART

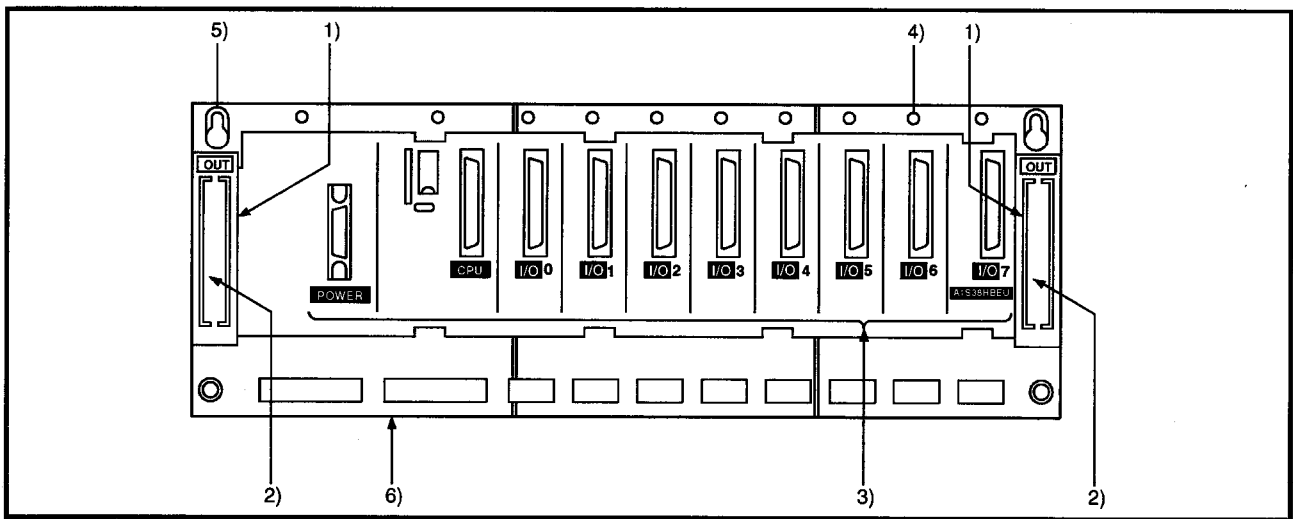
4.1 A38HBEU



Point

- **A38HBEU** is printed below the base cover on the A38HBEU base, while nothing is printed on the A38B. This can be used to distinguish the base type when installing a module.

4.2 A1S38HBEU



No.	Name	Application
1)	Extension cable connector	Connects the extension cable using a signal communication connector for the extension base unit.
2)	Base cover	This is a protective cover for the extension cable connector. When extending, the area surrounded by a groove below the letters "OUT" on the base cover needs to be removed using a tool such as a nipper.
3)	Module connector	These are the connectors for installing the power supply module, CPU module, I/O module and special function module. Install the supplied connector cover or blank cover (A1S60) to unused connectors to prevent dust from entering.
4)	Module fixing screw	This is a screw to fix the module to the base. The screw size is M4 × 12.
5)	Base installation hole	A bell-shaped hole used to install the base unit to a panel such as a control panel. (For M5 screw)
6)	DIN rail hook	A hook used to install a DIN rail

Important

Only one extension base unit can be connected to the basic base unit. If an extension base unit is connected to each of the two extension connectors of the basic base unit, false input or false output may occur.

5. PRECAUTIONS WHEN HANDLING

The following describes the precautionary items from unpacking to handling of a base unit.

- (1) Do not drop or exert a huge impact on the terminal block connectors or connector pins of the base unit, since these are made of resin.



CAUTION

- Do not remove the base unit's printed wiring board from the base.
It may lead to failures, malfunctions, injuries or fire.
- Take caution so that foreign objects such as wire chips do not enter the base unit.
It may lead to failures, malfunctions or fire.

6. BASE UNIT INSTALLATION

The precautionary items when installing a basic base or extension base are described in this chapter.

6.1 Precautions for Installation

The following are the precautionary items when installing a PC to a panel, etc.

- (1) For better ventilation and ease of module replacement works, secure a clearance between the top of the module and other structures or parts. (Refer to Sections 6.2.1 and 6.2.2.)
- (2) Do not install the module vertically or horizontally due to ventilation reasons.
- (3) Installing a base unit on a bumpy or distorted surface gives excessive pressure on the printed wiring board and may cause malfunctions. Install it on a flat surface.
- (4) Avoid installing a base unit near a vibration source such as a large magnetic contactor and a no-fuse breaker. Install them on separate panels or install them apart from each other.
- (5) Provide a wiring duct as needed.

However, take the following points into consideration if the distances from the top and bottom of the PC are less than those shown in figures 6.1, 6.2, 6.6 and 6.7:

- (a) When providing a duct on the top of PC, limit the height of the duct within 50 mm (1.97 in.) to allow good ventilation.

<For A38HBEU>

Secure a clearance against the top of the PC so the hook on the top of the module can be depressed.

If the hook on the top of the module cannot be depressed, a module replacement cannot be carried out.

<For A1S38HBEU>

Secure a clearance against the top of the PC so the fixing screws on the top of the module can be tightened and removed.

If the hook on the top of the module cannot be tightened and removed, module replacement cannot be carried out.

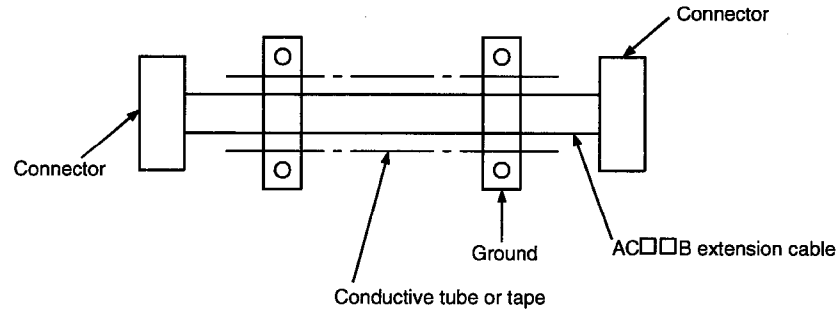
- (b) When providing a duct at the bottom of PC, provide enough space so the optical fiber cable or coaxial cable can reside, and consider the minimum bending radius of the cable.

Also, secure enough space so the 100/200 V AC input line of the power supply module, I/O line and 12/24 V DC line of the I/O modules are not affected by the duct.

- (6) If an equipment is positioned in front of the PC (if an equipment is installed to the rear of the door), place it at least 100 mm (3.94 in.) apart from the PC in order to avoid the influences from the emitted noise and heat.

Install any equipment at least 50 mm (1.97 in.) apart from the left and right ends of the base unit.

- (7) When using an extension base, be sure to wire the extension cable so that it is brought into absolute contact with the panel as much as possible.
- To reduce noise emission from the extension cable,
- 1) Cover the extension cable with a conductive tube or a spiral, and ground it to the control panel.
 - 2) For the Q2ASCPU(S1) and Q2ASHCPU(S1) systems, installing a ferrite core (TDK-2CAT3035-1330 recommended) reduces noise emission.



6.2 Installation

6.2.1 A38HBEU installation

This section explain how to install basic and extension base units.

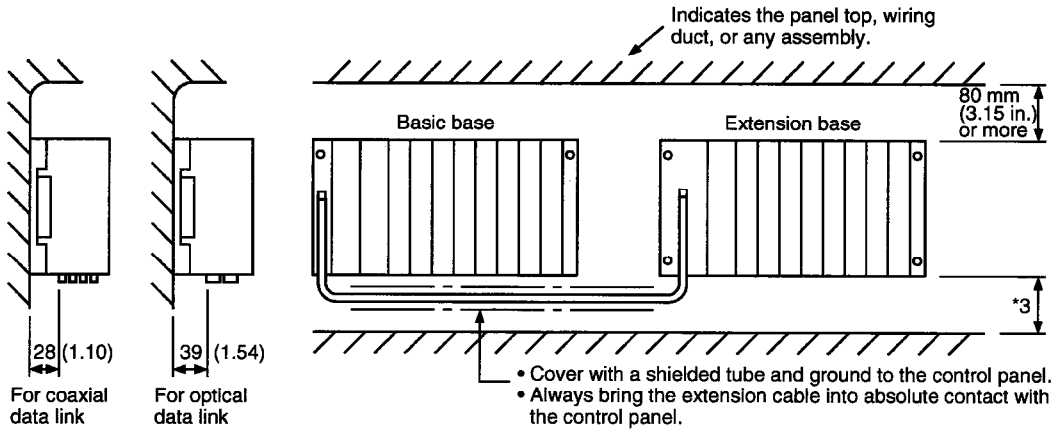


Fig. 6.1 Parallel installation

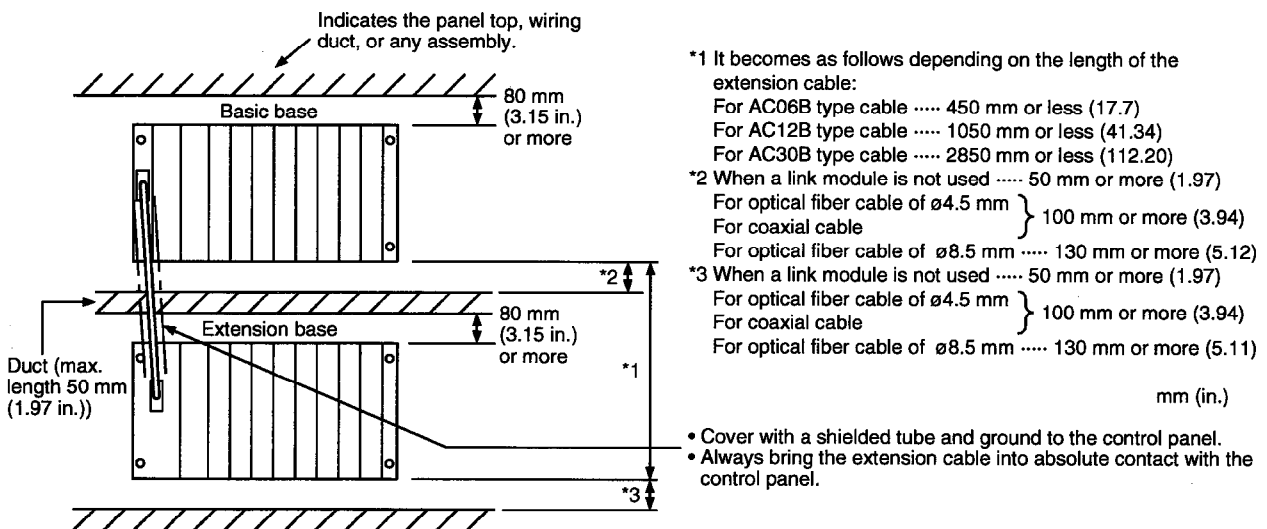


Fig. 6.2 Serial mounting

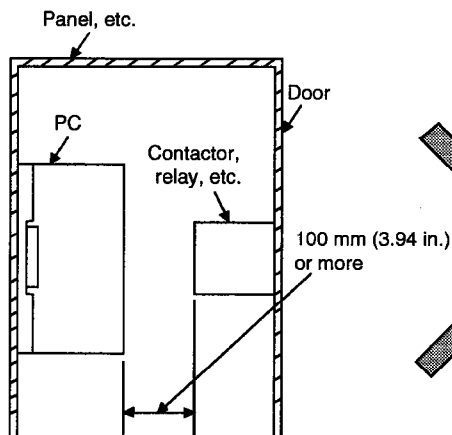


Fig. 6.3 Minimum front clearance with panel door

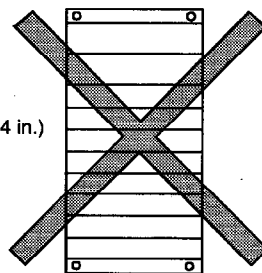


Fig. 6.4 Vertical mounting (not allowed)

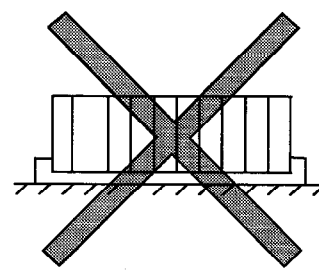


Fig. 6.5 horizontal mounting (not allowed)

6.2.2 A1S38HBEU installation

This section explains how to install basic and extension base units.

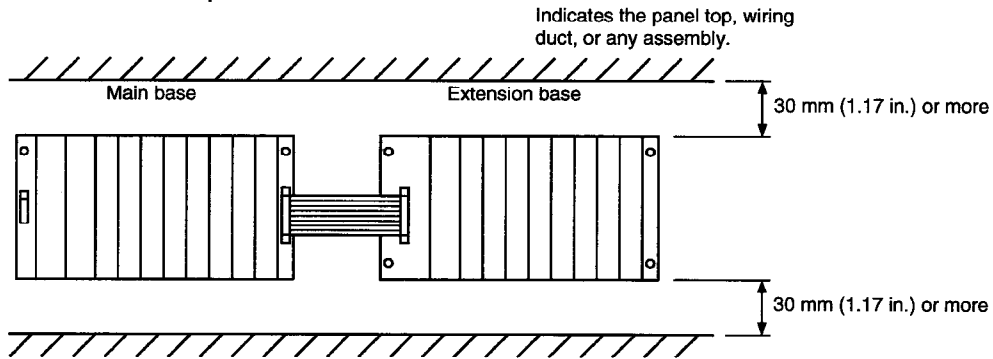


Fig. 6.6 Parallel installation

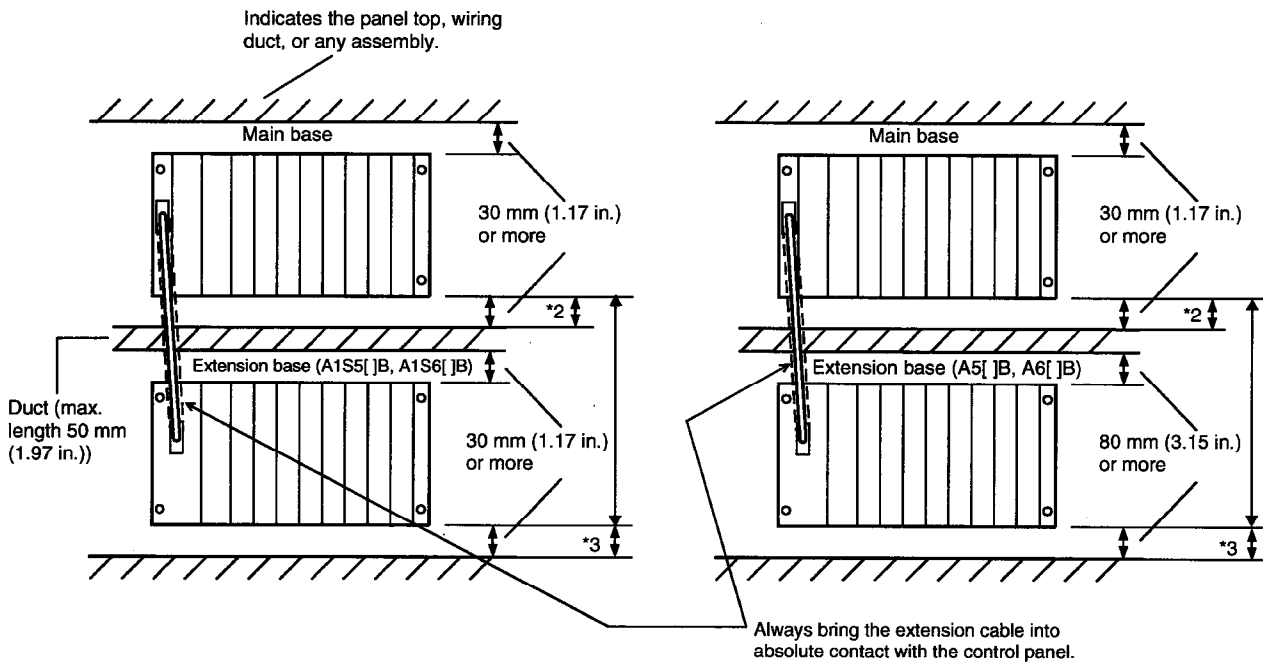


Fig. 6.7 Serial installation

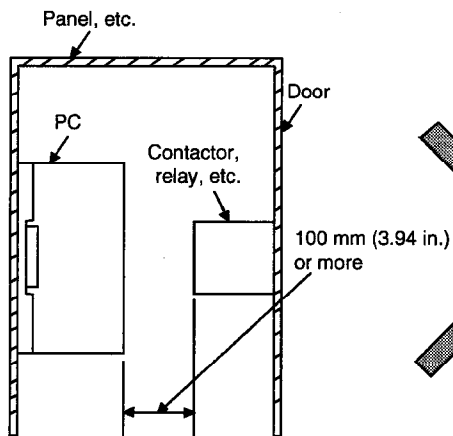


Fig. 6.8 Minimum Front Clearance with Panel Door

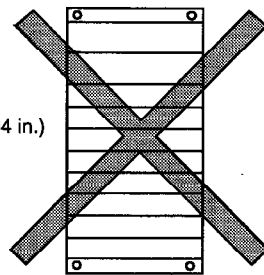


Fig. 6.9 Vertical installation (not allowed)

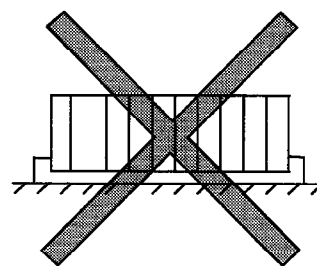


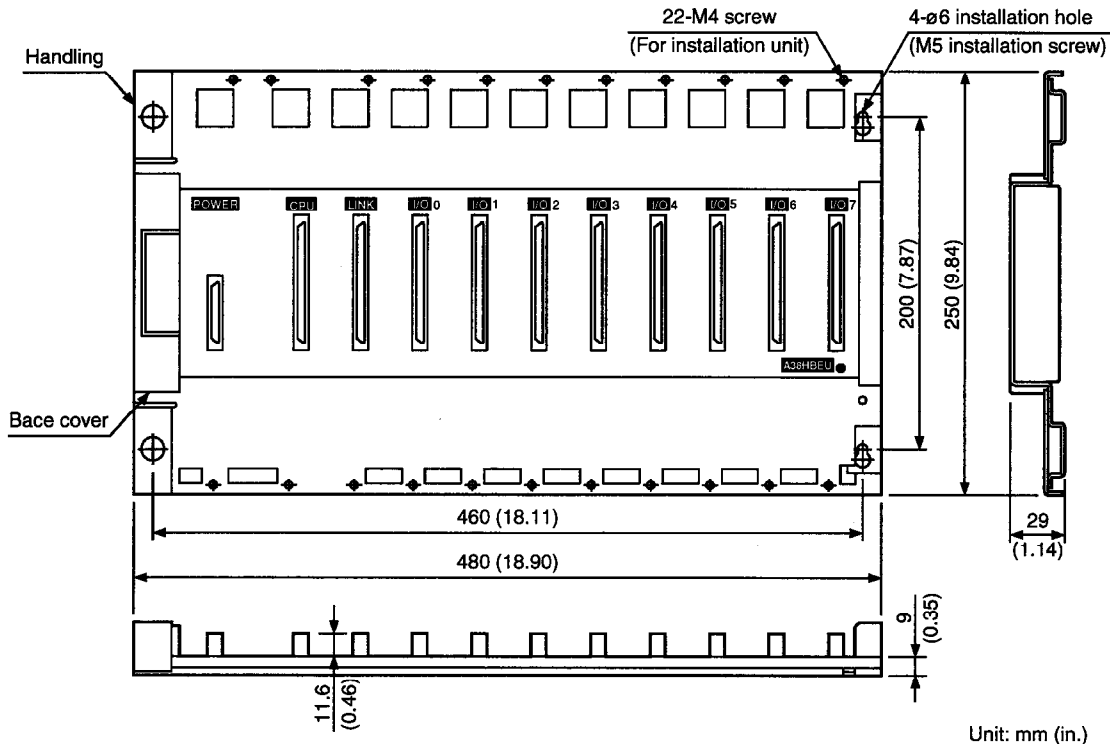
Fig. 6.10 Horizontal installation (not allowed)

- *1 It becomes as follows depending on the length of the extension cable:
For A1SC03B type cable 280 mm or less (11.02)
For A1SC12B type cable 1100 mm or less (43.31)
For A1SC30B type cable 2900 mm or less (114.17)
For A1SC05NB type cable 350 mm or less (13.78)
- *2 When a link module is used
For optical fiber cable of ϕ 4.5 mm }
For coaxial cable } 100 mm or more (3.94)
For optical fiber cable of ϕ 8.5 mm 130 mm or more (5.12)
- *3 When a link module is used
For optical fiber cable of ϕ 4.5 mm }
For coaxial cable } 100 mm or more (3.94)
For optical fiber cable of ϕ 8.5 mm 130 mm or more (5.12)

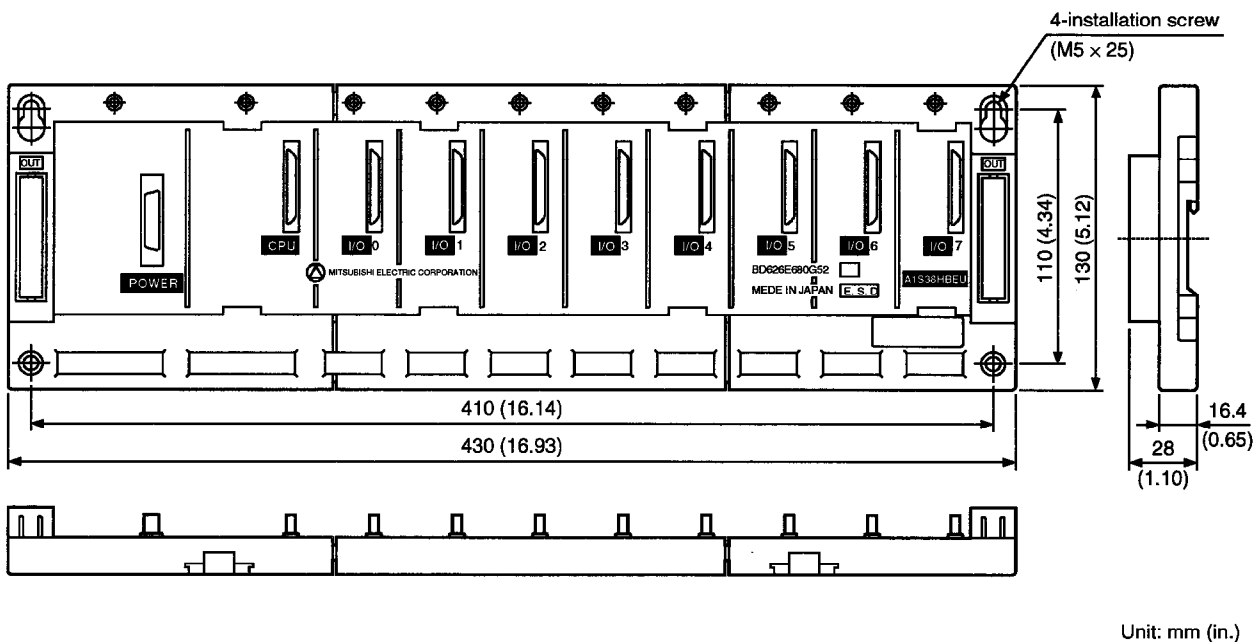
mm : (in.)

7. EXTERNAL DIMENSIONS

7.1 A38HBEU Basic Base Unit



7.2 A1S38HBEU Basic Base Unit



QnA Series CPU Compatible High-Speed Accessing Basic Base Unit

Additional Explanation for Product Conforming to EMC Standard

MODEL	A/A1S38HBEU-U-E
MODEL CODE	13JL55
IB(NA)66837-B(9806)MEE	



HEAD OFFICE: MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100-0005 TELEX: J24532 CABLE MELCO TOKYO
NAGOYA WORKS: 1-14, YADA-MINAMI 5, HIGASHI-KU, NAGOYA, JAPAN

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