

MELSEC System Q

Programmable Logic Controllers

Users's Manual

Digital I/O Modules



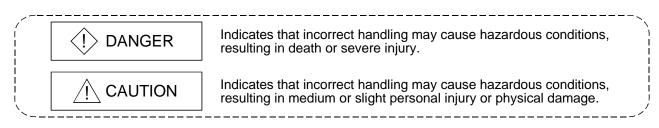
• SAFETY PRECAUTIONS •

(Always read these instructions before using this equipment.)

Before using this product, please read this manual and the relevant manuals introduced in this manual carefully and pay full attention to safety to handle the product correctly.

The instructions given in this manual are concerned with this product. For the safety instructions of the programmable controller system, please read the CPU module user's manual.

In this manual, the safety instructions are ranked as "DANGER" and "CAUTION".



Note that the \triangle CAUTION level may lead to a serious consequence according to the circumstances. Always follow the instructions of both levels because they are important to personal safety.

Please save this manual to make it accessible when required and always forward it to the end user.

[Design Instructions]

- Install a safety circuit external to the PLC that keeps the entire system safe if there are problems with the external power supply or PLC. Not doing so may cause false output or malfunction, leading to accidents.
 - (1) Outside the PLC, construct mechanical damage preventing interlock circuits, e.g. emergency stop circuits, protective circuits, forward/reverse or other conflicting operation interlocking circuits, and upper and lower positioning limit switches.

(2) When the PLC detects either of the following problems, it will stop arithmetic operation and turn off all outputs in the case of (a). In the case of (b), it will stop arithmetic operation and hold or turn off all outputs according to the parameter setting.

- (a) The overcurrent protection or overvoltage protection of the power supply module is activated.
- (b) The self-diagnostic function of the PLC CPU has detected a fault such as the watchdog timer error.

In addition, all outputs may be turned on when there are problems undetectable by the PLC CPU, such as in the I/O controller. Build a fail-safe circuit or provide a mechanism externally of the PLC to operate the machine safely at such times. Refer to the CPU module user's manual for fail-safe circuit examples.

(3) Output could be left on or off when there is trouble in the output module's relays, transistors, etc. So build an external monitoring circuit that will monitor any output signal that could lead to a serious accident.

[Design Instructions]

- When overcurrent exceeding the rated load current or caused by a shorted load or the like flows in the output module for a long time, it may cause smoke or fire. To prevent this, configure an external safety circuit, such as fuses.
- Build a circuit that turns on the external power supply after the PLC power supply has been turned on. If the external power supply is turned on first, it could result in false output or malfunction.
- When there are communication problems with the data link, refer to the corresponding data link manual for the operating status of each station. Not doing so could result in false output or malfunction.
- When connecting a peripheral device to the CPU module or connecting a personal computer or the like to the intelligent function module to exercise control (data change) on the running PLC, configure up an interlock circuit in the sequence program to ensure that the whole system will always operate safely.

Also before exercising other control (program change, operating status change (status control)) on the running PLC, read the manual carefully and fully confirm safety.

Especially for the above control on the remote PLC from an external device, an immediate action may not be taken for PLC trouble due to a data communication fault.

In addition to configuring up the interlock circuit in the sequence program, corrective and other actions to be taken as a system for the occurrence of a data communication fault should be predetermined between the external device and PLC CPU.

• Do not bundle the control wires or communication cables with the main circuit or power wires, or run them close to each other.

They should be run 100mm (3.94in.) or more away from each other.

Not doing so could result in noise that would cause malfunction.

• When the output module is used to control a lamp load, heater, solenoid valve or the like, large current (approximately 10 times greater than the normal) may flow when the output is turned from OFF to ON. Choose an output module having a sufficient rated current.

[Installation Instructions]

 Use the PLC in an environment that meets the general specifications contained in this manual. Using this PLC in an environment outside the range of the general specifications could result in electric shock, fire, erroneous operation, and damage to or deterioration of the product. Hold down the module-loading lever at the module bottom, and securely insert the module-fixing hook into the fixing hole in the base unit. Incorrect loading of the module can cause a malfunction, failure or drop.
When using the PLC in the environment of much vibration, tighten the module with a screw. Tighten the screw in the specified torque range. Undertightening can cause a drop, short circuit or malfunction. Overtightening can cause a drop, short circuit or malfunction due to damage to the screw or module.
 When installing extension cables, be sure that the base unit and the extension module connectors are installed correctly. After installation, check them for looseness.
 Poor connections could cause an input or output failure. Securely load the memory card into the memory card loading connector. After installation, check for lifting. Poor connections could cause an operation fault.
 Completely turn off the external power supply before loading or unloading the module. Not doing so could result in damage to the product. Do not directly touch the module's conductive parts or electronic components.

Touching the conductive parts could cause an operation failure or give damage to the module.

[Wiring Instructions]

- Completely turn off the external power supply before starting wiring. Not doing so could result in electric shock or damage to the product.
- When turning on the power supply or starting operation after wiring work, always mount the product with the supplied terminal cover.

Not doing so could result in electric shock.

[Wiring Instructions]

Always ground the FG and LG terminals to the protective ground conductor. Not doing so could
result in electric shock or malfunction.
Before wiring the module, confirm the rated voltage and terminal layout of the product.
Connecting a power supply that is different from the rating or incorrectly wiring the product could result in fire or failure.
External connectors should be crimped or pressure-welded with the specified tools, or correctly
soldered. Imperfect connections could result in short circuit, fires or malfunction.
Tighten the terminal screws in the specified torque range.
Undertightening could result in short circuit, fire or malfunction.
Overtightening could cause damage to the screws and/or the module, resulting in drop, short circuit or malfunction.
Be careful not to allow foreign matter such as chips and wire off-cuts to enter the module.
Foreign matter could cause fire, failure, or malfunction.
The module has an ingress prevention label on its top to prevent foreign matter, such as wire
offcuts, from entering the module during wiring.
Do not peel this label during wiring.
Before starting system operation, be sure to peel this label because of heat dissipation.
Install our PLC in a control panel for use.
Wire the main power supply to the power supply module installed in a control panel through a
distribution terminal block.
Furthermore, the wiring and replacement of a power supply module have to be performed by a
maintenance worker who acquainted with shock protection.
(For the wiring methods, refer to the QCPU User's Manual (Hardware Design, Maintenance and
Inspection).)

[Startup/Maintenance Instructions]

- Do not touch the terminals while power is on. Doing so could cause electric shock.
- Correctly connect the battery. Do not charge, disassemble, heat, place in fire, short circuit, or solder the battery.

Mishandling of the battery can cause heat generation, burst or ignition which could result in injury or fire.

• Switch off all phases of the externally supplied power used in the system when cleaning the module or retightening the terminal or module mounting screws. Not doing so could result in electric shock.

Undertightening of terminal screws can cause a short circuit or malfunction.

Overtightening of screws can cause damages to the screws and/or the module, resulting in fallout, short circuits, or malfunction.

[Startup/Maintenance Instructions]

 The online operations conducted for the running CPU module by connecting a peripheral device (especially program modification, forced output, operating status change) should be performed after you have read the manual carefully read and fully confirmed safety. Operation mistakes could cause machine damage or accident. Do not disassemble or modify the modules. Doing so could cause failure, malfunction, injury or fire. Completely turn off the externally supplied power used in the system before mounting or
 removing the module. Not doing so could result in damage to the product. Do not mount/remove the module to/from the base unit or the terminal block more than 50 times (IEC61131-2-compliant), after the first use of the product. Failure to do so may cause module malfunctions. Before touching the module, always touch grounded metal, etc. to discharge static electricity from human body, etc.
Not doing so can cause the module to fail or malfunction.

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

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REVISIONS

* The manual number is given on the bottom left of the back cover.

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		Section 4.2
	1	

INTRODUCTION

Thank you for choosing the MITSUBISHI MELSEC-Q Series General-Purpose Programmable Logic Controller. Before using this product, please read this manual carefully to use the equipment to its optimum.

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MEMO

About Manuals

The following manuals are also related to this product.

In necessary, order them by quoting the details in the tables below.

Related Manuals

Manual Name	Manual Number (Model Code)
QCPU User's Manual (Hardware Design/Maintenance and Inspection) This manual provides the specifications of the CPU modules, power supply modules, base units, extension cables, memory cards and others. (Sold separately)	SH-080483ENG (13JR73)
QCPU User's Manual (Function Explanation/Program Fundamentals) This manual explains the functions, programming methods, devices on necessary to create programs with the QCPU. (Sold separately)	SH-080484ENG (13JR74)

Conformation to the EMC Directive and Low Voltage Instruction

For details on making Mitsubishi PLC conform to the EMC directive and low voltage instruction when installing it in your product, please refer to Chapter 3, "EMC Directive and Low Voltage Instruction" of the PLC CPU User's Manual(Hardware).

The CE logo is printed on the rating plate on the main body of the PLC that conforms to the EMC directive and low voltage instruction.

1. GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSTRUCTIONS FOR SELECTING THEM

This chapter describes the general specifications of I/O modules and instructions for selecting them.

1.1 General Specifications

Refer to the following manual for the general specifications of the I/O modules. QCPU User's Manual (Hardware Design/Maintenance and Inspection)

1.2 Selecting Instructions

- (1) If an output module drives an inductive load, it must be switched ON for 1 second or longer and switched OFF for 1 second or longer.
- (2) If a counter or timer which has a DC-DC converter as a load is used with an output module, using an average current to choose an output module can cause a fault due to periodic rush currents when it is turned ON or during operation. To reduce the influence of rush currents for use of the above load, connect a resistor or an inductance to the load in series or use a module whose maximum load current is larger.

	Resistor	Load		
Output			Output	
module			module	
			F	

(3) Fuses installed in output modules cannot be replaced. They are designed to protect external wiring if the module outputs are shorted.

Inductance Load ന്ന

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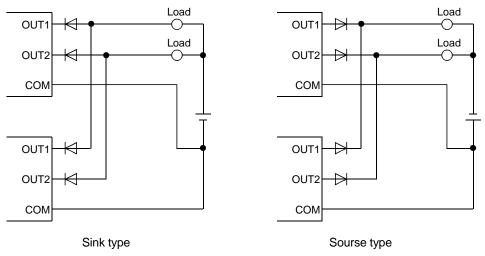
Therefore, output modules may not be protected from a short circuit. If an output module becomes faulty due to any cause other than a short circuit, its fuse may not function.

(4) The number of signals, which can be turned ON simultaneously in an input module, varies according to the input voltage and ambient temperature. Refer to the corresponding input module specifications.

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(4) Connecting the transistor output modules in parallel may result in failure of the output elements.

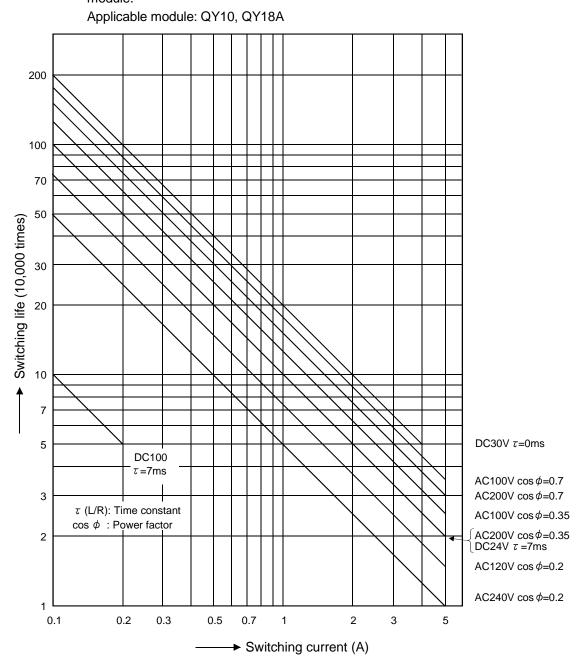
If connecting the transistor output modules in parallel, use diodes for the circuit as shown below.



(5) The number of signals, which can be turned ON simultaneously in an input module, varies according to the input voltage and ambient temperature. Refer to the corresponding input module specifications.

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(6) The following chart shows the actual service value of relay life for a relay output module.



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POINT

(1) When using the module for the application in wh	nich the relay contact is
frequently switched, the relay life span should be	e considered. Therefore, it is
recommended to use a triac output module.	
(2) The relay life curve shows the value based on a	actual use, which is not
guaranteed. Therefore, make sure to allow for a	
The relay life span differs according to the speci	-
Rated switching voltage, current load	100 thousand operations
200V AC 1.5A, 240V AC 1A (COS ϕ =0.7)	100 thousand operations
200V AC 0.4A, 240V AC 0.3A (COS ϕ =0.7)	300 thousand operations
200V AC 1A, 240V AC 0.5A (COS ϕ =0.35)	100 thousand operations
200V AC 0.3A, 240V AC 0.15A (COS ϕ =0.35)	300 thousand operations
24V DC 1A, 100V DC 0.1A (L/R=7ms)	100 thousand operations
24V DC 0.3A, 100V DC 0.03A (L/R=7ms)	300 thousand operations
(3) Relay life is substantially affected by the load typ	-
characteristics.	
The inrush current may cause the contact welding	ng. Therefore. consideration
should be given to it as well as constant current.	•
(a) Inductive load	
When the inductive load such as electromag	netic contactor or solenoid is
shut off, high counter-electromotive force is o	
contacting materials to produce an arc discha	-
made especially when the power factor is low	
period.	,
In addition, make sure to consider the contact	ct melting, as the inrush current
equivalent to 5 to 15 times of constant currer	•
powered on.	
(b) Lamp load	
Make sure to consider the contact melting, as	s the inrush current equivalent
to 10 to 15 times of constant current flows in	
(c) Capacitive load	
Make sure to consider the contact melting w	hen a device such as condenser
is used in a load circuit, as the inrush current	
constant current may flow in the circuit.	
	long length of wire is routed.

- (7) Insulation-sleeved crimping terminals cannot be used with the terminal block. It is recommended to cover the wire connections of the crimping terminals with mark or insulation tubes.
- (8) Use wires of 0.3 to 0.75mm² core and 2.8mm (0.11in.) OD max. to connect to the terminal block. When using a wire whose core is 0.75mm or more, it is preferable to use the spring terminal block(Q6TE-18S).
- (9) Do not use I/O modules under pressure higher than the atmospheric pressure of Om (Oft.) altitude. Doing so can cause a malfunction.When using I/O modules under pressure, please consult your sales representative.

1 GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSTRUCTIONS FOR SELECTING THEM

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(10) Tighten the module fixing and terminal block screws to the torques in the following ranges.

Screw Location	Tightening Torque Range
Module fixing screw (M3 $ imes$ 12 screw)	36 to 48 N•cm
I/O module terminal block screw (M3 screw)	42 to 58 N•cm
I/O module terminal block mounting screw (M3 screw)	66 to 89 N•cm

(11)The overload protection function and overheat protection function of the following modules will be explained below.

Function	Description
Common (Overload and overheat protection functions)	 If an overcurrent keeps flowing due to overload, heat is generated to activate the overheat protective function. Each protection function is designed to protect the internal elements of the module, not the external equipment.
Overload protection function	 The overload protection function is activated in 1 point increments in terms of 1A to 3A/point. The overload protection function returns operation to normal when the load becomes a rated load
Overheat protection function	 The overheat protection function is activated in 1 point increments. The overheat protection function automatically returns operation to normal when heat reduces.

(a) QY40P, QY41P, QY42P, QX41Y41P, QH42P

1 GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSTRUCTIONS FOR SELECTING THEM

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Function	Description
Common (Overload and overheat protective functions)	 If an overcurrent keeps flowing due to overload, heat is generated to activate the overheat protective function. Each protective function is designed to protect the internal elements of the module, not the external equipment.
Overload protective function	 The overload protective function is activated in 1 point increments in terms of 1A to 3A/point. The overload protective function returns operation to normal when the load becomes a rated load.
Overheat protective function	 The overheat protective function is activated in 2 point increments. (It is activated in 2 point increments of Y0/Y1, Y2/Y3,, and when overheat protection is activated, that of 2 points is activated simultaneously. If an overheat condition persists, heat transferred may activate the other overheat protective function.) If an output turns ON at the activation of the overheat protective function, the actual output voltage oscillates between 0V and load voltage. At the load voltage of 24V, the average voltage during oscillation is approx. 7V. No oscillation is encountered when the output is OFF at the activation of the overheat protective function. To ensure that the output is turned OFF at the activation of the overheat protective function, use an external load which switches OFF at 7V or more. The overheat protective function automatically returns operation to normal when heat reduces.

(b) QY81P

(12)Input modules may import noise or the like as an input depending on the pulse width of a signal.

This pulse width has a value as listed below depending on the parameter-set response time. The operating environment should be fully considered when making the response time setting.

Response Time Setting (ms)	Minimum Value of Pulse Width That May Be Imported (ms)
1	0.3
5	3
10	6
20	12
70	45

System Monito	л									×	
– Base Informatic Base Name Base Type – Installed status	Main B	ase						of Slot of Inst	: 8 alled Module 1	Overall Information Number of Base 1 Number of Module1	7
	0	1	2	3	4	5	6	7		01112000000000 · A	Confirm by
доен		unti					Unno unti ng			Base Module Base Module C Expansio n base 1 C Expansio n base 2 C Expansio n base 3 C Expansio n base 3	_ observing here
– Parameter statu	is —									L C Expansio	
I/O Address	5 0	20	30	40	50	60	70	80		D C Expansio	
	0	1	2	3	4	5	6	7		Expansio	
	Inte llig ent 32pt	16pt						None 16pt		Status Unit system error Unit error Unit warning	
PLC diagn	ostics	Mo	dule's l	Detaile	d Infor	, mation.		Star	t monitor Stop monitor	Close	

(13)When confirming the product information on the CPU PLC, observe the system monitor in the DIAGNOSIS menu of the GX Developer.

(14)When using the QH42P, QX41Y41P or QX48Y57, configure it with the following devices.

Part name	Detail
CPU PLC	Product of product information [011120000000000-A] or later
GX Developer	SW5D5C-GPPW or later

The CPU PLCs other than those listed above cannot be used.

When the SW4D5C-GPPW is used, the response time cannot be set (fixed at 10ms).

Set OUTPUT for the I/O allocation.

(15)Possible constructions for QI60 compatible time settings

When setting compatible times for QI60, use the constructions listed below.

If using other constructions, compatible times can not be set. (Fixed at 0.2 ms)

Product name	Contents
PLC CPU	Product information "02112000000000-B" or later
GX Developer	SW6D5C-GPPW or later

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(16)Instructions for use of QY22

It is recommended to fit a fuse to each external terminal in order to prevent the external device and module from being burnt if a load short-circuit occurs.

The fuse recommended for fitting is the one conforming to IEC60127 Sheet 1. The following fuses have been confirmed by Mitsubishi to operate properly.

Fuse Model	216 02.5	216 002
Rated current	2.5A	2A
Manufacturer	Littelfu	se, Inc

(17)Caution points when using QY68A

Installing a fuse to the external terminal to prevent burn out of external devices and modules in the case of a load short is recommended.

A rated voltage 3A fast type fuse is recommended.

Fuses confirmed for operation by this company are listed below.

Fuse Model	216 3.15	312 003
Rated current	3.15A	3A
Manufacturer	Littelfu	se, Inc

(18)I/O numbers of combined I/O modules

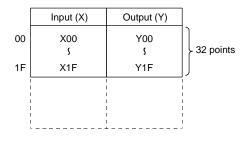
There are two types of combined I/O modules:

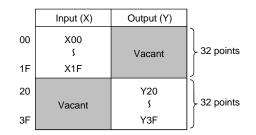
Module using same I/O numbers for input and output

Since same number is used for input and output, the I/O numbers to be used can be saved.

• Module using sequential I/O numbers for input and output

Since I/O assignments are the same for A series, it is useful when replacing modules from those of A series.





Module using same I/O numbers for input and output (QH42P)

Module using sequential I/O numbers for input and output (QX41Y41P)

(19)Precaution when Connecting the Uninterruptive Power Supply (UPS)Use an on-line UPS with 5 % or less voltage fluctuation.Do not use an off-line UPS.

MELSEC-Q

1.3 How to Make Settings on GX Developer

This section describes how to make settings using GX Developer.

1.3.1 Setting of I/O response time

Set the I/O response time in I/O assignment of PLC Parameter.

- (1) For Input/I/O mix module
 - Choose [Input/I/O mix] in Type, choose [Detailed setting], and choose [I/O response time] in I/O response time.

		Cho	ose In	put/	I/O mix.				Choos	e Det	ailed settii	ng.
Qn	(H) Para	neter										×
Pl	_C name	PLC syst	em PL	C file	PLC RAS De	evice Pro	gram	Boot file	SFC	1/0 a	ssignment	
		-	'				-				- 1	1
		1(X)										
	1/O Assigr									_		
		lot	Туре	_	Model na	me i	Poir		StartXY -	t s,	witch setting	11
	0 PLC		LC 🚽	<u> </u>				•		4 1 7		
	<u>1 0(*-0</u>		iput	•			16point:			1	المتعاد والمتعاد	d I
	2 1(*-1	·	mpty Iput	^				•			tailed setting	
	3 2(*-2	<u> </u>	li. input	-				•				
	4 3(*-3	<u> </u>	lutput					-				
┢	5 4(*-4		'O mix	-				-				
┢	<u>6 5(*-5</u>		ntelli.					-				
L	7 6(*-6)		-				•				
	Assignir	ig the I/O	address	is no	ot necessary as th	ne CPU do	es it aut	omatica	lly.			
	Leaving	this settir	ng blank	will r	iot cause an erroi	r to occur.						
-	-Base set	tina(*)										
		1								۱ _п .		
		Baser	model na	ime	Power model na	me Exter	nsion ca	ble	Slots		ase mode	
	Main								-		Auto	
	Ext.Base	1							-		Detail	
	Ext.Base								-		,	
	Ext.Base								-	89	olot Default	
	Ext.Base								-	10	ابر کر در ا	
	Ext.Base									12:	Slot Default	
L												41
		should b		same	when	Import Mu	iltiple CF	°U Para	meter	Rea	d PLC data	
_	using i	ultiple CP	·U.									
A	cknowled	ie XY ass	ianment	M	ultiple CPU setting	os Defa	ault 1	Check	E E	nd	Cancel	
		·	-									
								Cho	ose I/O	resp	onse time	
						♥					lt: 10ms).	
nte	lligent fu	nctional	module	a da	tailed setting	•				aoraa	la romoji	×
muə	ingent to	neuona		5 UG	alleu setting							
						Error time		/ error				
	Slot	T J	/pe		Model name	output	[time	e PLC ration	I/Oresp time		Control PLC (*)	
						mode		ode	une	,	0	
0	PLC	PLC					-	•		-	•	11
1	0(*-0)	Input					-	•	10ms	-	•	
2	1(*-1)						-	-	1ms		•	
3	2(*-2)						-	•	5ms		•	1
4	3(*-3)						•	•	10ms 20ms		•	1
5	4(*-4)						•	•	70ms		•	
6	5(*-5)						,	-		•	-	
7	6(*-6)						•	•		•	•	
8	7(*-7)						•	•		•	•	
9	8(*-8)						·	•		•	•	
	9(*-9)						·	•		•	•	
11	10(*-10)						·	•		•	•	
	11(*-11)						·	•		•	•	
	12(*-12)	_					·	•		•	•	
	13(*-13)					-	<u> </u>	•		•	•	
15	14(*-14)						•	•		•	•	•
[*]s	settinas sh	ould be se	et as sam	ne wh	en using multiple	PLC.	E	nd		Cancel		

1 GENERAL SPECIFICATIONS OF INPUT AND OUTPUT MODULES AND INSTRUCTIONS FOR SELECTING THEM

MELSEC-Q

(2) For high-speed input module/QI60

Choose [Hi. input/Interrupt] in Type, choose [Detailed setting], and choose [I/O response time] in I/O response time.

		Choose I	Hi. inp	out/Interrupt.			Choose	Detailed setting
Qn(H) I	Parame	eter						×
PLC n	iame P	LC system P	.C file	PLC RAS Devic	e Program	Boot file	SFC I	/O assignment
	Assignm	ent(*)						
	Slo	t Typ	. 1	Model name	F	oints S	tartXY 🔺	
0	PLC	PLC ,				•		Switch setting
1	0(×-0)	Hi. input	-		16ро	ints 💌		•
2	1(*-1)	Empty Input	-			-		Detailed setting
3	2(*-2) 3(*-3)	Hi. input						
5	4(×-4)	Output				Ţ		
6	5(*-5)	Intelli.	-			-		
7	6(*-6)		•			•	-	
As	ssigning	the I/O addres	s is not	t necessary as the C	:PU does it a	automatically		
Le	eaving tł	nis setting blank	k will no	ot cause an error to i	occur.	-		
- Ba:	se settin	a(*)						
			<u> </u>		F			- Base mode -
		Base model n	ame I	Power model name	Extension	cable S	lots	Auto
	Main						•	C Detail
	t.Base1						<u> </u>	, Detail
	t.Base2						<u> </u>	8 Slot Default
	t.Base3							
	t.Base4 t.Base5							12 Slot Default
		hould be set as Itiple CPU.	same	when Im	port Multiple	CPU Param	eter	Read PLC data
Ackno	owledge	XY assignment	t Mul	Itiple CPU settings	Default	Check	Enc	Cancel

Choose	I/O response time
01100000	i/O response ame
	(dofault: 0.2mc)

				•			(defa	ault: 0.2m	<u> </u>
Inte	ligent fund	ctional modul	e detailed setting						×
	Slot	Туре	Model name	Error time output mode	H/W error time PLC operation mode	И	D response time	Control PLI (*)	
0	PLC	PLC		•	•	_	•	· · · · ·	
1	0(*-0)	Hi. input		•		0.2			
2	1(*-1)			•		0.1			
3	2(*-2)			•	<u>•</u>	0.2 0.4			
4	3(*-3)			-	•	0.6			
5	4(*-4)			•	-	1m:			
6	5(*-5)			•	-		•		
7	6(*-6)			-	•		•		
8	7(*-7)			-	-		•		
9	8(*-8)			•	•		•		-
10	9(*-9)			-	•		•		
11	10(*-10)			•	•		•		<u>-</u>
12	11(*-11)			-	-		•		4
13	<u> </u>			•	•		•		-
14	· · ·			•	-		•		
15	14(*-14)			•	•		•		- -
(*)s	settings shou	ld be set as sar	me when using multiple	PLC.	End]	Cancel		

1.3.2 Setting of error-time output mode

Set the error-time output mode in I/O assignment of PLC Parameter. Choose [Output/I/O mix] in Type, choose [Detailed setting], and choose [Clear/Hold] in Error time output mode.

		Choose	Outp	out/I/O mix.					Choose [Detailed setting
٦r	n(H) Paramo	eter						-		×
_			L.C file	PLC RAS	evic	e Prog	gram Bo	ot fil	e SFC 1/C) assignment
Г	170 Assignm	ient(*)								
	Slo	ot Typ	e	Model na	ame		Points		StartXY 🔺	Charles and and
	0 PLC	PLC	• -					-		Switch setting
	1 O(*-O)	Output	-	•		1	6points -	•		*
ŀ	2 1(*-1)	Empty	-					•	.	Detailed setting
ŀ	3 2(*-2)	Input Hi. input		L				•		
ŀ	4 3(*-3) 5 4(*-4)	Output						• •		
ŀ	5 4(**4) 6 5(**5)	I/Omix Intelli.	-					÷		
ŀ	7 6(*-6)	II ICEIII.	-					Ŧ		
ľ		4- UO U			h			-		
				ot necessary as t			s it autom	atica	ally.	
L	Leaving t	his setting blan	k will r	not cause an erro	or to	occur.				
	Base settin	ng(*)								
		Base model r		Power model na		Euton	sion cable		Slots	Base mode -
		base modern	ame	Fower model na	ine	Exten	SION CADI	-	510(5	Auto
	Main							$ \rightarrow$	<u> </u>	C Detail
	Ext.Base1							\rightarrow	L	
	Ext.Base2				_			+	I	8 Slot Default
	Ext.Base3				_			+		
	Ext.Base4				-			+		2 Slot Default
	Ext.Base5								<u> </u>	
		should be set a Itiple CPU.	s sami	e when	Im	port Mul	tiple CPU	Par	ameter R	ead PLC data
A	Acknowledge	XY assignmer	t M	ultiple CPU settin	igs	Defa	ult C	hec	k End	Cancel
					ļ	Cho	oose C (defaul			
e	lligent func	tional modul	e det	ailed setting					,	
- 14										
	Slot	Туре	ł	Model name		ror time output mode	H/W e time P operat mod	LC ion	1/O response time	e Control PLC
	PLC	PLC				+ -		-		• •
	O(*-O)	Output			Cle			-		• •
	1(*-1)				Cle			•		• •
	2(*-2)				H₀			•		▼ <u>▼</u>
.	3(*-3)					-		•		-

	Slot	Туре	le detailed setting Model name	Error time output mode	H/W error time PLC operation mode	1/0 response time	Control PLC (*)
0	PLC	PLC		• •	•	•	•
1	0(*-0)	Output		Clear 🗸	•	•	_
2	1(*-1)			Clear	•	•	•
3	2(*-2)			Hold	•	¥	•
4	3(*-3)			•	•	▼	•
5	4(*-4)			•	•	¥	•
6	5(*-5)			•	+	۲	•
7	6(*-6)			•	•	¥	•
8	7(*-7)			•	•	¥	•
9	8(*-8)			•	-	¥	•
10	9(*-9)			•	-	¥	•
11	10(*-10)			-	•	•	•
12	11(*-11)			-	•	+	•
13	12(*-12)			-	•	+	•
14	13(*-13)			•	•	¥	•
15	14(*-14)			•	•	▼	•
(*):	ettings shou	ld be set as sai	me when using multiple	PLC.	End	Cancel	

1.3.3 QI60 switch setting

Set the QI60 switches in I/O assignment of PLC Parameter.

Choose [Interrupt] in Type, choose [Switch setting], choose [HEX.] in Input format, and set the interrupt processing conditions in Switch 1.

		Ch	oose	Inter	rupt.						(Cho	ose S	Switc	h settir
Ū	Qn(H) F														×
	PLC na	ame Pl	_C syster	m PLC	file PLC	RAS	Device	P	rogram	Boot fi	le SF	С	I/O ass	ignmen	t [
	-1/U A	ssignme.		- -					1 8				1		
	0	Slot PLC	PLO	Туре	•	Mode	Iname		Poi	nts 🔻	Start	<u>×Y</u> •	Swi	tch setti	ing
	1	0(×-0)		errupt	-				16point				1	. †	
		1(*-1)	Inp Hi	iut input						•	<u> </u>		Deta	ailed sett	ting
		2(*-2) 3(*-3)	0u	tput								_			
		4(*-4)) mix elli						-	1	_			
		5(*-5)		errupt	-					-		_			
		6(*-6)			•					-		•]		
					is not nece	-				omatic	ally.				
				j blank v	vill not cau	se an i	error to c	iccui	r.						
	Bas	e setting	3(")		-		- 1								
			Base m	odel nar	ne Power	model	name	Ext	ension ca	able	Slots			e mode Auto	
		1ain 🛛									_	•		Auto Detail	
		Base1			_									Decan	
		Base2 Base3			-						_	-	8 Slo	ot Defau	ult 🕴
		Base4										-	12 5	ot Defa	
	Ext.	Base5											12 01		
	(*)Se	ttings sl	nould be	set as s	ame when		Imp	ort N	1ultiple Cl	PU Par	ametei	П	Read	PLC dat	ta
	us	ing mult	iple CPU												
	Ackno	wledge (XY assig	nment	Multiple 0	CPU se	ttings	De	efault	Cheo	:k	En	з	Cance	el
								,		С	hoo	se H	IFX		
							•					<u> </u>	/		
Switch	n settin	g for l	/O and	intellig	gent fund	tiona	l modu	е							
												+			
									Input	format		EX.	<u> </u>		
								-							-
0 P	<u>Slot</u> LC	PLC	Гуре	<u> </u>	fodel nam	8	Switch	11	Switch 2	Swite	<u>h3 5</u>	witch -	4 Swit	:ch 5 ▲	4
	[*-0]	Inter	rupt	1			00	00						_	
	[*-1]						1	<u> </u>							
	[*-2]	_		-			\vdash	+			1		_		-
	(*-3) (*-4)	_		-			\vdash	+					-		
	(*-5)			-			/	+					-		
	[*-6]						/	+					1		
	[*-7]					/									
	[*-8]	_		<u> </u>		_/_		+			_	\	_		
	(*-9) D(*-10)	_						+			-	1	-		
	0(**10) 1(**11)	+		-		+		+				+	+		
	2(*-12)														
14 13	3(*-13)				/										
15 14	4(*-14)											+		-	<u>'</u>
				Γ	End		(Canc	el						
					/										
	~ .	+ h a ;			′.						-	: ا م ما	~~:~		

Set the interrupt processing conditions Setting inhibited. (leading edge/trailing edge) of CH1 to CH16.

Set the interrupt processing condition with switch 1. The relationships between bits and inputs are as indicated below.

b15							to								b0
XF	XE	XD	XC	XB	XA	X9	X8	X7	X6	X5	X4	Х3	X2	X1	X0

0: Leading edge, 1: Trailing edge

2. INPUT MODULE SPECIFICATIONS

2.1 QX10 AC Input Module

	Туре	AC Input Module	
Specifications		QX10	Appearance
Number of	input points	16 points	
Isolatio	n method	Photocoupler	
Rated input vo	Itage, frequency	100-120VAC (+10/-15%) 50/60Hz (±3Hz)	QX10
Input volta	ge distortion	Within 5% (Refer to section 1.2 (17))	0 1 2 3 4 5 6 7 8 9 A B C D E F
Rated in	put current	Approx. 8mA (100VAC, 60Hz), approx. 7mA (100VAC, 50Hz)	
Input	derating	Refer to the derating chart.	
Inrush	current	Max. 200mA within 1ms (at 132VAC)	
ON voltage	e/ON current	80VAC or higher/5mA or higher (50Hz, 60Hz)	
OFF voltage	e/OFF current	30VAC or lower/1.7mA or lower (50Hz, 60Hz)	
Input in	npedance	Approx. 12k Ω (60Hz), approx. 15k Ω (50Hz)	
Response	OFF to ON	15ms or less (100VAC 50Hz, 60Hz)	+ <u>55</u> 2
time	ON to OFF	20ms or less (100VAC 50Hz, 60Hz)	⊷ <u>⊸</u> 4 3
Dielectric wit	hstand voltage	1780VAC rms/3 cycles (altitude 2000m (6557.38ft.))	+
Insulation	resistance	10M Ω or more by insulation resistance tester	[→] [→] 5
		By noise simulator of 1500Vp-p noise voltage, 1 μ s noise width	
Noise i	mmunity	and 25 to 60Hz noise frequency	<u>9</u> 7
		First transient noise IEC61000-4-4: 1kV	
Protection	n of degree	IP1X	B 9
Common termi	nal arrangement	16 points/common (common terminal: TB17)	- C A
Number o	of I/O points	16 (I/O allocation is set as a 16-points input module)	
Operatio	n indicator	ON indication (LED)	
External of	connections	18-point terminal block (M3 $ imes$ 6 screws)	
Applicabl	e wire size	0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	
Applicable cri	imping terminal	R1.25-3 (sleeved crimping terminals cannot be used.)	100VAC 8mA60Hz
	ernal current umption	50mA (TYP. all points ON)	7mA50Hz
We	eight	0.17kg]

Derating Chart	Terminal Block Number	Signal Name
(%)	TB1	X00
	TB2	X01
90 ON 80 120VAC	TB3	X02
ratio 70	TB4	X03
60 132VAC	TB5	X04
40 40 20 30 40 50 55(°C)	TB6	X05
Ambient temperature	TB7	X06
External Connections	TB8	X07
	TB9	X08
	TB10	X09
	TB11	X0A
	TB12	X0B
	TB13	X0C
	TB14	X0D
	TB15	X0E
	TB16	X0F
100VAC	TB17	COM
	TB18	Vacant

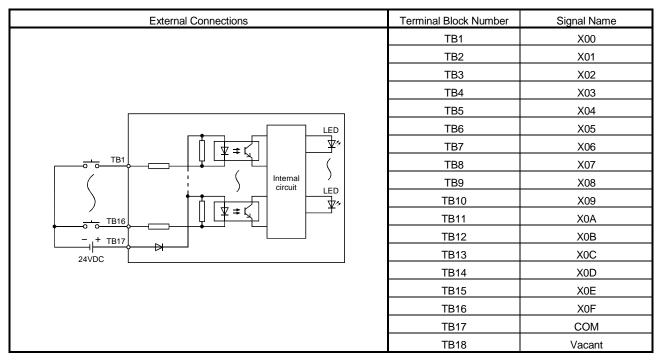
2.2 QX28 AC Input Module

	Туре	AC Input Module					
Specifications		QX28	Appearance				
Number of	f input points	8 points					
Isolatio	n method	Photocoupler					
Rated input vo	ltage, frequency	100-240VAC (+10/-15%) 50/60Hz (±3Hz)					
Input volta	ge distortion	Within 5% (Refer to section 1.2 (17))	QX28				
Rated in	put current	Approx. 17mA (200VAC, 60Hz), approx. 14mA (200VAC, 50Hz) Approx. 8mA (100VAC, 60Hz), approx. 7mA (100VAC, 50Hz)	0 1 2 3 4 5 6 7				
Input	derating	Refer to the derating chart.					
Inrush	n current	Max. 500mA within 1ms (at 264VAC)					
ON voltage	e/ON current	80VAC or higher/5mA or higher (50Hz, 60Hz)					
OFF voltage	e/OFF current	30VAC or lower/1.7mA or lower (50Hz, 60Hz)					
Input in	npedance	Approx. 12k Ω (60Hz), approx. 15k Ω (50Hz)					
Response	OFF to ON	10ms or less (100VAC 50Hz, 60Hz)					
time	ON to OFF	20ms or less (100VAC 50Hz, 60Hz)	NC 3				
Dielectric wit	hstand voltage	2830VAC rms/3 cycles (altitude 2000m (6557.38ft.))					
Insulation	n resistance	$10M\Omega$ or more by insulation resistance tester					
		By noise simulator of 1500Vp-p noise voltage, 1 μ s noise width					
Noise	immunity	and 25 to 60Hz noise frequency					
		First transient noise IEC61000-4-4: 1kV					
Protectio	n of degree	IP1X					
Common term	inal arrangement	8 points/common (common terminal: TB17)					
Number of	of I/O points	16 (I/O allocation is set as a 16-points input module)					
Operatio	on indicator	ON indication (LED)					
External of	connections	18-point terminal block (M3×6 screws)					
Applicable wire size		0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	200VAC 17mA60Hz				
Applicable crimping terminal		R1.25-3 (sleeved crimping terminals cannot be used.)	14mA50Hz				
5VDC internal current consumption		50mA (TYP. all points ON)					
W	eight	0.20kg					

Derating Chart	Terminal Block Number	Signal Name	
(%) 100% 45 °C	TB1	X00	
100 100 100 100 100 100 100 100 100 100	TB2	Vacant	
ON 80 87.5% 55 °C	TB3	X01	
ratio 70	TB4	Vacant	
50	TB5	X02	
40 <u>40</u> 0102030405055(°C)	TB6	Vacant	
Ambient temperature	TB7	X03	
External Connections	TB8	Vacant	
	TB9	X04	
	TB10	Vacant	
	TB11	X05	
	TB12	Vacant	
) (Internal) circuit)	TB13	X06	
	TB14	Vacant	
	TB15	X07	
	TB16	Vacant	
100/200VAC	TB17	СОМ	
	TB18	Vacant	

2.3 QX40 DC Input Module (Positive Common Type)

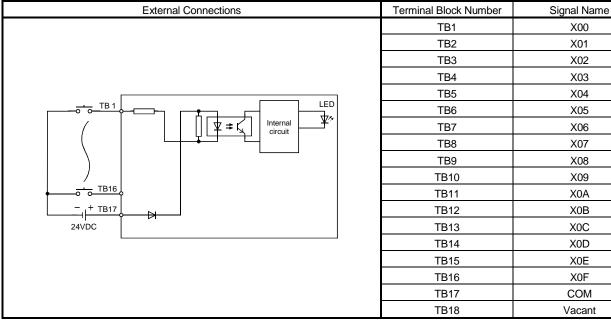
	Туре	DC Input Module (Positive Common Type)				
Specifications		QX40	Appearance			
Number of input points		16 points				
Isola	tion method	Photocoupler				
Rated input voltage		24VDC (+20/-15%, ripple ratio within 5%)	QX40			
Rated	input current	Approx. 4mA	01234567			
Inp	ut derating	No	89ABCDEF			
ON volta	age/ON current	19V or higher/3mA or higher				
OFF volta	age/OFF current	11V or lower/1.7mA or lower				
Input	impedance	Approx. 5.6k Ω				
	OFF to ON	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) $*$				
Response		Initial setting is 10ms.				
time	ON to OFF	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) $*$				
		Initial setting is 10ms.	<u>4</u> <u>5</u> 			
Dielectric	withstand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))				
Insulat	ion resistance	10M Ω or more by insulation resistance tester				
		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width				
Nois	e immunity	and 25 to 60Hz noise frequency				
		First transient noise IEC61000-4-4: 1kV	•••B 9			
	tion of degree	IP2X	A A			
Common ter	minal arrangement	16 points/common (common terminal: TB17)				
Numbe	er of I/O points	16 (I/O allocation is set as a 16-points input module)				
Operation indicator		ON indication (LED)				
External connections		18-point terminal block (M3×6 screws)	NC E			
Applicable wire size		0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	24VDC 4mA			
Applicable crimping terminal		R1.25-3 (sleeved crimping terminals cannot be used.)				
5VDC internal current consumption		50mA (TYP. all points ON)				
	Weight	0.16kg				



*: For the setting method, refer to the section 1.3.1.

2.4 QX40-S1 DC Input Module (Positive Common Type)

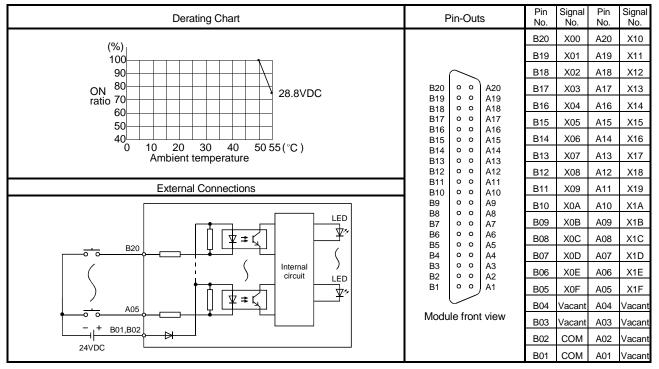
		Туре	DC Input Module (Positive Common Type)					
Specifications				Appearance				
Number of input points								
Isola	tion method				Photocoupler			
Rated	input voltage			24VDC (+20/	-15%, ripple rat	tio within 5%)		
Rated	input current				Approx. 6mA			QX40-S1
	ut derating				No			0 1 2 3 4 5 6 7 8 9 A B C D E F
	age/ON curre				nigher/4.0mA o			
	age/OFF curr	ent		-	lower/1.7mA o	r lower		
Input	impedance				Approx. 3.9k Ω			
	Set value		0.1	0.2	0.4	0.6	1	
Response	OFF to ON	Тур	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms	
time		max	0.10ms	0.20ms	0.40ms	0.60ms	1.20ms	<u></u>
	ON to OFF	Тур	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms	• • • <u>4</u> 3
Distantia		max	0.20ms	0.30ms 0VAC rms/3 cy	0.50ms	0.70ms	1.30ms	
	withstand vol							
Insulat	ion resistance	э	$10M \Omega$ or more by insulation resistance tester By noise simulator of 500Vp-p noise voltage, 1 μ s noise width					
Nois	e immunity		and 25 to 60Hz noise frequency					7
			First transient noise IEC61000-4-4: 1kV					•••• A 8
Protec	tion of degree	e	IP2X					9
	rminal arrang			16 points/comr	non (common t	erminal: TB17)		A
Number of I/O points			16 (I/O allocation is set as a 16-points Hi. input module)					
Operation indicator			ON indication (LED)					
External connections					ninal block (M3			
Applicable wire size			0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)					
Applicable crimping terminal			R1.25-3 (sleeved crimping terminals cannot be used.)					6mA
5VDC internal current								
CO	consumption			60mA (TYP. all points ON)				
	Weight				0.20kg			



* 1: CPU parameter setting. (Initial setting is 0.2ms)
 Response time can be changed on SW5D5C-GPPW or later.
 For the setting method, refer to the section 1.3.1.

2.5 QX41 DC Input Module (Positive Common Type)

	Туре	DC Input Module (Positive Common Type)			
Specifications		QX41	Appearance		
Number of input points		Number of input points 32 points			
Isola	tion method	Photocoupler			
Rated	input voltage	24VDC (+20/-15%, ripple ratio within 5%)			
Rated input current		Approx. 4mA	QX41 0 1 2 3 4 5 6 7		
Input derating		Refer to the derating chart.	89ABCDEF		
ON voltage/ON current		19V or higher/3mA or higher	0 1 2 3 4 5 6 7 8 9 A B C D E F		
OFF volta	OFF voltage/OFF current 11V or lower/1.7mA or lower				
Input	Input impedance Approx. 5.6k Ω		24VDC QX41 4mA		
	OFF to ON	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) $*_1$			
Response		Initial setting is 10ms.			
time	ON to OFF	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) $*_1$			
		Initial setting is 10ms.			
Dielectric withstand voltage		560VAC rms/3 cycles (altitude 2000m (6557.38ft.))			
Insulation resistance		10M Ω or more by insulation resistance tester			
		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width			
Nois	e immunity	and 25 to 60Hz noise frequency			
		First transient noise IEC61000-4-4: 1kV			
Protec	tion of degree	IP2X			
Common ter	rminal arrangement	32 points/common (common terminal: B01, B02)			
Numbe	er of I/O points	32 (I/O allocation is set as a 32-points input module)			
Opera	tion indicator	ON indication (LED)			
Externa	al connections	40-pin connector			
Applicable wire size		0.3mm ² (For A6CON1 or A6CON4) * 2			
External wiring connector		A6CON1, A6CON2, A6CON3, A6CON4 (optional)			
Applicable connector/terminal block		A6TBXY36, A6TBXY54, A6TBX70			
conversion module		AUIDAI30, AUIDAI34, AUIDAIU			
	current consumption	75mA (TYP. all points ON)			
	Weight	0.15kg			



 $*_1$: For the setting method, refer to the section 1.3.1.

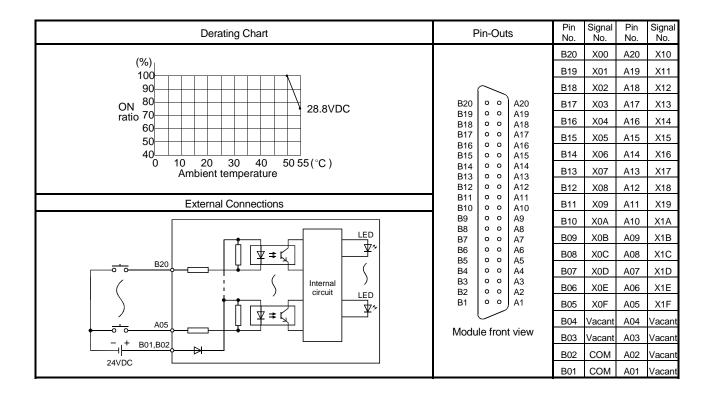
*2: When using A6CON2 or A6CON3, refer to Chapter 7.

2.6 QX41-S1 DC Input Module (Positive Common Type)

	_	Туре	DC Input Module (Positive Common Type)						
Specification	is			Appearance					
Number	r of input poin	its			32 points				
Isola	tion method				Photocoupler				
Rated	input voltage)		24VDC (+20/	-15%, ripple rat	io within 5%)			
Rated	input current	t			Approx. 4mA			_	
	ut derating				to the derating			QX41-S1	7
-	age/ON curre				higher/3.0mA o			0 1 2 3 4 5 6 8 9 A B C D E	F
	age/OFF curr	ent			r lower/1.5mA c	r lower		0 1 2 3 4 5 6 8 9 A B C D E	
Input	impedance				Approx. 5.6k Ω				(41-S1
	Set value		0.1	0.2	0.4	0.6	1	4mA	
Response	OFF to ON	Тур	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms		
time		max	0.12ms	0.20ms	0.40ms	0.60ms	1.20ms		-
- -	ON to OFF	Тур	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms		
		max	0.20ms	0.30ms	0.50ms	0.70ms	1.30ms		
	withstand vol		560VAC rms/3 cycles (altitude 2000m (6557.38ft.))						
Insulat	ion resistance	e	$10M\Omega$ or more by insulation resistance tester						
Nucle			By noise simulator of 500Vp-p noise voltage, 1 // s noise width						
INOIS	e immunity		and 25 to 60Hz noise frequency First transient noise IEC61000-4-4: 1kV						
Drotoo	tion of degree	_							
	minal arrang		2						
	er of I/O point		32 points/common (common terminal: B01, B02)						
	tion indicator		32 (I/O allocation is set as a 32-points Hi. input module) ON indication (LED)						
External connections			40-pin connector						
Applicable wire size			0.3mm ² (For A6CON1 or A6CON4) * 2						
External wiring connector			A6CON1, A6CON2, A6CON3, A6CON4 (optional)						
	Applicable connector/terminal						- /		
block conversion module			APIRX13	6, A6TBXY54,	ΑΟΙΒΧΙΟ				
5VDC i	5VDC internal current		75mA (TYP. all points ON)						
	nsumption							-	
	Weight				0.15kg			<u> </u>	

* 1: CPU parameter setting. (Initial setting is 0.2ms)
 Response time can be changed on SW5D5C-GPPW or later.
 For the setting method, refer to the section 1.3.1.

*2: When using A6CON2 or A6CON3, refer to Chapter 7.



2.7 QX42 DC Input Module (Positive Common Type)

	Туре	DC Input Module (Positive Common Type)	
Specifications		QX42	Appearance
Number	of input points	64 points	
Isolat	tion method	Photocoupler	QX42
Rated	input voltage	24VDC (+20/-15%, ripple ratio within 5%)	01234567
Rated input current		Approx. 4mA	8 9 A B C D E F 0 1 2 3 4 5 6 7
Inpu	ut derating	Refer to the derating chart.	89ABCDEF
	age/ON current	19V or higher/3mA or higher	QX42
OFF volta	age/OFF current	11V or lower/1.7mA or lower	24VDC DISPLAY 4mA F D L
Input	impedance	Approx. 5.6k Ω	4mA FOL
Response	OFF to ON	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) *1 Initial setting is 10ms.	0 0
time	ON to OFF	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) *1 Initial setting is 10ms.	
Dielectric withstand voltage		560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulation resistance		10M Ω or more by insulation resistance tester	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1 µ s noise width and 25 to 60Hz noise frequency First transient noise IEC61000-4-4: 1kV	
Protect	tion of degree	IP2X	
	minal arrangement	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	
	er of I/O points	64 (I/O allocation is set as a 32-points input module)	
	tion indicator	ON indication (LED), 32 point switch-over using switch	
Externa	al connections	40-pin connector	
Applicable wire size		0.3mm ² (For A6CON1 or A6CON4) * 2	
External wiring connector		A6CON1, A6CON2, A6CON3, A6CON4 (optional)	
Applicable connector/terminal block conversion module		A6TBXY36, A6TBXY54, A6TBX70	0 0
5VDC internal	current consumption	90mA (TYP. all points ON)	
	Weight	0.18kg	

*1: For the setting method, refer to the section 1.3.1.*2: When using A6CON2 or A6CON3, refer to Chapter 7.

Derating Chart	Pin-Outs		Pin No. * 4	Signal No.	Pin No. *4	Signal No.	Pin No. *4	Signal No.	Pin No. *4	Signal No.
(%)			1B20	X00	1A20	X10	2B20	X20	2A20	X30
			1B19	X01	1A19	X11	2B19	X21	2A19	X31
90			1B18	X02	1A18	X12	2B18	X22	2A18	X32
ON 70 24VDC	\frown		1B17	X03	1A17	X13	2B17	X23	2A17	X33
60 50 24VDC 26.4VDC	B20 0 0 B19 0 0	- 720	1B16	X04	1A16	X14	2B16	X24	2A16	X34
40 28.8VDC	B18 0 0 B17 0 0	7110	1B15	X05	1A15	X15	2B15	X25	2A15	X35
20	B16 0 0 B15 0 0	7110	1B14	X06	1A14	X16	2B14	X26	2A14	X36
0 10 20 30 40 50 55 (°C) Ambient temperature	B14 0 0 B13 0 0	7314	1B13	X07	1A13	X17	2B13	X27	2A13	X37
	B12 0 0 B11 0 0	···	1B12	X08	1A12	X18	2B12	X28	2A12	X38
External Connections	B10 0 0 B9 0 0	A10	1B11	X09	1A11	X19	2B11	X29	2A11	X39
	B8 0 0 B7 0 0	P A8	1B10	X0A	1A10	X1A	2B10	X2A	2A10	X3A
	B6 0 0 B5 0 0	P A6	1B09	X0B	1A09	X1B	2B09	X2B	2A09	X3B
	B3 0 0 B3 0 0	• A4	1B08	X0C	1A08	X1C	2B08	X2C	2A08	X3C
$\begin{pmatrix} & \text{Internal} \\ & \text{circuit} \end{pmatrix} = \begin{pmatrix} \Psi^{*} \\ \Gamma^{*} \\ \Psi^{*} \\ \Psi^{*} \end{pmatrix}$	B2 o d	P A2	1B07	X0D	1A07	X1D	2B07	X2D	2A07	X3D
	B1 0 0	A1	1B06	X0E	1A06	X1E	2B06	X2E	2A06	X3E
	Module		1B05	X0F	1A05	X1F	2B05	X2F	2A05	X3F
Left side (first half) e SW Indication	viev	N	1B04	Vacant	1A04	Vacant	2B04	Vacant	2A04	Vacant
Right side • selector circuit			1B03	Vacant	1A03	Vacant	2B03	Vacant	2A03	Vacant
24VDC			1B02	COM1	1A02	Vacant	2B02	COM2	2A02	Vacant
The above diagram shows the first half of 32 points (F).			1B01	COM1	1A01	Vacant	2B01	COM2	2A01	Vacant
The latter half of 32 points (L) are similar.										

* 3: Selection of left-hand (F) side provides the first half (X00 to X1F) LED indications, and selection of right-hand (L) side provides the latter half (X20 to X3F) LED indications.

*4: Pin number of 1 _____ indicates that of the left-hand side connector, and pin number of 2 _____ indicates that of the right-hand side connector.

2.8 QX42-S1 DC Input Module (Positive Common Type)

	_	Туре	DC Input Module (Positive Common Type)					
Specifications				Appearance				
Number of input points								
Isolation method					Photocoupler			
Rated input voltage				24VDC (+20/	-15%, ripple rat	io within 5%)		
Rated	input current				Approx. 4mA			
Inpi	ut derating			Refer	to the derating	chart.		QX42-S1 0 1 2 3 4 5 6 7
ON volta	age/ON curre	nt		19V or	higher/3.0mA o	r higher		8 9 A B C D E F 0 1 2 3 4 5 6 7
OFF volta	age/OFF curr	ent		9.5V or	r lower/1.5mA c	r lower		8 9 A B C D E F
Input	impedance				Approx. 5.6k Ω			QX42-S1 DISPLAY
	Set value	*1	0.1	0.2	0.4	0.6	1	24VDC FOL
Response	OFF to ON	Тур	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms	
time		max	0.12ms	0.20ms	0.40ms	0.60ms	1.20ms	\circ
	ON to OFF	Тур	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms	
		max	0.20ms	0.30ms	0.50ms	0.70ms	1.30ms	
	withstand vol	0	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))					
Insulati	ion resistance	e	10M Ω or more by insulation resistance tester					
			By noise simulator of 500Vp-p noise voltage, 1 μ s noise width					
Nois	e immunity	-	and 25 to 60Hz noise frequency					
			First transient noise IEC61000-4-4: 1kV IP2X					
	tion of degree		00 i i					
	minal arrange		32 points					
	er of I/O points				set as a 64-poir	•		
	tion indicator		ON indication (LED), 32 point switch-over using switch					
External connections			40-pin connector 0.3mm ² (For A6CON1 or A6CON4) * 2					
	Applicable wire size						al)	0 0
External wiring connector Applicable connector/terminal block conversion module			A6CON1, A6CON2, A6CON3, A6CON4 (optional) A6TBXY36, A6TBXY54, A6TBX70					
5VDC internal current consumption			90mA (TYP. all points ON)					
	Weight				0.18kg			

*1: CPU parameter setting. (Initial setting is 0.2ms) Response time can be changed on SW5D5C-GPPW or later. For the setting method, refer to the section 1.3.1.

*2: When using A6CON2 or A6CON3, refer to Chapter 7.

Derating Chart	Pin-Outs	Pin No. *4	Signal No.	Pin No. *4	Signal No.	Pin No. *4	Signal No.	Pin No. *4	Signal No.
(%) 100 90 0 0 0 70 70 60 24VDC	B20 • • A20 B19 • • A19	1B20 1B19 1B18 1B17 1B16	X00 X01 X02 X03 X04	1A20 1A19 1A18 1A17 1A16	X10 X11 X12 X13 X14	2B20 2B19 2B18 2B17 2B16	X20 X21 X22 X23 X24	2A20 2A19 2A18 2A17 2A16	X30 X31 X32 X33 X34
50 40 30 20 0 10 20 30 40 50 55 (°C) Ambient temperature	B18 0 0 A18 B17 0 A17 1E B16 0 0 A16 1E B15 0 0 A15 1E B14 0 0 A14 1E B13 0 0 A13 1E	1B15 1B14 1B13 1B12	X05 X06 X07 X08	1A15 1A14 1A13 1A12	X15 X16 X17 X18	2B15 2B14 2B13 2B12	X25 X26 X27 X28	2A15 2A14 2A13 2A12	X35 X36 X37 X38
External Connections	B11 0 0 A11 B10 0 0 A10 B9 0 0 A9 B8 0 0 A7 B6 0 0 A6 B5 0 0 A3 B2 0 0 A1 B1 0 0 A1 Module front view View	1B11 1B10 1B09 1B08 1B07 1B06 1B05 1B04 1B03 1B02 1B01	X09 X0A X0B X0C X0D X0E X0F Vacant Vacant COM1 COM1	1A11 1A10 1A09 1A08 1A07 1A06 1A05 1A04 1A03 1A02 1A01	X19 X1A X1B X1C X1D X1E X1F Vacant Vacant Vacant	2B11 2B10 2B09 2B08 2B07 2B06 2B05 2B04 2B03 2B02 2B01	X29 X2A X2B X2C X2D X2E X2F Vacant Vacant COM2 COM2	2A02	X39 X3A X3B X3C X3D X3E X3F Vacant Vacant Vacant
The above diagram shows the first half of 32 points (F). The latter half of 32 points (L) are similar.	L	1801	COM1	1AU1	vacant	2B01	COM2	2AU1	vacan

*3: Selection of left-hand (F) side provides the first half (X00 to X1F) LED indications, and selection of right-hand (L) side provides the latter half (X20 to X3F) LED indications.

*4: Pin number of 1 indicates that of the left-hand side connector, and pin number of 2 indicates that of the right-hand side connector.

2.9 QX50 DC (Positive Common/Negative Common Shared Type)/ AC Input Module

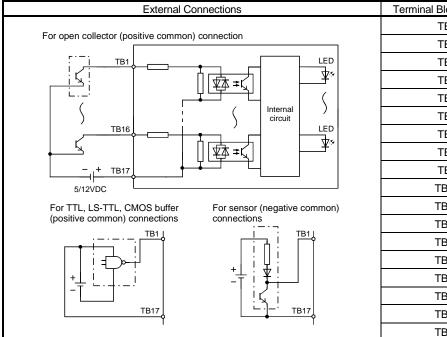
	Туре	DC (positive common	/negative common shared type)/ AC ir	nput module
		QX	50	Appearance
Specifications		DC Input AC Input		Appearance
Number of	f input points	16 pc		
Isolatio	n method	Photoc	oupler	OY50
Rated in	put voltage	48VDC (+20/-15%, ripple ratio within 5%)	48VAC (+10/-15%) 50/60Hz (±3Hz) (ripple ratio within 5%)	QX50 01234567 89ABCDEF
Rated in	put current	Approx	. 4mA	
Input	derating	Refer to the d	erating chart.	
ON voltage	e/ON current	28V or higher/2	.5mA or higher	
OFF voltage	e/OFF current	10V or lower/1	.0mA or lower	
Input in	npedance	Approx.	11.2k Ω	
Response	OFF to ON	5ms or less	15ms or less	1
time * 1	ON to OFF	20ms or less	20ms or less	$\frac{1}{100}$ $\frac{1}$
Dielectric wit	thstand voltage	1060VAC rms/3 cycles (al	titude 2000m (6557.38ft.))	
Insulatior	n resistance	10M Ω or more by insu	$\frac{1005}{006}$ 1 4	
		By noise simulator of 500Vp-p r		
Noise	immunity	and 25 to 60Hz		
		First transient noise		
	n of degree	IP2		
Common term	inal arrangement	16 points/common (co		
Number of	of I/O points	16 (I/O allocation is set as	,	
	on indicator	ON indicat		
	connections	18-point terminal blo		
	le wire size	0.3 to 0.75mm ² core (2.8		
	imping terminal	R1.25-3 (sleeved crimping	terminals cannot be used.)	
	ernal current umption	50mA (TYP. a	all points ON)	AC/DC 48V 4mA
W	eight	0.13	3kg	

Derating Chart	Terminal Block Number	Signal Name
(%)	TB1	X00
100 48VDC/AC	TB2	X01
90 80	TB3	X02
ON 70 ratio 60	TB4	X03
60 50 40 0 10 20 30 40 50 55 (°C)	TB5	X04
	TB6	X05
Ambient temperature	TB7	X06
External Connections	TB8	X07
	TB9	X08
	TB10	X09
	TB11	X0A
	TB12	X0B
	TB13	X0C
	TB14	X0D
	TB15	X0E
	TB16	X0F
+ $ 48V -$	TB17	СОМ
	TB18	Vacant

 \ast 1: Response time cannot be changed. Parameter setting of the CPU module will be invalid.

2.10 QX70 DC Input Module (Positive Common/Negative Common Shared Type)

	Туре	DC Input Module (F	ositive Common/Negative Common Sh	ared Type)
Specifications		Q	Appearance	
Number o	f input points	16	points	
Insulatio	on method	Photo	coupler	
Rated in	nut voltage	5VDC	12VDC	
Rated input voltage		(+20/-10%, ripple ratio within 5%)	(+20/-15%, ripple ratio within 5%)	QX70
Rated in	put current	Approx. 1.2mA	Approx. 3.3mA	0 1 2 3 4 5 6 7 8 9 A B C D E F
Input	derating		one	SGABCDEF
ON voltage	e/ON current	3.5V or highe	r/1mA or higher	
OFF voltag	e/OFF current	1V or lower/0	0.1mA or lower	
Input r	esistance		κ. 3.3k Ω	
	OFF to ON		less (CPU parameter setting) *	
Response			ing is 10ms	
time	ON to OFF		less (CPU parameter setting) *	
			ing is 10ms	
	aximum voltage	560VAC rms/3 cyc		
Insulation	n resistance	10M Ω or more by ins		
		By noise simulator of		
Noise	immunity	1 μ s noise width and 25	8	
		First transient noise	B 9	
	n of degree	IF	A	
	inal arrangement		ommon terminal: TB17)	
	of I/O points		s a 16-points input module)	C C
-	on indicator		ation (LED)	
	connections		block (M3×6 screw)	NC E
Applicable wire size Core cable: 0.3 to 0.75mm ² (Outside diameter: 2.8mm or smaller)			1.2mA 3.3mA	
	nnector terminal	R1.25-3 (Terminals wit	h sleeve cannot be used)	
5VDC internal current		55mA (TYP,		
	umption	· · ·	. ,	
W	eight	0.2	14kg	

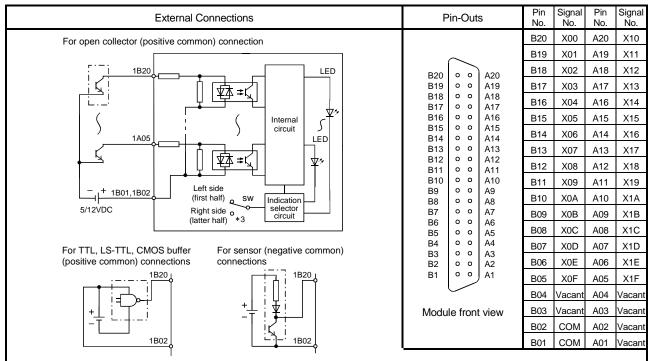


Terminal Block Number	Signal Name
TB1	X00
TB2	X01
TB3	X02
TB4	X03
TB5	X04
TB6	X05
TB7	X06
TB8	X07
TB9	X08
TB10	X09
TB11	X0A
TB12	X0B
TB13	X0C
TB14	X0D
TB15	X0E
TB16	X0F
TB17	COM
TB18	Vacant

*: For the setting method, refer to the section 1.3.1.

2.11 QX71 DC Input Module (Positive Common/Negative Common Shared Type)

	Туре	DC Input Module (F	Positive Common/Negative Common Sh	ared Type)	
Specifications QX71			Appearance		
Number o	f input points	32	32 points		
Insulati	on method	Photo	pcoupler		
Rated in	Rated input voltage5VDC12VDC(+20/-10%, ripple ratio within 5%)(+20/-15%, ripple ratio within 5%)				
Rated in	nput current	Approx. 1.2mA	Approx. 3.3mA	QX71 0 1 2 3 4 5 6 7 8 9 A B C D E F	
Input	derating	N	lone	01234567	
ON voltag	e/ON current	3.5V or highe	r/1mA or higher	8 9 A B C D E F	
OFF voltag	e/OFF current	1V or lower/	0.1mA or lower	5/12VDC QX71 1.2 / 3.3mA	
Input r	esistance		x. 3.3k Ω		
Response	OFF to ON	Initial set	less (CPU parameter setting) * 1 ting is 10ms		
time	ON to OFF		less (CPU parameter setting) * 1 ting is 10ms		
Dielectric ma	aximum voltage	560VAC rms/3 cyc	cles (altitude 2000m)		
Insulatio	n resistance	10M Ω or more by ins			
Noise	immunity	By noise simulator of 1μ s noise width and 29			
	-	First transient noise			
Protectio	on of degree	IF			
Common term	inal arrangement	32 points/common (cor	nmon terminal: B01, B02)		
Number	of I/O points	32 (I/O allocation is set a	s a 32-points input module)		
Operatio	on indicator	ON indic	ation (LED)		
External	connections		connector		
Applicat	ole wire size	0.3mm ² (For A6C0	ON1 or A6CON4) * 2		
External wi	External wiring connector A6CON1, A6CON2, A6CON3, A6CON4 (optional)				
5VDC internal current consumption		70mA (TYP,			
W	/eight	0.1	12kg		



 $*_1$: For the setting method, refer to the section 1.3.1.

*2: When using A6CON2 or A6CON3, refer to Chapter 7.

2.12 QX72 DC Input Module (Positive Common/Negative Common Shared Type)

	Туре	DC Input Module (Po	ositive Common/Negative Common S	Shared Type)
Specifications QX72			Appearance	
Number	of input points	64 p		
Insula	ation method	Photoc		
Rated input voltage		5VDC (+20/-10%, ripple ratio within 5%)	QX72 0 1 2 3 4 5 6 7	
Rated	input current	Approx. 1.2mA	(+20/-15%, ripple ratio within 5%) Approx. 3.3mA	8 9 A B C D E F 0 1 2 3 4 5 6 7
Inpu	ut derating	Nc	ne	89ABCDEF
ON volta	age/ON current	3.5V or higher,	/3mA or higher	5/12VDC DISPLAY
OFF volta	age/OFF current	1V or lower/0	.1mA or lower	1.2/3.3mA F L
Input	t resistance	Approx	. 3.3k Ω	
Response	OFF to ON	1ms/5ms/10ms/20ms/70ms or l Initial setti	ess (CPU parameter setting) * 1 ng is 10ms	
time	ON to OFF	1ms/5ms/10ms/20ms/70ms or lonitial setting		
Dielectric r	naximum voltage	560VAC rms/3 cycl		
Insulati	ion resistance	10M Ω or more by insu		
Nois	e immunity		500Vp-p noise voltage, to 60Hz noise frequency	
		First transient noise I		
Protect	tion of degree	IP	2X	
Common ter	minal arrangement	32 points/common (common ter	minal: 1B01, 1B02, 2B01, 2B02)	
Numbe	er of I/O points	64 (I/O allocation is set as	a 64-points input module)	
Opera	tion indicator	ON indication (LED), 32-pc	bint switchover using switch	
External connections			onnector	
Applicable wire size 0.3mm ² (For A6CON1 or A6CON4) * 4				
External wiring connector		A6CON1, A6CON2, A6C		
5VDC internal	current consumption	85mA (TYP,		
	Weight	0.1	3kg	

External Connections	Pin-Outs	Pin No. *2	Signal No.	Pin No. *2	Signal No.	Pin No. *2	Signal No.	Pin No. *2	Signal No.
For open collector (positive common) connection		1B20	X00	1A20	X10	2B20	X20	2A20	X30
		1B19	X01	1A19	X11	2B19	X21	2A19	X31
	B20 0 0 A20	1B18	X02	1A18	X12	2B18	X22	2A18	X32
	B20	1B17	X03	1A17	X13	2B17	X23	2A17	X33
	B18	1B16	X04	1A16	X14	2B16	X24	2A16	X34
) 1A05	B16 º º A16	1B15	X05	1A15	X15	2B15	X25	2A15	X35
	B14 0 0 A14	1B14	X06	1A14	X16	2B14	X26	2A14	X36
	B13 o o A13 B12 o o A12 B11 o o A11 B10 o o A10 B9 o o A9	1B13	X07	1A13	X17	2B13	X27	2A13	X37
		1B12	X08	1A12	X18	2B12	X28	2A12	X38
5/12/DC Elet Side SW Indication		1B11	X09	1A11	X19	2B11	X29	2A11	X39
5/12VDC Right side selector (latter half) *3	B8	1B10	X0A	1A10	X1A	2B10	X2A	2A10	ХЗА
For TTL, LS-TTL, CMOS buffer For sensor (negative common)	B6	1B09	X0B	1A09	X1B	2B09	X2B	2A09	ХЗВ
(positive common) connections connections	B4 0 0 A4	1B08	X0C	1A08	X1C	2B08	X2C	2A08	X3C
	B3	1B07	X0D	1A07	X1D	2B07	X2D	2A07	X3D
	B1 0 0 A1	1B06	X0E	1A06	X1E	2B06	X2E	2A06	X3E
		1B05	X0F	1A05	X1F	2B05	X2F	2A05	X3F
	Module	1B04	Vacant	1A04	Vacant	2B04	Vacant	2A04	Vacant
	front view	1B03	Vacant	1A03	Vacant	2B03	Vacant	2A03	Vacant
The above diagram shows the first half of 32 points (F).		1B02	COM1	1A02	Vacant	2B02	COM2	2A02	Vacant
The latter half of 32 points (L) are similar.		1B01	COM1	1A01	Vacant	2B01	COM2	2A01	Vacant

*1: For the setting method, refer to the section 1.3.1.

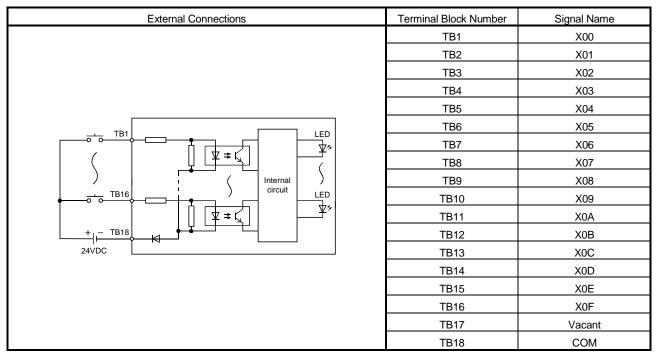
*2: Pin number of 1 indicates that of the left-hand side connector, and pin number of 2 indicates that of the right-hand side connector.

* 3: Selection of left-hand (F) side provides the first half (X00 to X1F) LED indications, and selection of right-hand (L) side provides the latter half (X20 to X3F) LED indications.

 \ast 4: When using A6CON2 or A6CON3, refer to Chapter 7.

2.13 QX80 DC Input Module (Negative Common Type)

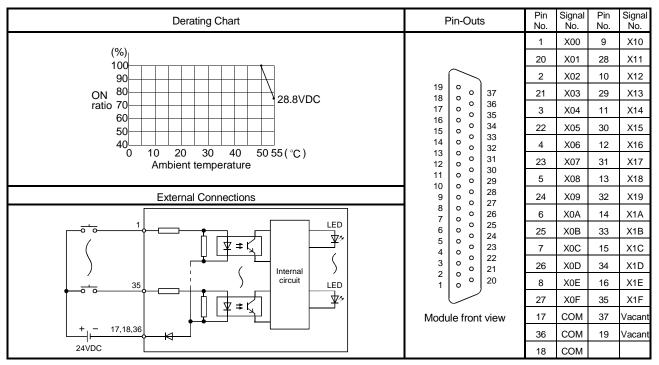
	Туре	DC Input Module (Negative Common Type)	1
Specifications		QX80	Appearance
Number	of input points	16 points	
Isolat	tion method	Photocoupler	
Rated	input voltage	24VDC (+20/-15%, ripple ratio within 5%)	QX80
Rated input current Input derating		Approx. 4mA	01234567
		No	8 9 A B C D E F
ON volta	age/ON current	19V or higher/3mA or higher	
OFF volta	age/OFF current	11V or lower/1.7mA or lower	
Input	impedance	Approx. 5.6k Ω	
Response	OFF to ON	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) * Initial setting is 10ms.	
time	ON to OFF	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) * Initial setting is 10ms.	$\begin{array}{c c} & & & & \\ \hline \\ \hline$
Dielectric v	withstand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulati	on resistance	10M Ω or more by insulation resistance tester	
Nois	e immunity	By noise simulator of 500Vp-p noise voltage, 1 μ s noise width and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
Protect	tion of degree	IP2X	
Common ter	minal arrangement	16 points/common (common terminal: TB18)	
Numbe	er of I/O points	16 (I/O allocation is set as a 16-points input module)	
Opera	tion indicator	ON indication (LED)	NC D
Externa	al connections	18-point terminal block (M3×6 screws)	
Applicable wire size		0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	24VDC 4mA
Applicable crimping terminal		R1.25-3 (sleeved crimping terminals cannot be used.)	
5VDC internal	current consumption	50mA (TYP. all points ON)	
	Weight	0.16kg	



*: For the setting method, refer to the section 1.3.1.

2.14 QX81 DC Input Module (Negative Common Type)

	Туре	DC Input Module (Negative Common Type)	
Specifications		QX81	Appearance
Number	of input points	32 points	
Isolation method Rated input voltage Rated input current Input derating		Photocoupler	
		24VDC (+20/-15%, ripple ratio within 5%)	[]
		Approx. 4mA	QX81 01234567
		Refer to the derating chart.	8 9 A B C D E F 0 1 2 3 4 5 6 7
ON volta	age/ON current	19V or higher/3mA or higher	8 9 A B C D E F
OFF volta	age/OFF current	11V or lower/1.7mA or lower	QX81
Input	impedance	Approx. 5.6k Ω	24VDC
Response	OFF to ON	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) *1 Initial setting is 10ms.	4mA
time	ON to OFF	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) *1 Initial setting is 10ms.	
Dielectric	withstand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	0 0 0
Insulation resistance		10M Ω or more by insulation resistance tester	0 0
		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width	0 0 0
Nois	e immunity	and 25 to 60Hz noise frequency	0 0 0
		First transient noise IEC61000-4-4: 1kV	0 0
Protection of degree		IP2X	0 0 0
Common ter	minal arrangement	32 points/common (common terminal: 17, 18, 36)	0 0 0
Numbe	er of I/O points	32 (I/O allocation is set as a 32-points input module)	0 0 0
Opera	tion indicator	ON indication (LED)	0 0 0
Externa	al connections	37-pin D-sub connector	0 0 0
Applica	able wire size	0.3mm ² (For A6CON1E) * 2	
External	wiring connector	A6CON1E, A6CON2E, A6CON3E (optional)	
	nector/terminal block rsion module	A6TBX36-E, A6TBX54-E, A6TBX70-E	
5VDC internal	current consumption	75mA (TYP. all points ON)	
	Weight	0.16kg	



 $*_1$: For the setting method, refer to the section 1.3.1.

*2: When using A6CON2E or A6CON3E, refer to Chapter 7.

2.15 QX82 DC Input Module (Negative Common Type)

	Туре	DC Input Module (Negative Common Type)	· · · · · · · · · · · · · · · · · · ·
Specifications		QX82	Appearance
Number of input points		64 points	
Isolation method		Photocoupler	QX82
Rated	input voltage	24VDC (+20/-15%, ripple ratio within 5%)	01234567
Rated	input current	Approx. 4mA	8 9 A B C D E F 0 1 2 3 4 5 6 7
Inpu	ut derating	Refer to the derating chart.	89ABCDEF
ON volta	age/ON current	19V or higher/3mA or higher	QX82
OFF volta	age/OFF current	11V or lower/1.7mA or lower	24VDC DISPLAY 4mA FOL
Input	impedance	Approx. 5.6k Ω	
Response	OFF to ON	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) *1 Initial setting is 10ms.	0 0
time	ON to OFF	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) *1 Initial setting is 10ms.	
Dielectric v	withstand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulation resistance		10M Ω or more by insulation resistance tester	
Nois	e immunity	By noise simulator of 500Vp-p noise voltage, 1 μ s noise width and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
Protect	tion of degree	IP2X	
Common ter	minal arrangement	32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)	
Numbe	er of I/O points	64 (I/O allocation is set as a 64-points input module)	
Opera	tion indicator	ON indication (LED), 32 point switch-over using switch	
Externa	al connections	40-pin connector	
Applica	able wire size	0.3mm ² (For A6CON1 or A6CON4) * 2	
	wiring connector	A6CON1, A6CON2, A6CON3, A6CON4 (optional)	
Applicable connector/terminal block conversion module			$\bigcirc \bigcirc$
5VDC internal	current consumption	90mA (TYP. all points ON)	
	Weight	0.18kg	

 \ast 1: For the setting method, refer to the section 1.3.1. \ast 2: When using A6CON2 or A6CON3, refer to Chapter 7.

Derating Chart	Pin-Outs	Pin No. *2	Signal No.	Pin No. *2	Signal No.	Pin No. *2	Signal No.	Pin No. *2	Signal No.
(%)		1B20	X00	1A20	X10	2B20	X20	2A20	X30
		1B19	X01	1A19	X11	2B19	X21	2A19	X31
80		1B18	X02	1A18	X12	2B18	X22	2A18	X32
ON 70 ratio 60	B20 0 0 A20	1B17	X03	1A17	X13	2B17	X23	2A17	X33
60 50 50 50 50 50 50 50 50 50 50 50 50 50	B19 • • A19	1B16	X04	1A16	X14	2B16	X24	2A16	X34
40 28.8VDC	B18	1B15	X05	1A15	X15	2B15	X25	2A15	X35
	B16	1B14	X06	1A14	X16	2B14	X26	2A14	X36
0 10 20 30 40 5055(°C)	B13 0 0 A13	1B13	X07	1A13	X17	2B13	X27	2A13	X37
Ambient temperature		1B12	X08	1A12	X18	2B12	X28	2A12	X38
External Connections		1B11	X09	1A11	X19	2B11	X29	2A11	X39
		1B10	X0A	1A10	X1A	2B10	X2A	2A10	ХЗА
	B7	1B09	X0B	1A09	X1B	2B09	X2B	2A09	X3B
	B5	1B08	X0C	1A08	X1C	2B08	X2C	2A08	X3C
	B3 0 0 A3 B2 0 0 A2	1B07	X0D	1A07	X1D	2B07	X2D	2A07	X3D
	B1 0 0 A1	1B06	X0E	1A06	X1E	2B06	X2E	2A06	X3E
	Module front	1B05	X0F	1A05	X1F	2B05	X2F	2A05	X3F
24VDC	view	1B04	Vacant	1A04	Vacant	2B04	Vacant	2A04	Vacant
(first half) SW Indication		1B03	Vacant	1A03	Vacant	2B03	Vacant	2A03	Vacant
Right side o Selector (latter half) *3		1B02	COM1	1A02	Vacant	2B02	COM2	2A02	Vacant
The above diagram shows the first half of 32 points (F).		1B01	COM1	1A01	Vacant	2B01	COM2	2A01	Vacant
The latter half of 32 points (L) are similar.		-						•	

*3: Selection of left-hand (F) side provides the first half (X00 to X1F) LED indications, and selection of right-hand (L) side provides the latter half (X20 to X3F) LED indications.

*4: Pin number of 1 indicates that of the left-hand side connector, and pin number of 2 indicates that of the right-hand side connector.

2.16 QX82-S1 DC Input Module (Negative Common Type)

	/	Туре			DC Input Modu	lle (Negative Co	ommon Type)	
Specification	s		QX82-S1				Appearance	
Number	of input poin	its			64 points			
Isolat	tion method				Photocoupler			
Rated	input voltage)		24VDC (+20/	-15%, ripple rat	tio within 5%)		
Rated	input current				Approx. 4mA			
Inpu	ut derating			Refer	to the derating	chart.		QX82-S1 0 1 2 3 4 5 6 7
ON volta	age/ON curre	ent		19V or	higher/3.0mA o	r higher		8 9 A B C D E F 0 1 2 3 4 5 6 7
OFF volta	age/OFF curr	ent		9.5V or	r lower/1.5mA c	or lower		8 9 A B C D E F
Input	impedance				Approx. 5.6k Ω			QX82-S1 DISPLAY
	Set value	e *1	0.1	0.2	0.4	0.6	1	24VDC FOL
Response	OFF to ON	Тур	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms	
time		max	0.12ms	0.20ms	0.40ms	0.60ms	1.20ms	
une	ON to OFF	Тур	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms	
		max	0.20ms	0.30ms	0.50ms	0.70ms	1.30ms	
Dielectric v	withstand vol	tage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))					
Insulati	ion resistance	e	10M Ω or more by insulation resistance tester					
			By noise simulator of 500Vp-p noise voltage, 1 μ s noise width					
Nois	e immunity		and 25 to 60Hz noise frequency					
			First transient noise IEC61000-4-4: 1kV					
	tion of degree		IP2X					
	minal arrang		32 points/common (common terminal: 1B01, 1B02, 2B01, 2B02)					
	er of I/O point		· ·		set as a 64-poir		<i>,</i>	
	tion indicator		ON i), 32 point swite		witch	
External connections					10-pin connecto			
Applicable wire size				r A6CON1 or A				
External wiring connector Applicable connector/terminal		At	SCON1, A6CON	12, A6CON3, A	6CON4 (option	al)		
block conversion module								
5VDC internal current								
cor	nsumption			90mA	(TYP. all point	s ON)		
	Weight				0.18kg			

* 1: CPU parameter setting. (Initial setting is 0.2ms) Response time can be changed on SW5D5C-GPPW or later. For the setting method, refer to the section 1.3.1.
* 2: When using A6CON2 or A6CON3, refer to Chapter 7.

Derating Chart	Pin-Outs	Pin No. *4	Signal No.	Pin No. *4	Signal No.	Pin No. *4	Signal No.	Pin No. *4	Signal No.
(%)		1B20	X00	1A20	X10	2B20	X20	2A20	X30
		1B19	X01	1A19	X11	2B19	X21	2A19	X31
90		1B18	X02	1A18	X12	2B18	X22	2A18	X32
ON 70 70		1B17	X03	1A17	X13	2B17	X23	2A17	X33
	B20	1B16	X04	1A16	X14	2B16	X24	2A16	X34
50 40 26.4VDC 28.8VDC	B18 • • A18 B17 • • A17	1B15	X05	1A15	X15	2B15	X25	2A15	X35
30	B16 0 0 A16 B15 0 0 A15	1B14	X06	1A14	X16	2B14	X26	2A14	X36
20 10 20 30 40 50 55 (°C)	B14 0 0 A14 B13 0 0 A13	1B13	X07	1A13	X17	2B13	X27	2A13	X37
Ambient temperature	B12 0 0 A12	1B12	X08	1A12	X18	2B12	X28	2A12	X38
External Connections	B11	1B11	X09	1A11	X19	2B11	X29	2A11	X39
	B9 0 0 A9 B8 0 0 A8	1B10	X0A	1A10	X1A	2B10	X2A	2A10	ХЗА
	B7	1B09	X0B	1A09	X1B	2B09	X2B	2A09	ХЗВ
(¥≠⊊	B5 0 0 A5 B4 0 0 A4	1B08	X0C	1A08	X1C	2B08	X2C	2A08	X3C
	B3 0 0 A3	1B07	X0D	1A07	X1D	2B07	X2D	2A07	X3D
	B2	1B06	X0E	1A06	X1E	2B06	X2E	2A06	X3E
		1B05	X0F	1A05	X1F	2B05	X2F	2A05	X3F
24/DC	Module front view	1B04	Vacant	1A04	Vacant	2B04	Vacant	2A04	Vacant
(first half) SW Indication	VIEW	1B03	Vacant	1A03	Vacant	2B03	Vacant		Vacant
Right side o circuit (latter half) *3		1B02	COM1		Vacant		COM2	2A02	Vacant
The choice diagram above the first half of 22 points (E)		1B01	COM1	1A01			COM2	2A01	Vacant
The above diagram shows the first half of 32 points (F). The latter half of 32 points (L) are similar.	۹								

*3: Selection of left-hand (F) side provides the first half (X00 to X1F) LED indications, and selection of right-hand (L) side provides the latter half (X20 to X3F) LED indications.
*4: Pin number of 1 _____ indicates that of the left-hand side connector, and pin number of 2 _____ indicates that of the right-hand

side connector.

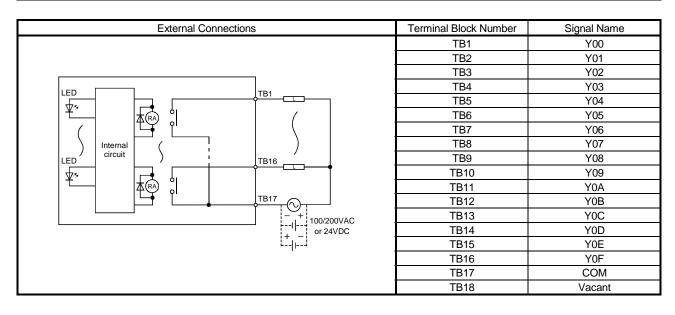
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3. OUTPUT MODULE SPECIFICATIONS

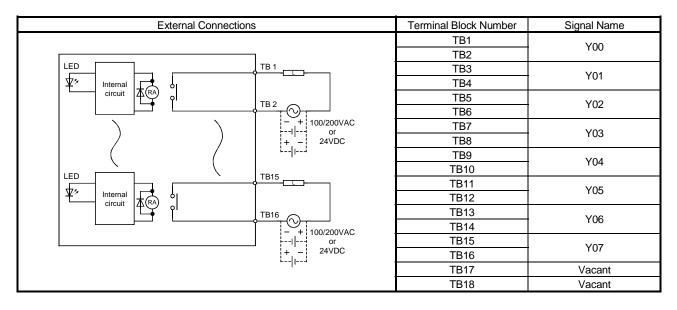
3.1 QY10 Contact Output Module

	Туре	Contact Output Module	
Specifications		QY10	Appearance
Number of c	output points	16 points	
Isolation method		Relay	
	hing voltage, rent	24VDC 2A (resistive load) /point, 8A/common 240VAC 2A (cos $\phi = 1$)	
Minimum sv	vitching load	5VDC 1mA	
Maximum sv		264VAC 125VDC	
Response	OFF to ON	10ms or less	QY10
time	ON to OFF	12ms or less	01234567
	Mechanical	20 million times or more	89ABCDEF
		Rated switching voltage/current load More than 100 thousand times or more	
Life	Electrical	200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100 thousand times or more 200VAC 0.4A, 240VAC 0.3A (COS ϕ =0.7) 300 thousand times or more	
	Electrical	200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100 thousand times or more	
		200VAC 0.3A, 240VAC 0.15A (COS ϕ =0.35) 300 thousand times or more	
		24VDC 1A, 100VDC 0.1A (L/R=7ms) 100 thousand times or more 24VDC 0.3A, 100VDC 0.03A (L/R=7ms) 300 thousand times or more	\square^{3}
Maximum frequ	switching lency	3600 times/hour	
Surge su	ippressor	No	
	ise	No	
Dielectric with	nstand voltage	2830VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulation	resistance	10M Ω or more by insulation resistance tester	
Noise ir	nmunity	By noise simulator of 1500Vp-p noise voltage, 1 μ s noise width and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
	of degree	IP1X	
	n terminal Jement	16 points/common (common terminal: TB17)	
Number of	f I/O points	16 (I/O allocation is set as a 16-points output module)	24VDC 240VAC
Operation	n indicator	ON indication (LED)	2A
External co	onnections	18-point terminal block (M3 $ imes$ 6 screws)	
Applicable		0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	
Applicable crir	1 0	R1.25-3 (sleeved crimping terminals cannot be used.)	
	rnal current mption	430mA (TYP. all points ON)	
We	ight	0.22kg	



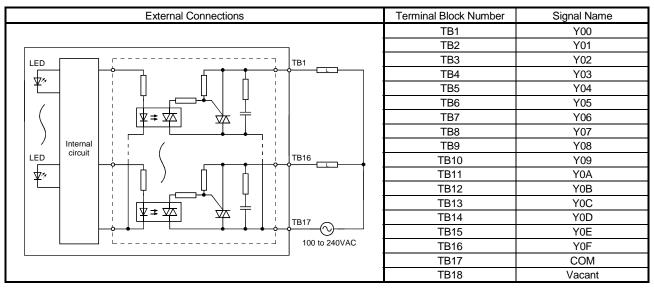
3.2 QY18A Contact Output Module (All Independent)

	Туре	Contact Output Module (All points Independent)	
Specifications		QY18A	Appearance
Number of c	output points	8 points	
Isolation	method	Relay isolation	
Rated s	witching	24VDC 2A (resistive load)	
voltage	current	240VAC 2A ($\cos \varphi = 1$) J	
	ching load	5VDC 1mA	QY18A
	ching load	264VAC 125VDC	0 1 2 3 4 5 6 7
Response	OFF to ON	10ms or shoter	89ABCDEF
time	ON to OFF	12ms or shoter	
	Mechanical	20 million cycles or more	
		Rated switching voltage/current load: 100 thousand cycles or more	
		200VAC 1.5A, 240VAC 1A (COS ϕ =0.7) 100 thousand cycles or more	
Life		200VAC 0.4A, 240VAC 0.3A (COS ϕ =0.7) 300 thousand cycles or more	
	Electrical	200VAC 1A, 240VAC 0.5A (COS ϕ =0.35) 100 thousand cycles or more	
		200VAC 0.3A, 240VAC 0.15A (COS ϕ =0.35) 300 thousand cycles or more	
		24VDC 1A, 100VDC 0.1A (L/R=7ms) 100 thousand cycles or more	· 🛛 – 2 – 3
		24VDC 0.3A, 100VDC 0.03A (L/R=7ms) 300 thousand cycles or more	
	ng frequency	3600 cycles/hour	
Ŭ	e killer	None	
	lse	None	7
	ximum voltage	2830VAC rms/3 cycles (altitude 2000m)	8
Insulation	resistance	10M Ω or more by insulation resistance tester	
		By noise simulator of 1500Vp-p noise voltage,	
Noise ir	mmunity	1 μ s noise width and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
	of degree	IP1X	
	f I/O points	16 (I/O allocation is set as a 16-points output module)	
· · · · · · · · · · · · · · · · · · ·	n indicator	ON indication (LED)	24VDC
External connections		18-point terminal block (M3×6 screws)	240VAC
Applicable wire size		Core cable: 0.3 to 0.75mm ² (Outside diameter: 2.8mm or smaller)	
	nector terminal	R1.25-3 (Terminals with sleeve cannot be used)	
5VDC internal current		240mA (TYP. all points ON)	
	mption		
We	eight	0.22kg	



3.3 QY22 TRIAC Output Module

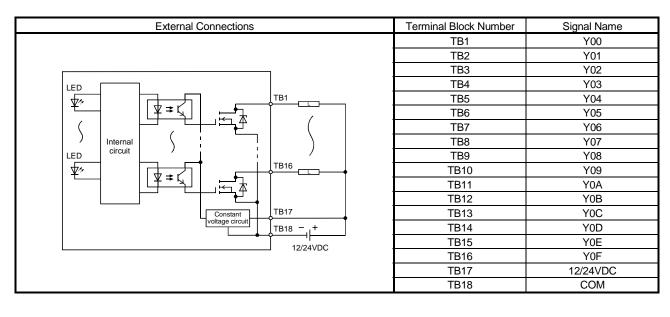
Туре		TRIAC Output Module	
Specifications		QY22	Appearance
Number of or	utput points	16 points	
Isolation	method	Photocoupler	
Rated load	d voltage	100 to 240VDC 50/60Hz±5%	
Load voltage o	listortion rate	Within 5%	
Maximum lo	ad voltage	264VAC	
Maximum lo	ad current	0.6A/point, 4.8A/common	QY22
Minimum load v	oltage/current	24VAC 100mA, 100VAC 25mA, 240VAC 25mA	0 1 2 3 4 5 6 7 8 9 A B C D E F
Maximum ru	ish current	20A/cycle or less	
Leakage curi	rent at OFF	3mA or lower (for 240V, 60Hz), 1.5mA or lower (for 120V, 60Hz)	
Maximum volta	ge drop at ON	1.5V or lower	
Response time	OFF to ON	1ms or less	
Response time	ON to OFF	1ms + 0.5 cycles or less (rated load, resistance load)	
Surge	killer	CR absorber	
Fus	20	None (Attaching a fuse to each external wiring is recommended. Refer to	$\begin{array}{c c} & 3 \\ \hline 1 \\ 1 \\$
1 42		Section 1.2 (16))	
Dielectric maxi	mum voltage	2830VAC rms/3 cycles (altitude 2000m)	
Insulation r	esistance	10M Ω or higher by insulation resistance meter	
		By noise simulator of 1.5kVp-p noise voltage,	L∏_A \\ 8
Noise im	imunity	1 μ s noise width and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
Protection	0	IP1X	
Common termina		16 points/common (common terminal: TB17)	
Number of		16 (I/O allocation is set as a 16-points output module)	100VAC E
Operation indicator		ON indication (LED)	240VAC 0.6A
External connections		18-point terminal block (M3×6 screws)	
Applicable wire size		Core cable: 0.3 to 0.75mm ² (Outside diameter: 2.8mm or smaller)	
Applicable connector terminal		R1.25-3 (Terminals with sleeve cannot be used)	
5VDC interr consum		250mA (Max., all points ON)	
Weig	ght	0.40kg	



 \ast 1: Wire the module taking care so that the wiring does not interfere with the left-side module.

3.4 QY40P Transistor Output Module (Sink Type)

	Туре	Transistor Output Module (Sink Type)	
Specifications		QY40P	Appearance
Number of ou	utput points	16 points	
Isolation (method	Photocoupler	
Rated load	l voltage	12-24VDC (+20/-15%)	
Maximum lo	ad current	0.1A/point, 1.6A/common	
Maximum inr	ush current	0.7A, 10ms or less	
Leakage curr	ent at OFF	0.1mA or less	QY40P
Maximum voltag	ge drop at ON	0.1VDC (TYP.) 0.1A, 0.2VDC (MAX.) 0.1A	0 1 2 3 4 5 6 7 8 9 A B C D E F
Response time	OFF to ON	1ms or less	
Response time	ON to OFF	1ms or less (rated load, resistive load)	
Surge sup	pressor	Zener diode	
Fus	e	No	
External supply	Voltage	12-24VDC (+20/-15%) (ripple ratio within 5%)	
power	Current	10mA (when 24VDC and all point is ON)	
Dielectric withs	tand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulation re	esistance	10M $^{\Omega}$ or more by insulation resistance tester	
		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width	
Noise im	munity	and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
Protection	of degree	IP2X	
Common termina	al arrangement	16 points/common (common terminal: TB18)	
Number of	I/O points	16 (I/O allocation is set as a 16-points output module)	
		Yes (overload protection function, overheat protection function)	
Protection	function	 Overheat protection function is activated in increments of 1 point. 	
		Overload protection function is activated in increments of 1 point.	
Operation indicator		ON indication (LED)	12VDC 24VDC 0.1A
External connections		18-point terminal block (M3×6 screws)	0.1A
Applicable wire size		0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	
Applicable crimping terminal		R1.25-3 (sleeved crimping terminals cannot be used.)	
5VDC intern		65mA (TYP. all points ON)	
consum			
Weig	ght	0.16kg	<u> </u>



3.5 QY41P Transistor Output Module (Sink Type)

	Туре	Transistor Output	Module (Sink Type)				
Specifications		QY41P			Appear	rance	
Number of ou	utput points	32 points					
Isolation I		Photocoupler					
Rated load	0	12-24VDC (+20/-15%)					
Maximum load current		0.1A/point, 2A/common					
Maximum inr		0.7A, 10ms or less			41P		
Leakage curr		0.1mA or less			1234 9ABC		
Maximum voltag		0.1VDC (TYP.) 0.1A, 0.2VDC (MA	X.) 0.1A	0	1234	567	
Response time	OFF to ON	1ms or less		8	9 A B C		
	ON to OFF	1ms or less (rated load, resistive	e load)		4VDC	QY4	41P
Surge sup		Zener diode		0.1A	` [[1
Fus	-	No		_			
External supply	Voltage	12-24VDC (+20/-15%) (ripple ratio v	vitnin 5%)	4		\sim	
power Dielectric withs	Current	20mA (at 24VDC) 560VAC rms/3 cycles (altitude 2000m	(6557.00# \)				
				-			
Insulation re	esistance	$10M \Omega$ or more by insulation resista		4			
Noiso im	munity	By noise simulator of 500Vp-p noise voltage					
Noise im	manny	and 25 to 60Hz noise frequer First transient noise IEC61000-4-		+			
Protection	of degree	First transient hoise IEC61000-4-	Υ τ. ΙΝΥ	1			
Common termina		32 points/common (common terminal	· A01 A02)			0 0	
Number of		32 (I/O allocation is set as a 32-points o					
		Yes (overheat protection function, overload protect					
Protection	function	Overheat protection function is activated in incre					
		Overload protection function is activated in increments of 1 point.					
Operation	indicator	ON indication (LED)					
External co	nnections	40-pin connector					
Applicable	wire size	0.3mm ² (For A6CON1 or A6CO	N4) *				
External wiring	g connector	A6CON1, A6CON2, A6CON3, A6CON					
Applicable conn		A6TBXY36, A6TBXY54		L		1	
block convers		A010/130, A010/134					
5VDC intern		105mA (TYP. all points ON)					
consum							
Weig	ght	0.15kg					
		ternel Connections	Dia Outa	Pin	Signal	Pin	Signal
	E>	ternal Connections	Pin-Outs	No.	No.	No.	No.
				B20	Y00	A20	Y10
			\sim	B19	Y01	A19	Y11
			B20 • • A20	B18	Y02	A18	Y12
			B19 0 0 A19	B17	Y03	A17	Y13
			B18 º º A18	B16	Y04	A16	Y14
	\dashv \vdash	B20	B17 0 0 A17	B15	Y05	A15	Y15
<u>₹</u> *		≠ᡬ║᠋ᠲ	B16	B14	Y06	A14	Y16
(B14 0 0 A14	B13	Y07	A13	Y17
	Internal		B13 0 0 A13	B12	Y08	A12	Y18
	circuit		B12	B11	Y09	A11	Y19
LED	┥┝ <u>─</u>	Á05	B10 0 0 A10	B10	Y0A	A10	Y1A
¥*	_ ▼	≠└││ └──┴│ └────	B9 0 0 A9	B09	Y0B	A09	Y1B
		──────┴┼── <u>└</u> ──┴	B8	B08	Y0C	A08	Y1C
			B6 0 0 A6	B07	Y0D	A07	Y1D
		Constant B01,B02	B5 0 0 A5	B06	Y0E	A06	Y1E
		A01,A02 -,+	B4 00 A4 B3 00 A3	B05	Y0F	A05	Y1F
			B2 0 0 A2	B04	Vacant	A04	Vacant
		12/24VDC	B1 0 0 A1	B03	Vacant	A03	Vacant
				DOO	12/24	400	

 \ast : When using A6CON2 or A6CON3, refer to Chapter 7.

A02

A01

СОМ

COM

VDC 12/24

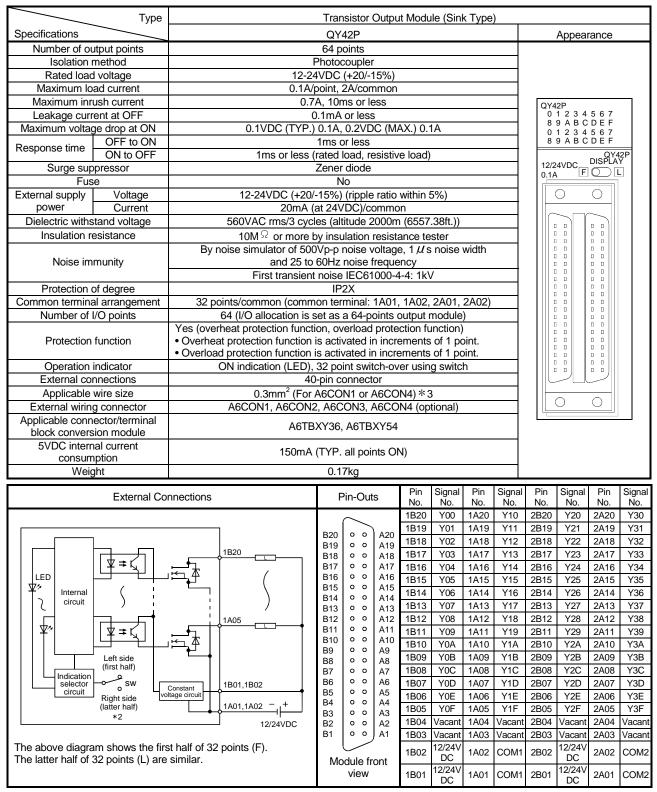
VDC

B02

B01

Module front view

3.6 QY42P Transistor Output Module (Sink Type)



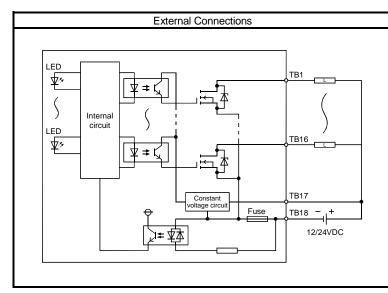
*1: Pin number of 1 _____ indicates that of the left-hand side connector, and pin number of 2 _____ indicates that of the right-hand side connector.

*2: Selection of left-hand (F) side provides the first half (Y00 to Y1F) LED indications, and selection of right-hand (L) side provides the latter half (Y20 to Y3F) LED indications.

*3: When using A6CON2 or A6CON3, refer to Chapter 7.

3.7 QY50 Transistor Output Module (Sink Type)

	Туре	Transistor Output Module (Sink Type)	
Specifications		QY50	Appearance
Number of ou	utput points	16 points	
Isolation I	method	Photocoupler	
Rated load	d voltage	12-24VDC (+20/-15%)	
Maximum lo	ad current	0.5A/point, 4A/common	
Maximum inr	ush current	4A, 10ms or less	
Leakage curr	ent at OFF	0.1mA or less	QY50 0 1 2 3 4 5 6 7 8 9 A B C D E F
Maximum voltag	ge drop at ON	0.2VDC (TYP.) 0.5A, 0.3VDC (MAX.) 0.5A	8 9 A B C D E F FUSE□
Response time	OFF to ON	1ms or less	
Response ume	ON to OFF	1ms or less (rated load, resistive load)	
Surge sup	pressor	Zener diode	
Fus	e	6.7A (unchangeable) (fuse blow capacity: 50A)	
Fuse blow i	ndication	Yes (When fuse blows, LED indicates it and signal is output to CPU) $$ * 1	
External supply	Voltage	12-24VDC (+20/-15%) (ripple ratio within 5%)	
power	Current	20mA (at 24VDC)	
Dielectric withs	stand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulation re	esistance	10M Ω or more by insulation resistance tester	
		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width	
Noise im	munity	and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
Protection of	of degree	IP2X	
Common termina	al arrangement	16 points/common (common terminal: TB18)	
Number of	I/O points	16 (I/O allocation is set as a 16-points output module)	
Operation indicator		ON indication (LED)	12VDC 24VDC
External connections		18-point terminal block (M3×6 screws)	0.5A
Applicable wire size		0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	
Applicable crimping terminal		R1.25-3 (sleeved crimping terminals cannot be used.)	
5VDC intern consum		80mA (TYP. all points ON)	
Weig	ght	0.17kg	

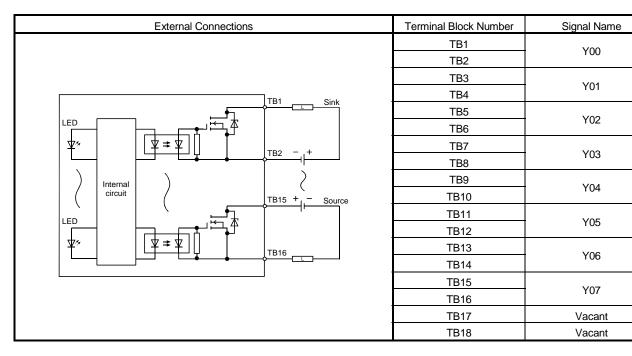


Terminal Block Number	Signal Name
TB1	Y00
TB2	Y01
TB3	Y02
TB4	Y03
TB5	Y04
TB6	Y05
TB7	Y06
TB8	Y07
TB9	Y08
TB10	Y09
TB11	Y0A
TB12	Y0B
TB13	YOC
TB14	Y0D
TB15	Y0E
TB16	Y0F
TB17	12/24VDC
TB18	COM

* 1: Fuse disconnection is not detected when the external power supply is off.

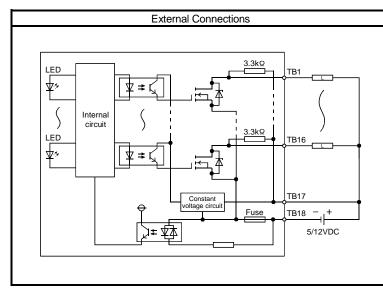
3.8 QY68A Transistor Output Module (All Points Independent, Sink/Source Type)

	Туре	Transistor Output Module (All Points Independent, Sink/So	ource Type)
Specifications		QY68A	Appearance
Number of output points		8 points	
Isolation I	method	Photocoupler	
Rated load	l voltage	5-24VDC (+20/-10%)	
Maximum lo	ad current	2A/point, 8A/unit	OY68A
Maximum inr	ush current	8A, 10ms or less	QY68A 0 1 2 3 4 5 6 7
Leakage curr	ent at OFF	0.1mA or less	
Maximum voltag	ge drop at ON	0.3VDC (MAX.) 2A	
Response time	OFF to ON	3ms or less	
Response line	ON to OFF	10ms or less (resistive load)	
Surge sup	pressor	Zener diode	
Fus	0	None (Attaching a fuse to external wiring is recommended. Refer to	
T US		Section 1.2 (17))	
External sup	ply power	None	
Dielectric withs	tand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulation re	esistance	10M $^{\Omega}$ or more by insulation resistance tester	
		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width	
Noise im	munity	and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
Protection of	of degree	IP2X	A A
Common termina	al arrangement	All points Independent	
Number of	/O points	16 (I/O allocation is set as a 16-points output module)	
Operation indicator		ON indication (LED)	
External connections		18-point terminal block (M3 $ imes$ 6 screws)	
Applicable wire size		0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	5/12/ 24/DC 2A
Applicable crim	ping terminal	R1.25-3 (sleeved crimping terminals cannot be used.)	
5VDC internal current		110mA (TYP. all points ON)	
consum	ption		
Weig	ght	0.14kg	



3.9 QY70 Transistor Output Module (Sink Type)

	Туре	Transistor Output Module (Sink Type)	
Specifications		QY70	Appearance
Number of ou	utput points	16 points	
Isolation r	method	Photocoupler	
Rated load	l voltage	5/12VDC (+25/-10%)	
Maximum lo	ad current	16mA/point, 256mA/common	
Maximum inre	ush current	40mA, 10ms or less	
Output volta	ge at OFF	VOH: 3.5VDC (VCC=5VDC, IOH=0.4mA)	QY70 0 1 2 3 4 5 6 7 8 9 A B C D E F
Maximum voltag	ge drop at ON	Vol: 0.3VDC	8 9 A B C D E F FUSE□
Response time	OFF to ON	0.5ms or less	
Response time	ON to OFF	0.5ms or less (resistive load)	
Surge sup	pressor	None	
Fus	e	1.6A (unchangeable) (fuse blow capacity: 50A)	
Fuse blow i	ndication	Yes (When fuse blows, LED indicates it and signal is output to CPU) $*1$	
External supply	Voltage	5/12VDC (+25/-10%) (ripple ratio within 5%)	
power	Current	90mA (when 12VDC and all point is ON)	
Dielectric withs	stand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	J T T T T T T T T T T T T T T T T T T T
Insulation re	esistance	10M Ω or more by insulation resistance tester	
		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width	
Noise im	munity	and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
Protection of		IP2X	
Common termina	al arrangement	16 points/common (common terminal: TB18)	
Number of I/O points		16 (I/O allocation is set as a 16-points output module)	
Operation indicator		ON indication (LED)	5VDC 12VDC
External connections		18-point terminal block (M3×6 screws)	12VDC 16mA
Applicable wire size		0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	
Applicable crimping terminal		R1.25-3 (sleeved crimping terminals cannot be used.)	
5VDC intern consum		95mA (TYP. all points ON)	
Weig	ght	0.14kg	



Terminal Block Number	Signal Name
TB1	Y00
TB2	Y01
TB3	Y02
TB4	Y03
TB5	Y04
TB6	Y05
TB7	Y06
TB8	Y07
TB9	Y08
TB10	Y09
TB11	Y0A
TB12	Y0B
TB13	YOC
TB14	Y0D
TB15	Y0E
TB16	Y0F
TB17	5/12VDC
TB18	COM

* 1: Fuse disconnection is not detected when the external power supply is off.

3.10 QY71 Transistor Output Module (Sink Type)

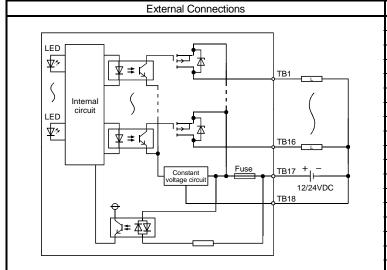
	Туре	Transistor Output Module (Sink Type)	
Specifications		QY71	Appearance
Number of ou	utput points	32 points	
Isolation I	method	Photocoupler	
Rated load	l voltage	5/12VDC (+25/-10%)	
Maximum lo	ad current	16mA/point, 512mA/common	QY71
Maximum inr	ush current	40mA, 10ms or less	0 1 2 3 4 5 6 7 8 9 A B C D E F
Output volta	ge at OFF	Voн: 3.5VDC (Vcc=5VDC, Ioн=0.4mA)	0 1 2 3 4 5 6 7
Maximum voltaç	ge drop at ON	Vol: 0.3VDC	8 9 A B C D E F
Response time	OFF to ON	0.5ms or less	5/12VDC FUSE
Response ame	ON to OFF	0.5ms or less (resistive load)	16mA O
Surge sup	pressor	None	
Fus	е	1.6A (unchangeable) (fuse blow capacity: 50A)	
Fuse blow i	ndication	Yes (When fuse blows, LED indicates it and signal is output to CPU) *1	
External supply	Voltage	5/12VDC (+25/-10%) (ripple ratio within 5%)	
power	Current	170mA (when 12VDC and point is ON)	
Dielectric withs	tand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulation re	esistance	10M $^\Omega$ or more by insulation resistance tester	
		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width	
Noise im	munity	and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
Protection of	of degree	IP2X	
Common termina	al arrangement	32 points/common (common terminal: A01, A02)	
Number of	I/O points	32 (I/O allocation is set as a 32-points output module)	
Operation	indicator	ON indication (LED)	
External connections		40-pin connector	
Applicable	wire size	0.3mm ² (For A6CON1 or A6CON4) *2	
External wiring connector		A6CON1, A6CON2, A6CON3, A6CON4 (optional)	
5VDC internal current consumption		150mA (TYP. all points ON)	
Weig	ght	0.14kg	

External Connections	Pin-Outs	Pin No.	Signal No.	Pin No.	Signal No.
External Connections	B20 o A20 B19 o A19 B18 o A18 B17 o A17 B16 o A16 B15 o A16 B15 o A17 B16 o A16 B15 o A13 B12 o A13 B12 o A12 B11 o A11 B10 o A10 B9 o A19 B8 o A14 B13 o A11 B10 o A10 B9 o A3 B7 o A7 B6 o A6 B5 o A2 B1 o A1				

 \ast 1: Fuse disconnection is not detected when the external power supply is off. \ast 2: When using A6CON2 or A6CON3, refer to Chapter 7.

3.11 QY80 Transistor Output Module (Source Type)

	Туре	Transistor Output Module (Source Type)	
Specifications		QY80	Appearance
Number of ou	utput points	16 points	
Isolation r	method	Photocoupler	
Rated load	l voltage	12-24VDC (+20/-15%)	
Maximum lo	ad current	0.5A/point, 4A/common	
Maximum inr	ush current	4A, 10ms or less	
Leakage curr	ent at OFF	0.1mA or less	QY80 01234567
Maximum voltaç	ge drop at ON	0.2VDC (TYP.) 0.5A, 0.3VDC (MAX.) 0.5A	8 9 A B C D E F FUSED
Response time	OFF to ON	1ms or less	
Response une	ON to OFF	1ms or less (rated load, resistive load)	
Surge sup	pressor	Zener diode	
Fus	e	6.7A (unchangeable) (fuse blow capacity: 50A)	
Fuse blow i	ndication	Yes (When fuse blows, LED indicates it and signal is output to CPU) $$ * 1	
External supply	Voltage	12-24VDC (+20/-15%) (ripple ratio within 5%)	
power	Current	20mA (at 24VDC)	
Dielectric withs	tand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulation re	esistance	10M Ω or more by insulation resistance tester	
		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width	
Noise im	munity	and 25 to 60Hz noise frequency	
		First transient noise IEC61000-4-4: 1kV	
Protection of	of degree	IP2X	
Common termina	al arrangement	16 points/common (common terminal: TB17)	
Number of	I/O points	16 (I/O allocation is set as a 16-points output module)	
Operation indicator		ON indication (LED)	12VDC 24VDC
External connections		18-point terminal block (M3×6 screws)	0.5A
Applicable	wire size	0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)	
Applicable crim	ping terminal	R1.25-3 (sleeved crimping terminals cannot be used.)	
5VDC internal current consumption		80mA (TYP. all points ON)	
Weig	ght	0.17kg	



Terminal Block Number	Signal Name
TB1	Y00
TB2	Y01
TB3	Y02
TB4	Y03
TB5	Y04
TB6	Y05
TB7	Y06
TB8	Y07
ТВ9	Y08
TB10	Y09
TB11	Y0A
TB12	Y0B
TB13	YOC
TB14	Y0D
TB15	Y0E
TB16	Y0F
TB17	COM
TB18	0V

*1: Fuse disconnection is not detected when the external power supply is off.

3.12 QY81P Transistor Output Module (Source Type)

	Туре	Transistor Output Module (Source Type)	
Specifications		QY81P	Appearance
Number of ou	utput points	32 points	
Isolation	method	Photocoupler	1
Rated load	d voltage	12-24VDC (+20/-15%)	1
Maximum lo	ad current	0.1A/point, 2A/common	
Maximum inr	ush current	0.7A, 10ms or less	QY81P
Leakage curr	rent at OFF	0.1mA or less	01234567
Maximum volta		0.1VDC (TYP.) 0.1A, 0.2VDC (MAX.) 0.1A	8 9 A B C D E F 0 1 2 3 4 5 6 7
Response time	OFF to ON	1ms or less	89ABCDEF
Response and	ON to OFF	1ms or less (rated load, resistive load)	QY81P
Surge sup		Zener diode	12/24VDC
Fus	-	No	0.1A
External supply	Voltage	12-24VDC (+20/-15%) (ripple ratio within 5%)	
power	Current	40mA (at 24VDC)	
Dielectric withs	stand voltage	560VAC rms/3 cycles (altitude 2000m (6557.38ft.))	
Insulation resistance		10M Ω or more by insulation resistance tester	
Noise immunity		By noise simulator of 500Vp-p noise voltage, 1 μ s noise width	0 0
		and 25 to 60Hz noise frequency	0 0
		First transient noise IEC61000-4-4: 1kV	
Protection of degree		IP2X	0
Common terminal arrangement		32 points/common (common terminal: 17, 18, 36)	
Number of I/O points		32 (I/O allocation is set as a 32-points output module)	
		Yes (overheat protection function, overload protection function)	0 0
Protection	function	• Overheat protection function is activated in increments of 2 points.	0 0 0
		Overload protection function is activated in increments of 1 point.	
Operation		ON indication (LED)	
External co		37-pin D-sub connector	
Applicable		0.3mm ² (For A6CON1E) *	
External wirin		A6CON1E, A6CON2E, A6CON3E (optional)	
Applicable connector/terminal		A6TBY36-E, A6TBY54-E	
block convers		····· _ ···· , ····	4
5VDC interr		95mA (TYP. all points ON)	
consum		0.45km	4
Weig	yni	0.15kg	

Derating Chart	Pin-Outs	Pin No.	Signal No.	Pin No.	Signal No.
		1	Y00	9	Y10
	\frown	20	Y01	28	Y11
	$\begin{bmatrix} 19 \\ 18 \\ 2 \end{bmatrix} = \begin{bmatrix} 0 \\ 37 \end{bmatrix}$	2	Y02	10	Y12
	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	21	Y03	29	Y13
	16 0 ⁰ 35	3	Y04	11	Y14
√√ □−−−−, −−−, −− ↓	15 0 34 15 0 33	22	Y05	30	Y15
│ [╋] ┥──│ <u></u> ¥≠Қ」── <mark>┩┘│</mark> _{┚────}	14 0 0 32	4	Y06	12	Y16
	12 0 0 31 12 0 30	23	Y07	31	Y17
) Internal (11 0 0 29 10 0 29	5	Y08	13	Y18
	a o 28	24	Y09	32	Y19
	8 0 0 27 8 0 26	6	Y0A	14	Y1A
│ │ │ │└ <u>┤</u> ╶╨┙ └┤┽ [┉] ────┥	7 0 0 25 6 0 25	25	Y0B	33	Y1B
Constant 17,18,36 + -	5 0 24 23	7	Y0C	15	Y1C
voltage circuit DC12/24V	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	26	Y0D	34	Y1D
	2 0 0 21	8	Y0E	16	Y1E
	$1 \circ 20$	27	Y0F	35	Y1F
		17	СОМ	37	0V
	Module front view	36	COM	19	0V
		18	COM		

*: When using A6CON2E or A6CON3E, refer to Chapter 7.

MEMO

4. COMBINED I/O MODULE

4.1 QH42P I/O Module

- When using the main module, use the constructions listed in Section 1.2 (14).
- This module uses same I/O numbers for input and output.

For I/O numbers of combined I/O modules, refer to Section 1.2 (18).

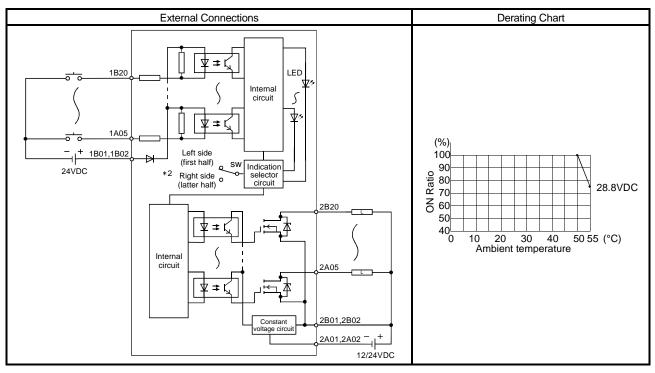
(1) DC Input Specification (Positive Common Type)

Type		QH42P I/O Module (Input Specification)
Number of	input points	32 points
Insulation		Photocoupler
Rated inp	ut voltage	24VDC (+20/-15%, ripple ratio within 5%)
	ut current	Approx. 4mA
Input d	0	See the derating chart.
	ON current	19V or higher/3mA or higher
OFF voltage	OFF current	11V or lower/1.7mA or lower
Input rea	sistance	Approx. 5.6k Ω
Response time	OFF→ON	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) * 1 Initial setting is 10ms
Response time	ON→OFF	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) * 1 Initial setting is 10ms
Dielectric max	kimum voltage	560VAC rms/3 cycles (altitude 2000m)
Insulation	resistance	10M $^{\Omega}$ or more by insulation resistance tester
Noise ir	nmunity	By noise simulator of 500Vp-p noise voltage, 1 μ s noise width and 25 to 60Hz noise frequency First transient noise IEC61000-4-4: 1kV
Protection	of degree	IP2X
Common termir	nal arrangement	32 points/common (common terminal: 1B01, 1B02)
Number of I/O	occupied points	32 points (For I/O allocation on I/O mixed module, set 32 points.)
Operation	n indicator	ON indication (LED), 32-point switchover using switch *2
External co	onnections	40-pin connector
Applicable wire size		0.3mm ² (For A6CON1 or A6CON4) * 3
External wiri	ng connector	A6CON1, A6CON2, A6CON3, A6CON4 (optional)
Mixed connector/terminal block conversion module		A6TBXY36, A6TBXY54, A6TBX70
5VDC internal cur	rent consumption	130mA (TYP, all points ON)
We	ight	0.20kg

* 1: For the setting method, refer to the Section 1.3.1.

*2: Selection of left-hand (F) side provides the first half (X00 to X1F) LED indications, and selection of right-hand (L) side provides the latter half (Y00 to Y1F) LED indications.

*3: When using A6CON2 or A6CON3, refer to Chapter 7.



*2: Selection of left-hand (F) side provides the first half (X00 to X1F) LED indications, and selection of right-hand (L) side provides the latter half (Y00 to Y1F) LED indications.

(2) Transistor Output Specification (Sink Type)

Specifications	Туре	QH42P I/O Module (Output Specification)	Appearance
Number of ou	tput points	32 points	
Insulation I	method	Photocoupler	QH42P 0 1 2 3 4 5 6 7
Rated load	voltage	12-24VDC (+20/-15%)	8 9 A B C D E F 0 1 2 3 4 5 6 7
Max. load	current	0.1A/point, 2A/common	89ABCDEF
Max. rush	current	0.7A/10ms or less	24VDC4mA QH42P
Leakage curre	ent at OFF	0.1mA or lower	
Max. voltage o	drop at ON	0.1VDC (TYP.) 0.1A, 0.2VDC (MAX.) 0.1A	
Response time	OFF→ON	1ms or shorter	
Response lime	ON→OFF	1ms or shorter (rated load, resistance load)	
Surge k	killer	Zener diode	
Fuse	е	None	
External power	Voltage	12-24VDC (+20/-15%) (ripple ratio within 5%)	
supply	Current	15mA /common (when 24VDC and all point is ON)	
Common termina	l arrangement	32 points/common (common terminal: 2A01, 2A02)	
Protection function		Provided (overheat protection function, overload protection function) • Overheat protection function operate independently of each other. • Overload protection function operate independently of each other.	

Pin-Outs	Pin No.4 *4	Signal No.	Pin No.4 *4	Signal No.	Pin No.4 *4	Signal No.	Pin No.4 *4	Signal No.
	1B20	X00	1A20	X10	2B20	Y00	2A20	Y10
	1B19	X01	1A19	X11	2B19	Y01	2A19	Y11
B20 • • A20	1B18	X02	1A18	X12	2B18	Y02	2A18	Y12
B19 • • A19 B18 • • A18	1B17	X03	1A17	X13	2B17	Y03	2A17	Y13
B17 0 0 A17	1B16	X04	1A16	X14	2B16	Y04	2A16	Y14
B16	1B15	X05	1A15	X15	2B15	Y05	2A15	Y15
B15	1B14	X06	1A14	X16	2B14	Y06	2A14	Y16
B13 0 0 A13	1B13	X07	1A13	X17	2B13	Y07	2A13	Y17
B12	1B12	X08	1A12	X18	2B12	Y08	2A12	Y18
B10 • • A10	1B11	X09	1A11	X19	2B11	Y09	2A11	Y19
B9 0 0 A9	1B10	X0A	1A10	X1A	2B10	Y0A	2A10	Y1A
B8	1B09	X0B	1A09	X1B	2B09	Y0B	2A09	Y1B
B6 0 0 A6	1B08	X0C	1A08	X1C	2B08	Y0C	2A08	Y1C
B5 0 0 A5	1B07	X0D	1A07	X1D	2B07	Y0D	2A07	Y1D
B4 0 0 A4 B3 0 0 A3	1B06	X0E	1A06	X1E	2B06	Y0E	2A06	Y1E
B2	1B05	X0F	1A05	X1F	2B05	Y0F	2A05	Y1F
B1 0 0 A1	1B04	Vacant	1A04	Vacant	2B04	Vacant	2A04	Vacant
	1B03	Vacant	1A03	Vacant	2B03	Vacant	2A03	Vacant
Module front view	1B02	COM1	1A02	Vacant	2B02	12/24 VDC	2A02	COM2
	1B01	COM1	1A01	Vacant	2B01	12/24 VDC	2A01	COM2

*4: Pin number of 1 _____ indicates that of the left-hand side connector, and pin number of 2 _____ indicates that of the right-hand side connector.

4.2 QX41Y41P I/O Module

- When using the main module, use the constructions listed in Section 1.2 (14).
- This module uses sequential I/O numbers for input and output. For I/O numbers of combined I/O modules, refer to Section 1.2 (18).

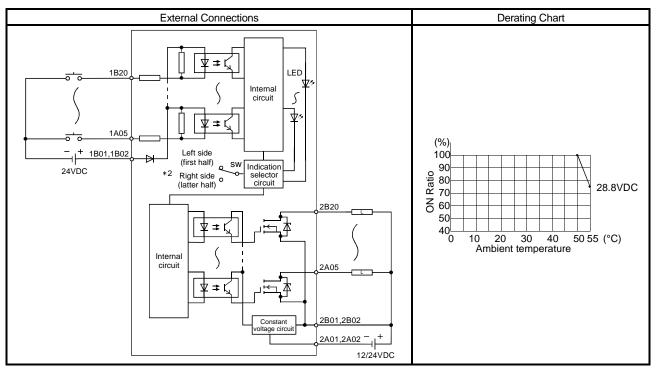
(1) DC Input Specification (Positive Common Type)

Type		QX41Y41P I/O Module (Input Specification)
Number of	input points	32 points
Insulation		Photocoupler
Rated inp	ut voltage	20.4 to 28.8VDC (ripple ratio within 5%)
Rated inp	ut current	Approx. 4mA
Input d		See the derating chart.
ON voltage/	ON current	19V or higher/3mA or higher
OFF voltage/	OFF current	11V or lower/1.7mA or lower
Input res	sistance	Approx. 5.6k Ω
Response time	OFF→ON	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) * 1 Initial setting is 10ms
Response time	ON→OFF	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) * 1 Initial setting is 10ms
Dielectric max	kimum voltage	560VAC rms/3 cycles (altitude 2000m)
Insulation	resistance	10M $^{\Omega}$ or more by insulation resistance tester
Noise in	nmunity	By noise simulator of 500Vp-p noise voltage, 1 μ s noise width and 25 to 60Hz noise frequency First transient noise IEC61000-4-4: 1kV
Protection	of degree	IP2X
	nal arrangement	32 points/common (common terminal: 1B01, 1B02)
Number of I/O	occupied points	64 points (For I/O allocation on I/O mixed module, set 64 points.)
Operation	indicator	ON indication (LED), 32-point switchover using switch * 2
External co	onnections	40-pin connector
Applicable	e wire size	0.3mm ² (For A6CON1 or A6CON4) * 3
External wirir	ng connector	A6CON1, A6CON2, A6CON3, A6CON4 (optional)
Mixed connecto conversio	r/terminal block	A6TBXY36, A6TBXY54, A6TBX70
5VDC internal cur	rent consumption	130mA (TYP, all points ON)
We	ight	0.20kg

*1: For the setting method, refer to the Section 1.3.1.

*2: Selection of left-hand (F) side provides the first half (X00 to X1F) LED indications, and selection of right-hand (L) side provides the latter half (Y00 to Y1F) LED indications.

*3: When using A6CON2 or A6CON3, refer to Chapter 7.



*2: Selection of left-hand (F) side provides the first half (X00 to X1F) LED indications, and selection of right-hand (L) side provides the latter half (Y00 to Y1F) LED indications.

(2) Transistor Output Specification (Sink Type)

Specifications	Туре	QX41Y41P I/O Module (Output Specification)	Appearance			
Number of output points		32 points	OVMVMD			
Insulation I	method	Photocoupler	QX41Y41P 0 1 2 3 4 5 6 7 8 9 A B C D E F 0 1 2 3 4 5 6 7			
Rated load	voltage	12-24VDC (+20/-15%)				
Max. load	current	0.1A/point, 2A/common	89ABCDEF			
Max. rush	current	0.7A/10ms or less	24VDC4mA QX41Y41P			
Leakage curre	ent at OFF	0.1mA or lower				
Max. voltage of	drop at ON	0.1VDC (TYP.) 0.1A, 0.2VDC (MAX.) 0.1A				
Deenenee time	OFF→ON	1ms or shorter				
Response time	ON→OFF	1ms or shorter (rated load, resistance load)				
Surge k	killer	Zener diode				
Fuse	е	None				
External power	Voltage	12-24VDC (+20/-15%) (ripple ratio within 5%)				
supply	Current	15mA /common (when 24VDC and all point is ON)				
Common termina	l arrangement	32 points/common (common terminal: 2A01, 2A02)				
Protection function		 Provided (overheat protection function, overload protection function) Overheat protection function operate independently of each other. Overload protection function operate independently of each other. 				

Pin-Outs	Pin No.4 *4	Signal No.	Pin No.4 *4	Signal No.	Pin No.4 *4	Signal No.	Pin No.4 *4	Signal No.
	1B20	X00	1A20	X10	2B20	Y20	2A20	Y30
\sim	1B19	X01	1A19	X11	2B19	Y21	2A19	Y31
B20	1B18	X02	1A18	X12	2B18	Y22	2A18	Y32
B19	1B17	X03	1A17	X13	2B17	Y23	2A17	Y33
B18	1B16	X04	1A16	X14	2B16	Y24	2A16	Y34
B16 ° ° A16	1B15	X05	1A15	X15	2B15	Y25	2A15	Y35
B15	1B14	X06	1A14	X16	2B14	Y26	2A14	Y36
B14 0 0 A14 B13 0 0 A13	1B13	X07	1A13	X17	2B13	Y27	2A13	Y37
B12 • • A12	1B12	X08	1A12	X18	2B12	Y28	2A12	Y38
B11	1B11	X09	1A11	X19	2B11	Y29	2A11	Y39
B10 0 0 A10 B9 0 0 A9	1B10	X0A	1A10	X1A	2B10	Y2A	2A10	Y3A
B8 ° ° A8	1B09	X0B	1A09	X1B	2B09	Y2B	2A09	Y3B
B7 0 0 A7 B6 0 0 A6	1B08	XOC	1A08	X1C	2B08	Y2C	2A08	Y3C
B0 0 0 A0 B5 0 0 A5	1B07	X0D	1A07	X1D	2B07	Y2D	2A07	Y3D
B4	1B06	X0E	1A06	X1E	2B06	Y2E	2A06	Y3E
B3 0 0 A3 B2 0 0 A2	1B05	X0F	1A05	X1F	2B05	Y2F	2A05	Y3F
B1 0 0 A1	1B03	Vacant	1A04	Vacant	2B03	Vacant	2A04	Vacant
	-	Vacant	1A03	Vacant	-	Vacant		Vacant
						12/24		
Module front view	1B02	COM1	1A02	Vacant	2B02	VDC	2A02	COM2
	1B01	COM1	1A01	Vacant	2B01	12/24 VDC	2A01	COM2

*4: Pin number of 1 _____ indicates that of the left-hand side connector, and pin number of 2 _____ indicates that of the right-hand side connector.

4.3 QX48Y57 I/O Module

- When using the main module, use the constructions listed in Section 1.2 (14).
- This module uses sequential I/O numbers for input and output.

For I/O numbers of combined I/O modules, refer to Section 1.2 (18).

(1) DC Input Specification (Positive Common Type)

Specifications	Туре	QX48Y57 I/O Module (Input Specification)	Appearance	
Number of input points		8 points		
Insulation method		Photocoupler		
Rated inp	out voltage	24VDC (+20/-15%, ripple ratio within 5%)		
Rated inp	out current	Approx. 4mA	QX48Y57	
Input d	lerating	None	0 1 2 3 4 5 6 7	
ON voltage	ON current	19V or higher/3mA or higher	8 9 A B C D E F FUSE⊡	
OFF voltage	OFF current	11V or lower/1.7mA or lower		
Input re	sistance	Approx. 5.6k Ω		
Response	OFF→ON	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) * 1 Initial setting is 10ms		
time	ON→OFF	1ms/5ms/10ms/20ms/70ms or less (CPU parameter setting) * 1 Initial setting is 10ms	$\begin{array}{c} & & & \\ \hline \\ & & & \\ \hline & & & \\ \hline & & \\ \hline & & & \\ \hline \\ & & & \\ \hline & & \\ \hline \\ \hline$	
Dielectric max	ximum voltage	560VAC rms/3 cycles (altitude 2000m)		
Insulation	resistance	10M Ω or more by insulation resistance tester	+ 005 × 4	
Noise ir	mmunity	By noise simulator of 500Vp-p noise voltage, 1 μ s noise width and 25 to 60Hz noise frequency	то <u>с</u> <u>со</u> <u>с</u> <u>со</u> <u>с</u> <u>с</u> <u>с</u> <u>с</u> <u>с</u> <u>с</u> <u>с</u> <u>с</u>	
		First transient noise IEC61000-4-4: 1kV		
Protection	n of degree	IP2X	- <u>-</u> -9 \∠ 8	
	n terminal gement	8 points/common (common terminal: TB9)		
Number of I/O occupied points		16 points (For I/O allocation on I/O mixed module, set 16 points.)		
Operation indicator		ON indication (LED)		
External connections		18-point terminal block (M3×6 screw)	E E	
Applicable wire size		Core cable: 0.3 to 0.75mm ² (Outside diameter: 2.8mm or smaller)	24VDC4mA 12/24VDC 0.5A	
Applicable connector terminal		R1.25-3 (Terminals with sleeve cannot be used)		
5VDC internal current consumption		80mA (TYP, all points ON)		
We	eight	0.20kg		

*1: For the setting method, refer to the Section 1.3.1.

External Connections	Terminal Block No.	Signal Name
	TB1	X00
	TB2	X01
	TB3	X02
	TB4	X03
	TB5	X04
	TB6	X05
	TB7	X06
	TB8	X07
	TB9	COM1
	TB10	Y08
	TB11	Y09
	TB12	Y0A
	TB13	Y0B
	TB14	Y0C
	TB15	Y0D
Constant TB17	TB16	Y0E
	TB17	12/24VDC
12/24VDC	TB18	COM2

(2)	Transistor	Output	Specifications	(Sink	Type)
(4)	1101313101	Output	opecifications		iype)

Specifications	Туре	QX48Y57 I/O Module (Output Specification)					
Number of c	output points	7 points					
Insulatio	n method	Photocoupler					
Rated loa	id voltage	12-24VDC (+20/-15%)					
Max. loa	d current	0.5A/point, 2A/common					
Max. rus	h current	4A/10ms or less					
Leakage cu	rrent at OFF	0.1mA or lower					
Max. voltage	e drop at ON	0.2VDC (TYP.) 0.5A, 0.3VDC (MAX.) 0.5A					
Response	OFF→ON	1ms or shorter					
time	ON→OFF	1ms or shorter (rated load, resistance load)					
Surge	e killer	Zener diode					
Fu	ISE	4A (Not replaceable) (Fuse breakage capacity: 50A)					
Fuse breaka	ge indication	Provided (When fuse is broken, LED lights and a signal is output to CPU) $*2$					
External	Voltage	12-24VDC (+20/-15%) (ripple ratio within 5%)					
power supply Current		10mA (at 24VDC)					
Common terminal arrangement		7 points/common (common terminal: TB18)					

*2: When the external power supply is turned off, fuse breakage is not detected.

MEMO

5. INTERRUPT MODULE

5.1 QI60 Interrupt Module

For usage of the main module, refer to the QCPU User's Manual (Function Explanation/Program Fundamentals).

\sim					/			
	_	Туре			In	terrupt Module		1
Specifications					Q160			Appearance
Number of input points			16 points					
Isolation method					Photocoupler			
Rated input voltage				24VDC (+20	/-15%, ripple rati	o within 5%)		
	nput current			, ,	Approx. 6mA	,		
	t derating				No			QI60 0 1 2 3 4 5 6 7
	ge/ON currei	nt		19V or	higher/4.0mA or	hiaher		89 A B C D E F
	ge/OFF curre				r lower/1.7mA or			
	impedance				Approx. 3.9k Ω			
	Set value	*1	0.1	0.2	0.4	0.6	1	
_		Typ	0.05ms	0.15ms	0.30ms	0.55ms	1.05ms	
Response	OFF to ON	max	0.10ms	0.20ms	0.40ms	0.60ms	1.20ms	
time		Тур	0.15ms	0.20ms	0.35ms	0.60ms	1.10ms	
	ON to OFF	max	0.20ms	0.30ms	0.50ms	0.70ms	1.30ms	
Dielectric w	ithstand volt				cles (altitude 20			
	on resistance				e by insulation re		//	6 4
			By nois		00Vp-p noise vo		se width	5
Noise	e immunity		29 11010		to 60Hz noise fre	-		
	,				nt noise IEC610			- <u>-9</u> 7
Protecti	on of degree)			IP2X			• • • • A B
	on terminal		16 points/common (common terminal: TB17)					
	ngement							
	of I/O points	5	16 (I/O allocation is set as a 16-points interrupt module) *3				E B	
Interrupt pro			Set by setting the CPU parameter switch. *2				F C	
	ion indicator		ON indication (LED)					
	connections	6			minal block (M3	,		NC E
	ble wire size		0.3 to 0.75mm ² core (2.8mm (0.11in.) OD max.)					24VDC F
	crimping term		R1.25-3 (sleeved crimping terminals cannot be used.)					6mA
	ternal curren							
	sumption	ii.	60mA (TYP. all points ON)					
	Veight		0.20kg					
V	volgin				0.20109			
		Ex	ternal Connecti	ons		Terminal E	Block Number	Signal Name
							TB1	X00
						1	B2	X01
I							FB3	X02
] LED		B4	X03
Г			┑┎╆╤	<u> </u>			B5	X04
	(🛨	≠ 🛴 📔 Internal circuit	<u>⊢_</u> ¥´		B6	X05
			└┤¥╧				B7 B8	X06 X07
				L	1	TB8 TB9		X07 X08
)						B10	X09
/ - TB10 TB11 TB12 TB13						-	X09	
						X0R		
						X0C		
	24VDC	-	-			Т	B14	X0D
	L						B15	X0E
							B16	X0F
						Т	B17	COM

*1: Use the CPU parameter settings to select. (Default: 0.2ms). Refer to Section 1.3.1 for the setting method.

*2: For the setting method, refer to the section 1.3.3.

*3: When making settings with an SW5D5C-GPPW or earlier GX Developer, select "16 point intelligent module."

Vacant

TB18

MEMO

6. BLANK COVER MODULE

This chapter provides the specifications of the blank cover module used to protect the vacant slot (between I/O modules) of the base module from dust.

Type Item		QG60	
Number of I/O points occupied		Default: 16 points (Can be changed to 0, 16, 32, 48, 64, 128, 256, 512, 1024 points by "PLC system" of "PLC parameter".)	
Application		Used as a dustproof cover for a slot not loaded with an I/O module (especially a vacant slot between modules).	
	Н	98(3.86) mm(inch)	
External	W	27.4(1.08) mm(inch)	
D		90(3.55) mm(inch)	
Weight		0.07 kg	

Table 6.1 Blank Cover Module Specifications

* Load the blank cover module with the connector cover of the base module fitted.

MEMO

7. CONNECTORS

The 40-pin connectors and 37-pin D-sub connectors used with the input and output modules are to be user-prepared.

The following tables list the connector types and applicable models, and introduce crimp-contact and pressure-displacement tools.

(1) 40-pin connectors (a) 40-pin connectors

() -			
Туре	Model Name	Applicable Wire Size	Applicable Model
Soldering type connector	A6CON1	0.3mm ² (AWG#22)	QX41, QX41-S1, QX42,
Crimp-contact type connector	A6CON2	AWG#24 to 28	QX42-S1, QX71, QX72,
	A600N/2	AWG#28 (twisted)	QX82, QY41P, QY42P,
Pressure-displacement type connector	A6CON3	AWG#30 (single wire)	QY71, QH42P,
Soldering type connector	A6CON4	0.3mm ² (AWG#22)	QX41Y41P

(b) 40-pin connector crimp-contact and pressure-displacement tools

Туре	Model Name	Contact
Crimp-contact tool	FCN-363T-T005/H	
	FCN-367T-T012/H	
	(locator plate)	
Dressure displacement to al	FCN-707T-T001/H	FUJITSU COMPONENT
Pressure-displacement tool	(cable cutter)	
	FCN-707T-T101/H	
	(hand press)	

(2) 37-pin D-sub connectors (a) 37-pin D-sub connectors

Туре	Model Name	Applicable Wire Size	Applicable Model
Soldering type connector	A6CON1E	0.3mm ² (AWG#22)	
Crimp-contact type connector	A6CON2E	AWG#24 to 24	
Description la compact temperature		AWG#28 (twisted)	QX81, QY81P
Pressure-displacement type connector	A6CON3E	AWG#30 (single wire)	

(b) 37-pin D-sub connector crimp-contact and pressuredisplacement tools

Туре	Model Name	Contact
Crimp-contact tool	91503-1	
	768349-1 (die set) 768338-1	
Pressure-displacement tool	91220-1 (cable cutter)	Tyco Electronics AMP K.K.
	91085-2 (hand mini- press)	

MELSEC-Q

8. SPECIFICATIONS OF CONNECTOR/TERMINAL BLOCK CONVERTOR MODULES

8.1 Specifications of Connector/Terminal Block Convertor Modules

This chapter explains the specifications of connector/terminal block convertor modules.

Туре	Details	Weight	Applicable wire size	Applicable crimping terminal	Applicable Models			
A6TBXY36	For positive common type input modules and sink type output modules (standard type)	0.4kg			Q series: QX41, QX41-S1, QX42, QX42-S1, QY41P, QY42P, QH42P, QX41Y41P AnS series: A1SX41, A1SX41-S1, A1SX41-S2,			
A6TBXY54	For positive common type input modules and sink type output modules (2-wire type)	0.5kg		1.25-3.5(JIS)	A1SX42, A1SX42-S1, A1SX42-S2, A1SX82-S1,A1SY41, A1SY41P, A1SY42, A1SY42P, A1SY82, A1SH42, A1SH42-S1 A series: AX42, AX42-S1, AY42, AY42-S1, AY42-S3, AY42-S4, AH42 CC-Link: AJ65SBTCF1-32D, AJ65SBTCF1-32T, AJ65SBC1-32D, AJ65SBC1-32T MELSECNET-MINI: AJ35TC1-32D, AJ35TC1-32T			
A6TBX70	For positive common type input modules (3-wire type)	0.75 to 2mm ²	to	to	to	to V1.25-YS3A	V1.25-M3 V1.25-YS3A 2-3.5(JIS) 2-YS3A V2-S3	Q series: QX41, QX41-S1, QX42, QX42-S1, QH42P, QX41Y41P AnS series: A1SX41, A1SX41-S1, A1SX41-S2, A1SX42, A1SX42-S1, A1SX42-S2, A1SX82-S1, A1SH42, A1SH42-S1 A series: AX42, AX42-S1, AH42 CC-Link: AJ65SBTCF1-32D, AJ65SBC1-32D MELSECNET-MINI: AJ35TC1-32D
A6TBX36-E	For negative common type input modules (standard type)	0.4kg			Q series: QX81			
A6TBX54-E	For negative common type input modules (2-wire type)	0.5kg			AnS series: A1SX81, A1SX81-S2 A series: AX82			
A6TBX70-E	For negative common type input modules (3-wire type)	0.6kg	.6kg	0.6kg				
A6TBY36-E	For source type output modules (standard type)	0.4kg			Q series: QY81P AnS series: A1SY81			
A6TBY54-E	For source type output modules (2-wire type)	0.5kg			A series: AY82EP			

(1) Connector/Terminal Block Convertor Module Specifications

POINT							
(1) The number of	of connectable I/O points is 32 for all connector/terminal block						
convertor mo	dules.						
Two connecto	Two connector/terminal block convertor modules and two cables for						
connector/terr	ninal block convertor modules are required for 64-point I/O						
modules.							
(2) Though the A	1SX81(S2) is used either as a sink or source type, use the						
A6TBX36-E, /	A6TBX54-E or A6TBX70-E.						
The A6TBXY	36, A6TBXY54 or A6TBX70 cannot be used.						
(3) Though the A	1SX82-S1 is used either as a sink or source type, the						
A6TBXY36/X	Y54/X70 may be used only when the A1SX82-S1 is used as a sink						
type.							
When it is use	ed as a source type, the A6TBXY36/XY54/X70 cannot be used.						
(4) Though the A	1SY82 is a source type output module, use theA6TBXY36 or						
A6TBXY54. T	he A6TBXY36-E or A6TBXY54-E cannot be used.						
(5) In the A series	s, the plus common input module is separately labeled as a sink						
type input mo	dule, and the minus common input module is separately labeled						
as a source ty	<i>r</i> pe input module.						
(6) When using t	he A6TBXY70 as a mixed input/output module, use at the input						
side.							
(7) Tighten the m	odule terminal screws to the following torque.						
Supply line co	onnecting terminal screw (M3.5 screw): Tightening torque						
78.4N•cm							

Туре	Details	Weight	Applicable Models
AC05TB	0.5 m (19.69 in.), for sink modules	0.17kg	
AC10TB	1 m (39.37 in.), for sink modules	0.23kg	
AC20TB	2 m (78.74 in.), for sink modules	0.37kg	
AC30TB	3 m (118.11 in.), for sink modules	0.51kg	A6TBXY36
AC50TB	5 m (196.85 in.), for sink modules	0.76kg	A6TBXY54
AC80TB	8 m (314.96 in.), for sink modules (common current not exceeding 0.5 A)	1.2kg	A6TBX70
AC100TB	10 m (393.7 in.), for sink modules (common current not exceeding 0.5 A)	1.5kg	
AC05TB-E	0.5 m (19.69 in.), for source modules	0.17kg	A6TBX36-E
AC10TB-E	1 m (39.37 in.), for source modules	0.23kg	A6TBY36-E
AC20TB-E	2 m (78.74 in.), for source modules	0.37kg	A6TBX54-E
AC30TB-E	3 m (118.11 in.), for source modules	0.51kg	A6TBY54-E
AC50TB-E	5 m (196.85 in.), for source modules	0.76kg	A6TBX70-E

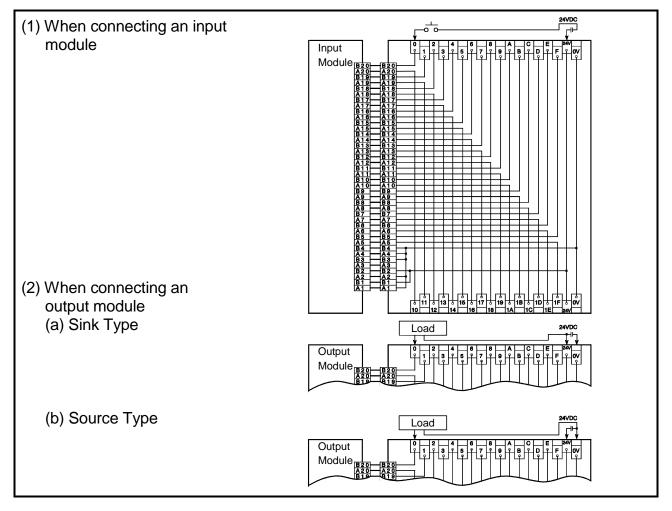
(2) Cable

8

MELSEC-Q

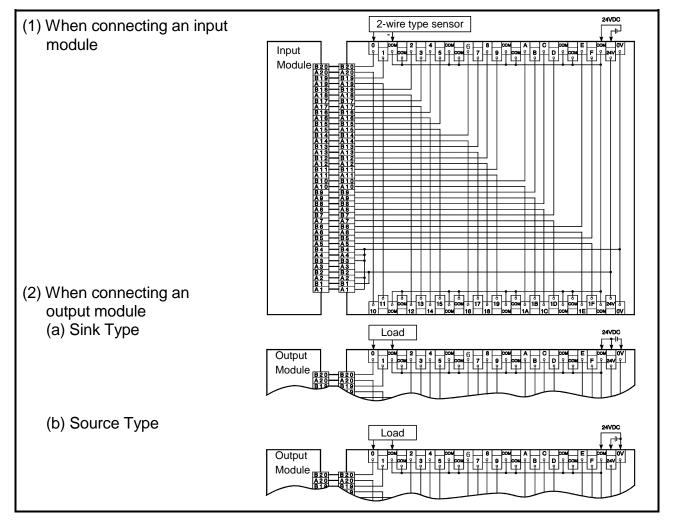
8.2 Connector/Terminal Block Convertor Module Connection Diagrams

8.2.1 A6TBXY36



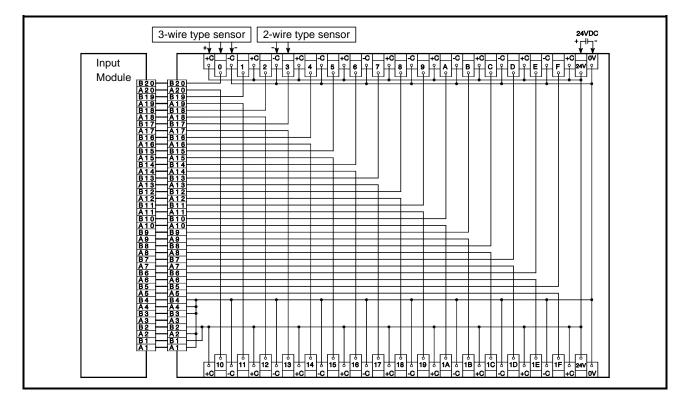
MELSEC-Q

8.2.2 A6TBXY54

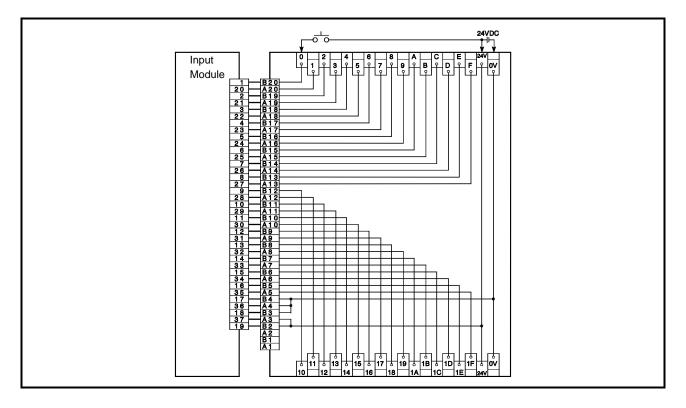


MELSEC-Q

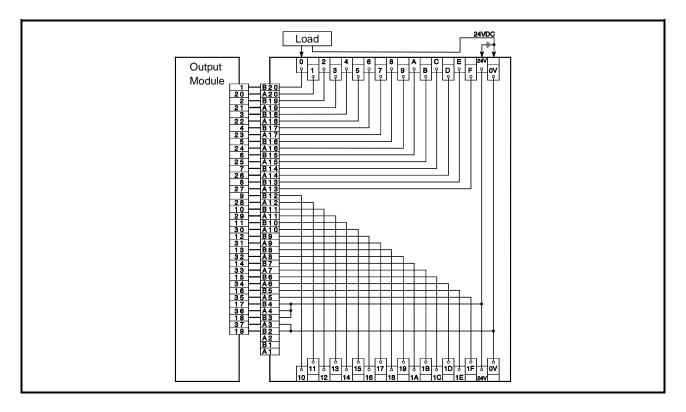
8.2.3 A6TBX70



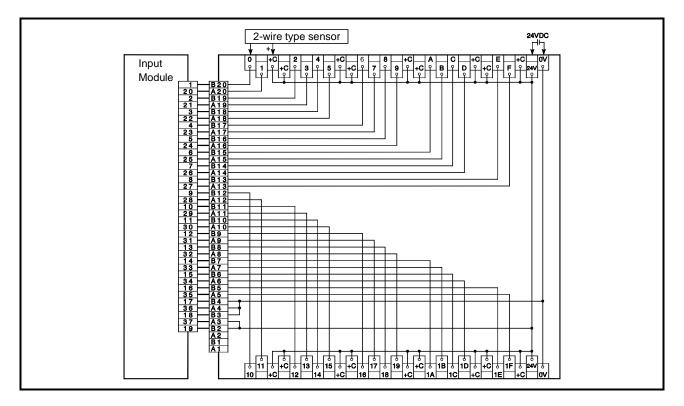
8.2.4 A6TBX36-E



8.2.5 A6TBY36-E



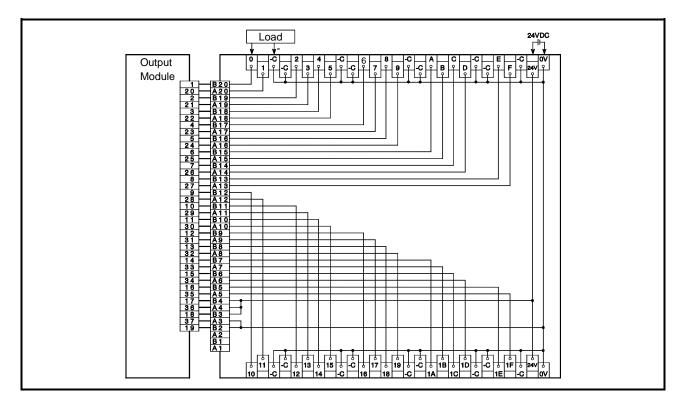
8.2.6 A6TBX54-E



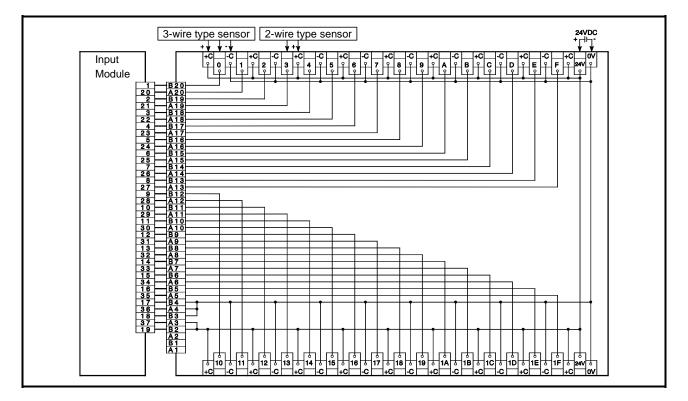
MELSEC-Q

MELSEC-Q

8.2.7 A6TBY54-E



8.2.8 A6TBX70-E



9. SPRING CLAMP TERMINAL BLOCK

9.1 Q6TE-18S

The Q6TE-18S shall be used attached to a Q Series terminal block type I/O module or an intelligent function module.

Since the Q6TE-18S uses a spring clamp it does not require screw tightening, which greatly reduces the number of wiring procedures.

(1) Compatible Models

The QT6E-18S can be used with the following models:

Model type	Model name					
I/O module	QX10 QX80 QY68A	QX28 QY10 QY70	QX40 QY18A QY80	QX40-S1 QY22 QX48Y57	QX50 QY40P QI60	QX70 QY50
Intelligent function module	Q62DA Q64AD Q64TCRT	Q64DA Q68ADV Q64TCRTBW	Q68DAV Q68ADI Q64RD	Q68DAI		

POINT

The terminal numbers of the Q6TE-18S correspond to the terminal numbers on the compatible module.

For the signal names corresponding to the terminal numbers when connected to an external device, please refer to the User's Manual of the module to use.

(2) Specifications

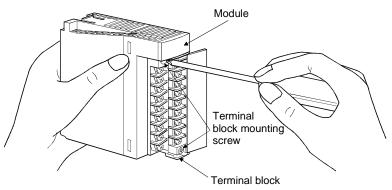
Q6TE-18S specification is explained.

Item	Specifications
Applicable wire size	0.3 to 1.5 mm ² (AWG22 to 16)
Wire strip length	8 to 11 mm
Mounting screw tightening torque range	66 to 89 N•cm
Weight	0.07kg

(3) Removal of Terminal Block and Installation of Q6TE-18S

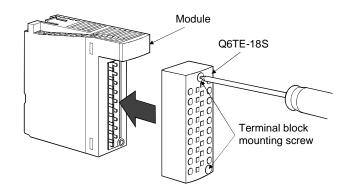
(a) Removal of terminal block

Unscrew the two terminal block mounting screws situated at the top and bottom of the terminal block and take them off.



(b) Installation of Q6TE-18S

Mount Q6TE-18S onto the module and tighten the terminal block mounting screws within the specified torque range.



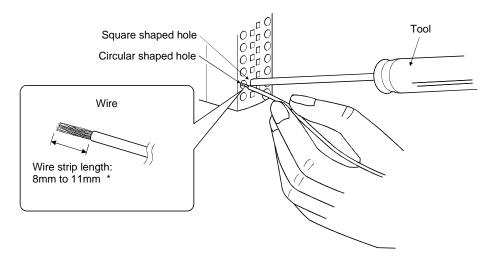
(c) Cable Installation

Insert the tool into the square shaped hole, which corresponds to the terminal you wish to use.

While the tool is inside the hole, insert the wire into the circular shaped hole (as shown below).

Remove the tool from the square shaped hole, taking care not to remove the wire.

After the wire has been clamped, gently pull the wire to confirm that it is secure.



[Cautions]

* Take care that the wire strip length is between 8mm to 11mm.

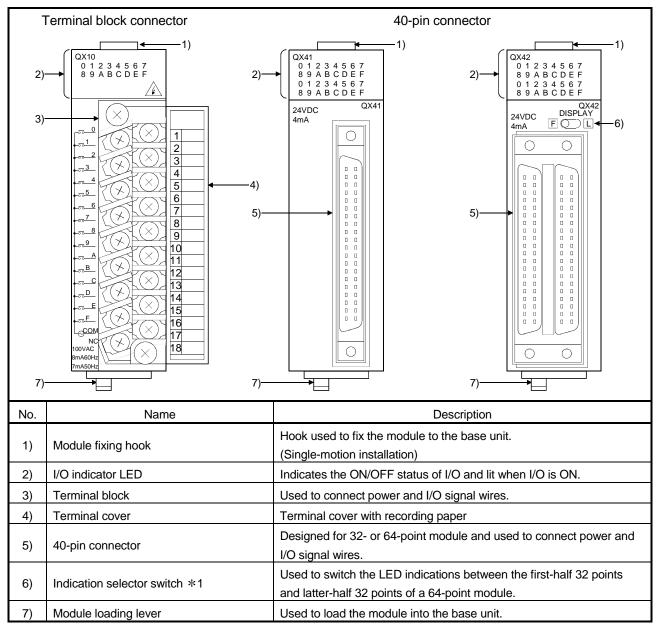
If the wire strip length is too long, this will expose the bare wire, which increases the risk of electric shock or short circuit.

If the wire strip length is too short, this will result in the wire not being securely attached.

(d) Cable removal

Insert the tool into the corresponding square shaped hall until it stops. Pull the wire out of the hall completely.

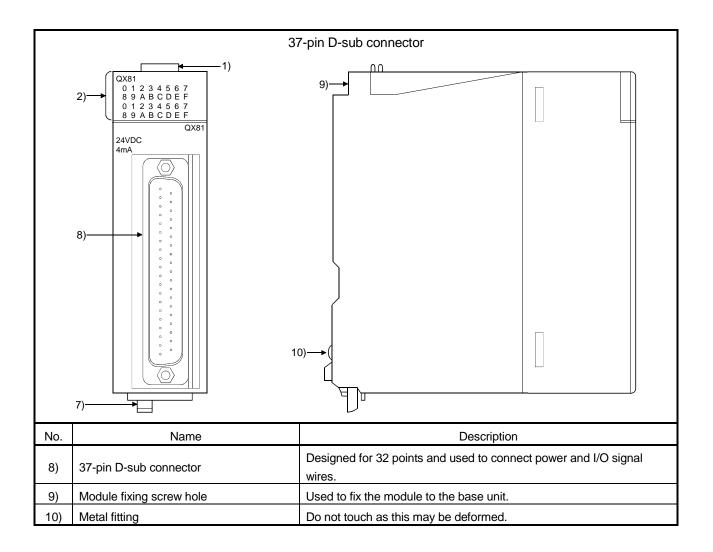
10. NAMES OF MODULE PARTS

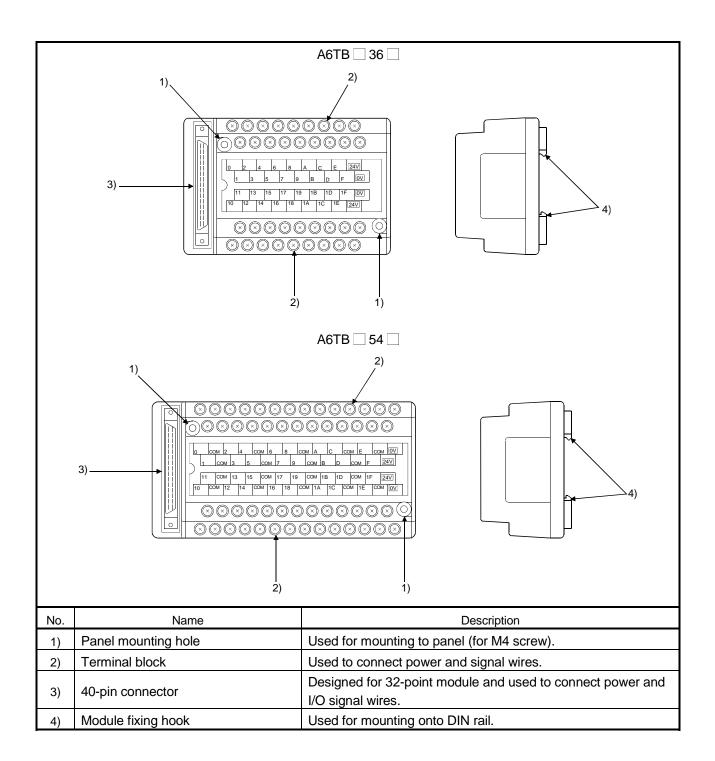


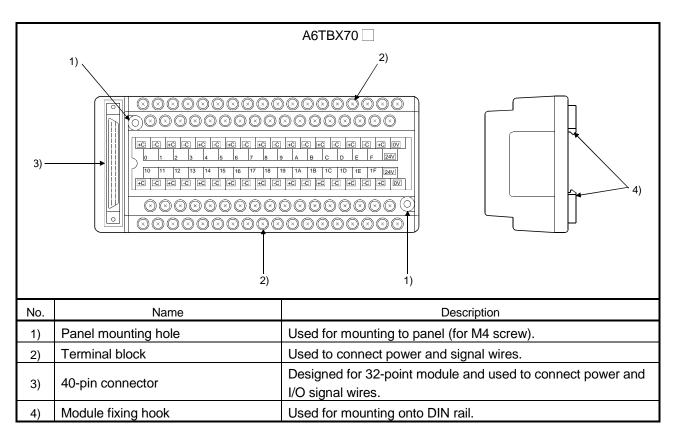
This chapter explains the names of the I/O module parts.

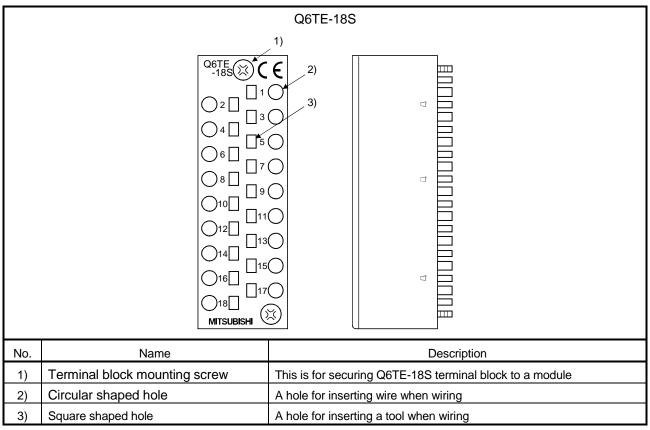
*1: Operate the indication selector switch with your fingertip.

Do not use a screwdriver or similar tool as it may damage the switch.









11. I/O MODULE TROUBLESHOOTING

This chapter explains possible problems with I/O circuits and their corrective actions.

11.1 Input Circuit Troubleshooting

This section describes possible problems with input circuits and their corrective actions.

\backslash	Condition	Cause	Corrective Action
Example 1	Input signal is not turned OFF.	• Leakage current of input switch (e.g. drive by non-contact switch). AC input C Leakage current Power supply	 Connect an appropriate resister so that the voltage across the terminals of the input module becomes below the OFF voltage value. AC input Input module It is recommended to use 0.1 to 47 ^µF + 47 to 120 Ω (1/2W) for the CR constant.
Example 2	Input signal is not turned OFF.	• Drive by a limit switch with neon lamp. AC input Leakage current Power supply	 Same as Example 1. Or make up another independent display circuit.
Example 3	Input signal is not turned OFF.	Leakage current due to line capacity of wiring cable. (Line capacity C of twisted pair wire is approx. 100 PF/m). AC input Input module Power supply	 Same as Example 1. However, leakage current is not generated when the power supply is located in the input equipment side as shown below. AC input AC input Power supply

Table 11.1 Input Circuit Problems and Corrective Actions

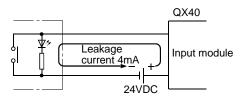
11

	Condition	Cause	Corrective Action
Example 4	Input signal is not turned OFF.	• Drive by switch with LED indicator. DC input (Positive common)	Connect an appropriate resister, as shown below, so that the current flowing along the input module becomes below the OFF current. DC input (Positive common) Resistor Input module * A calculation example of a value for a connected resistor is given on the following page.
Example 5	Input signal is not turned OFF.	• Sneak path due to the use of two power supplies. $DC Input$ $E_1 + E_2 + E_2 + E_2$ Input module $E_1 > E_2$	 Use only one power supply. Connect a sneak path prevention diode. (Figure below) DC Input E1 + E2 * Input module
Example 6	Input signal is not turned ON (AC input module).	Stepwise distortion as shown below appears to the zero cross voltage of input signal (AC). Zero cross voltage	Improve input signal waveform by using the on- line system etc.
Example 6	False input due to noise	Depending on response time setting, noise is imported as input.	Change response time setting. Example 1ms → 5ms (Setting of a shorter response time may produce a higher effect on periodic excessive noise.) If no effects are produced by the above, take basic actions to prevent excessive noise from entering, e.g. avoid bundling the power and I/O cables, and suppress noise by adding surge absorbers to such noise sources as relays and contactors used with the same power supply.)

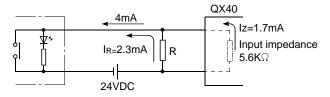
Table 11.1 Input Circuit Problems and Corrective Actions (Continued)

<Calculation example of Example 4>

Consider a switch with LED indicator connected to the QX40, giving a leakage current of 4mA when a 24VDC power is turned on.



(1) The 1.7mA OFF current of the QX40 is not satisfied. Hence, connect a resistor as shown below.



(2) Calculate the resistor value R as indicated below.

To satisfy the 1.7mA OFF current of the QX40, the resistor R to be connected may be the one where 2.3mA or more will flow.

IR: Iz=Z (Input impedance): R

 $R \le \frac{Iz}{I_R} \times Z$ (Input impedance) = $\frac{1.7}{2.3} \times 5.6$ =4.13[k Ω]

R<4.13k Ω.

Assuming that resistor R is 3.9k Ω, the power capacity W of resistor R is:

W = $(input voltage)^2 \div R = 28.8^2 \div 3900 = 0.213(W)$

(3) The power capacity of the resistor selected is 3 to 5 times greater than the actual power consumption. A 3.9 (k Ω), 1 to 2 (W) resistor may therefore be connected to the terminal in question.

This section describes possible problems with output circuits and their corrective actions.

\square	Condition	Cause	Corrective Action
	When the output is	 Load is half-wave rectified inside (in some cases, this is true of a solenoid). 	• Connect a resistor several tens to hundreds of \mathbf{k}^{Ω} across the load.
Example 1	OFF, excessive voltage is applied to the load.	 QY22 Output module Load When the polarity of the power supply is as shown in [1], C is charged. When the polarity is as shown in [2], the voltage charged in C plus the line voltage are applied across D1. Max. voltage is approx. 2.2E. (If a resistor is used in this way, it does not pose a problem to the output element. But it may cause the diode, which is built into the load, to deteriorate, resulting in a fire, etc.) 	Load
Example 2	The load is not turned OFF (triac output).	Leakage current due to built-in noise suppression.	• Connect C and R across the load. (When the wiring distance from the output card to the load is long, there may be a leakage current due to the line capacity.)

Table 11.2 Output Circuit Problem	ms and Corrective Actions
-----------------------------------	---------------------------

	Condition	Cause	Corrective Action
Example 3	The load is not turned OFF. (Triac output)	 The load current is lower than the minimum load current. QY22 Surge suppressor Phototriac Phototriac Up to the load current is lower than the minimum load current is lower than the minimum load current of the output module, the triac does not operate since the load current flows into a phototriac as shown below. When an inductive load is connected, the load may not be turned OFF since surge at the time of OFF is applied to the phototriac. 	 Connect a resistor to both ends of a load so that the load current is higher than the minimum load current.

Table 11.2 Output Circuit Problems and Corrective Actions (Continued)

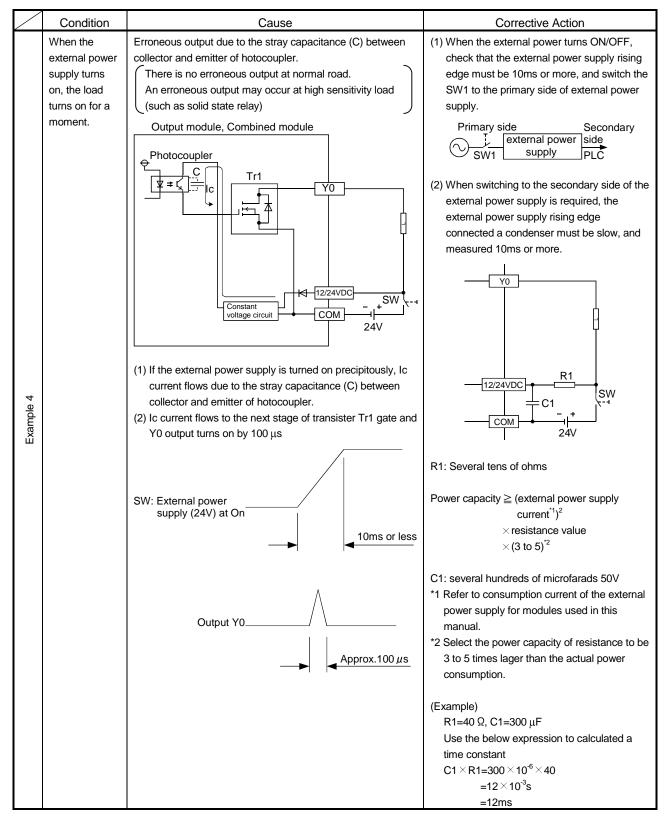


Table 11.2 Output Circuit Problems and Corrective Actions (Continued)

MELSEC-Q

Condition	Cause	Corrective Action
The load which was turned OFF is turned ON for a moment at power-off. (Transistor output)	The load [2] which was turned OFF may be turned ON due to back electromotive force at the time of power-off [1] if an inductive load is used.	To prevent the generation of the back electromotive force, connect diode in parallel with load where the back electromotive force has been generated. Source output [3] Back electromotive force

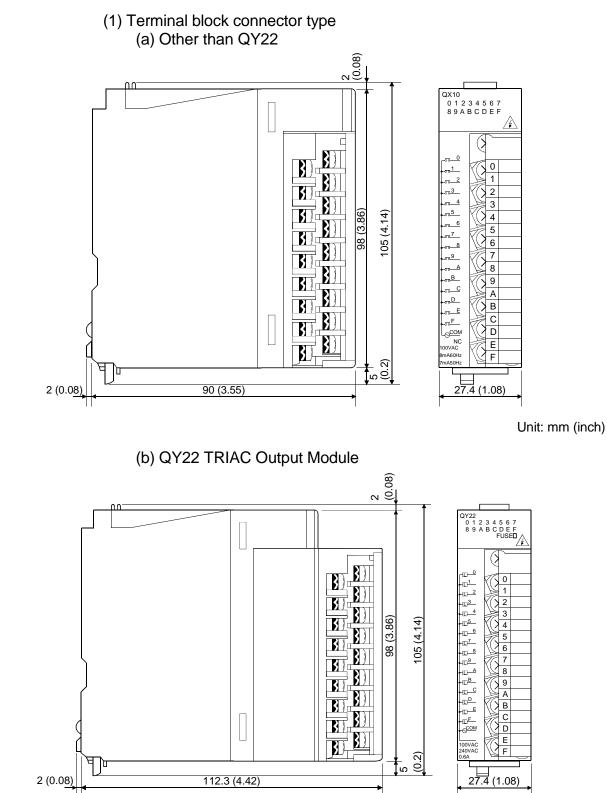
Table 11.2 Output Circuit Problems and Corrective Actions (Continued)

APPENDICES

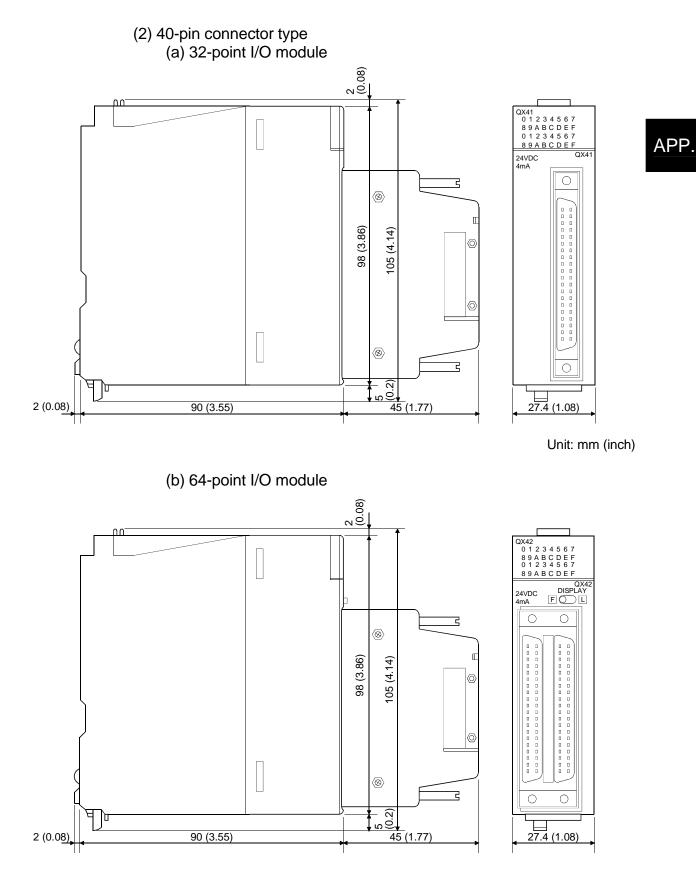
Appendix 1 External Dimensional Drawings

Appendix 1.1 I/O modules

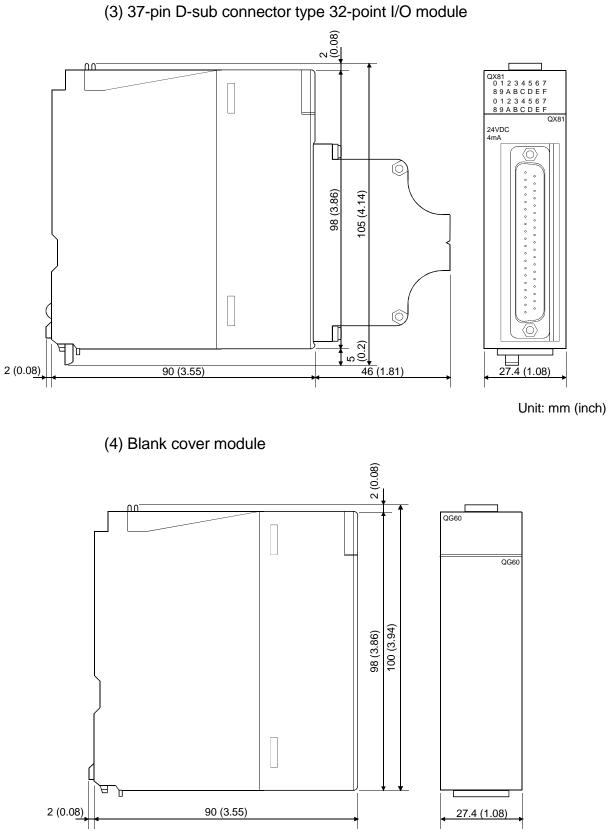
APP.



Unit: mm (inch) App - 1



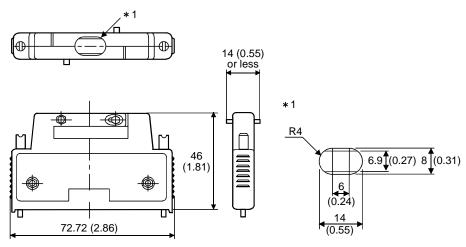
Unit: mm (inch)



Unit: mm (inch)

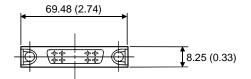
Appendix 1.2 Connectors, connector/terminal block converter modules

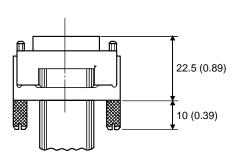
- (1) 40-pin connectors
 - (a) A6CON1 soldering type, A6CON2 crimp-contact type 40-pin connector



Unit: mm (inch)

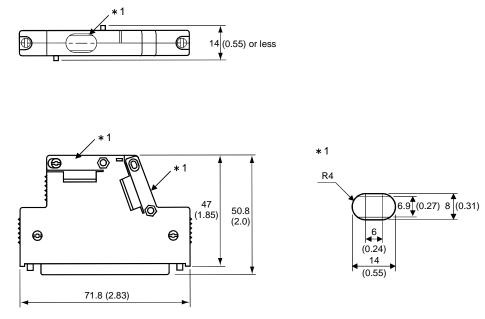
(b) A6CON3 pressure-displacement type 40-pin connector





* Flat cable arrangement is in the following sequence. A1 \rightarrow B1 \rightarrow A2...

Unit: mm (inch)

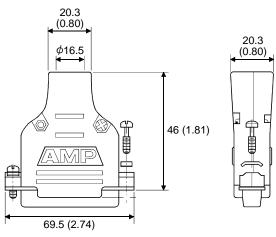


(c) A6CON4 soldering type 40-pin connector (straight/diagonal out type)

Unit: mm (inch)

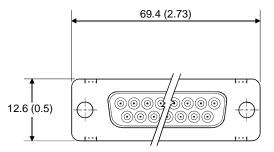
If the cable diameter is thinner than the clamp portion, wind tape, etc. to secure the cable so that it will not come off the cable clamp portion. If the cable is made of slippery material, it is recommended to take anti-slip measures by winding rubber-based tape, etc.

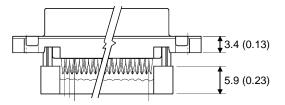
- (2) 37-pin D-sub connectors
 - (a) A6CON1E soldering type 37-pin D sub-connector (straight out type)
 - A6CON2E crimp-contact-type 37-pin D sub-connector (straight out type)



Unit: mm (inch)

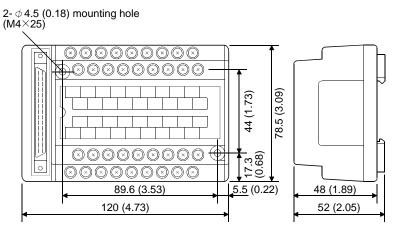
(b) A6CON3E pressure-displacement type 37-pin D-sub connector (flat cable type)





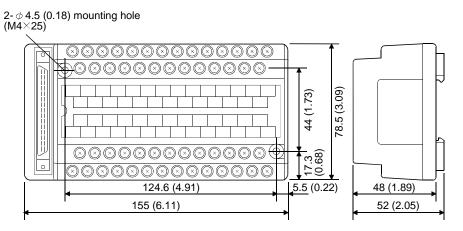
Unit: mm (inch)

(3) A6TB 36 connector/terminal block converter module



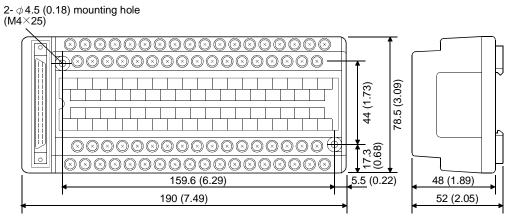
Unit: mm (inch)

(4) A6TB 54 connector/terminal block converter module



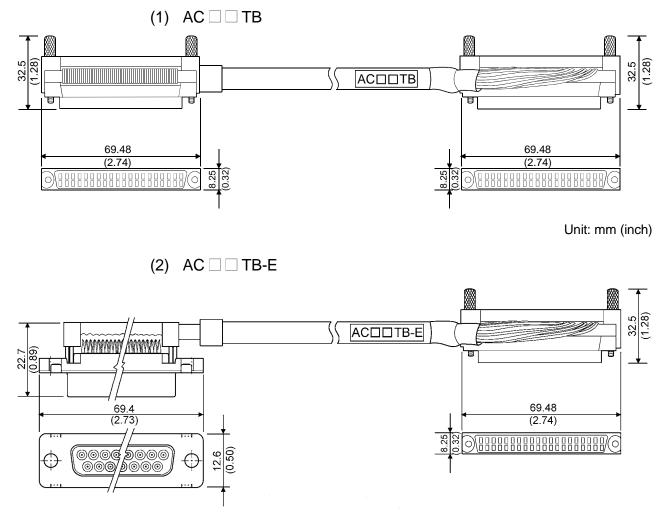
Unit: mm (inch)

(5) A6TBX70 connector/terminal block converter module



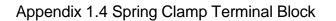
Unit: mm (inch)

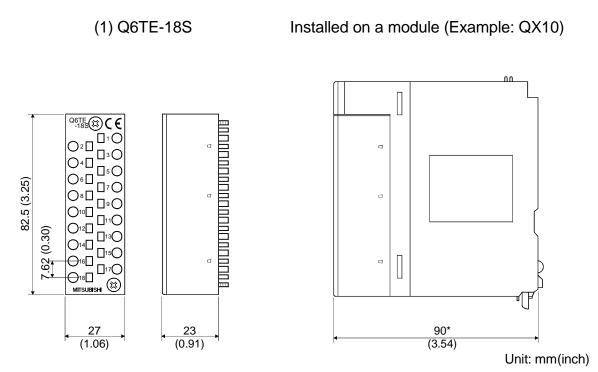
App - 7



Appendix 1.3 Connector/ terminal block converter module cable.

Unit: mm (inch)





*: The depth of the module installed with a Q6TE-18S is equivalent with the factory default dimensions for that module.

Appendix 2 Compatibility with MELSEC-AnS Series I/O modules

Note that the MELSEC-Q series I/O modules and MELSEC-AnS series I/O modules are different in external terminal block configuration. Differences in terminal block configuration are indicated below.

(1) Input modules

Terminal Block Number	QX10, QX40	QX80	A1SX10, A1SX40, A1SX80
TB9	X08	X08	COM
TB10	X09	X09	X08
TB11	X0A	X0A	X09
•	•	٠	•
•	•	•	•
•	•	•	•
TB16	X0F	X0F	X0E
TB17	COM	NC	X0F
TB18	NC	СОМ	СОМ
TB19	—	—	Vacant
TB20			Vacant

(2) Output modules

Terminal Block Number	QY10	QY40P	A1SY10	A1SY40
TB9	Y08	Y08	COM1	12/24VDC
TB10	Y09	Y09	Y08	COM1
TB11	Y0A	Y0A	Y09	Y08
•	•	•	•	•
•	•	•	•	•
•	•	•	•	•
TB16	Y0F	Y0F	Y0E	Y0D
TB17	COM	12/24VDC	Y0F	Y0E
TB18	NC	COM	COM2	Y0F
TB19		_	24VDC	12/24VDC
TB20	_	—	0V	COM2

			1
Terminal Block Number	QY50	A1SY50	
TB9	Y08	12/24VDC	
TB10	Y09	COM1	
TB11	Y0A	Y08	
•	•	•	
•	•	•	
•	•	•	
TB16	Y0F	Y0D	
TB17	12/24VDC	Y0E	
TB18	COM	Y0F	
TB19	_	12/24VDC	
TB20		COM2	

Terminal Block	QY80	A1SY80
Number		
TB9	Y08	COM1
TB10	Y09	0V
TB11	Y0A	Y08
•	•	•
•	•	•
•	•	•
TB16	Y0F	Y0D
TB17	COM	Y0E
TB18	0V	Y0F
TB19	_	COM2
TB20	_	0V

POINT

The 40-pin connector used with the MELSEC-AnS series I/O module can be used intact with the MELSEC-Q series I/O module.

The 37-pin D-sub connector used with the MELSEC-AnS series I/O module is the same in wiring as, but opposite in cable pulling direction to, the MELSEC-Q series I/O module. (The conventional cable for A6TB cannot be used.)

MEMO

WARRANTY

Please confirm the following product warranty details before using this product.

1. Gratis Warranty Term and Gratis Warranty Range

If any faults or defects (hereinafter "Failure") found to be the responsibility of Mitsubishi occurs during use of the product within the gratis warranty term, the product shall be repaired at no cost via the sales representative or Mitsubishi Service Company.

However, if repairs are required onsite at domestic or overseas location, expenses to send an engineer will be solely at the customer's discretion. Mitsubishi shall not be held responsible for any re-commissioning, maintenance, or testing onsite that involves replacement of the failed module.

[Gratis Warranty Term]

The gratis warranty term of the product shall be for one year after the date of purchase or delivery to a designated place.

Note that after manufacture and shipment from Mitsubishi, the maximum distribution period shall be six (6) months, and the longest gratis warranty term after manufacturing shall be eighteen (18) months. The gratis warranty term of repair parts shall not exceed the gratis warranty term before repairs.

[Gratis Warranty Range]

- (1) The range shall be limited to normal use within the usage state, usage methods and usage environment, etc., which follow the conditions and precautions, etc., given in the instruction manual, user's manual and caution labels on the product.
- (2) Even within the gratis warranty term, repairs shall be charged for in the following cases.
 - 1. Failure occurring from inappropriate storage or handling, carelessness or negligence by the user. Failure caused by the user's hardware or software design.
 - 2. Failure caused by unapproved modifications, etc., to the product by the user.
 - 3. When the Mitsubishi product is assembled into a user's device, Failure that could have been avoided if functions or structures, judged as necessary in the legal safety measures the user's device is subject to or as necessary by industry standards, had been provided.
 - 4. Failure that could have been avoided if consumable parts (battery, backlight, fuse, etc.) designated in the instruction manual had been correctly serviced or replaced.
 - 5. Failure caused by external irresistible forces such as fires or abnormal voltages, and Failure caused by force majeure such as earthquakes, lightning, wind and water damage.
 - 6. Failure caused by reasons unpredictable by scientific technology standards at time of shipment from Mitsubishi.
 - 7. Any other failure found not to be the responsibility of Mitsubishi or that admitted not to be so by the user.

2. Onerous repair term after discontinuation of production

- (1) Mitsubishi shall accept onerous product repairs for seven (7) years after production of the product is discontinued. Discontinuation of production shall be notified with Mitsubishi Technical Bulletins, etc.
- (2) Product supply (including repair parts) is not available after production is discontinued.

3. Overseas service

Overseas, repairs shall be accepted by Mitsubishi's local overseas FA Center. Note that the repair conditions at each FA Center may differ.

4. Exclusion of loss in opportunity and secondary loss from warranty liability

Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation of damages caused by any cause found not to be the responsibility of Mitsubishi, loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products, special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products, replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

5. Changes in product specifications

The specifications given in the catalogs, manuals or technical documents are subject to change without prior notice.

6. Product application

- (1) In using the Mitsubishi MELSEC programmable controller, the usage conditions shall be that the application will not lead to a major accident even if any problem or fault should occur in the programmable controller device, and that backup and fail-safe functions are systematically provided outside of the device for any problem or fault.
- (2) The Mitsubishi programmable controller has been designed and manufactured for applications in general industries, etc. Thus, applications in which the public could be affected such as in nuclear power plants and other power plants operated by respective power companies, and applications in which a special quality assurance system is required, such as for Railway companies or Public service purposes shall be excluded from the programmable controller applications.

In addition, applications in which human life or property that could be greatly affected, such as in aircraft, medical applications, incineration and fuel devices, manned transportation, equipment for recreation and amusement, and safety devices, shall also be excluded from the programmable controller range of applications.

However, in certain cases, some applications may be possible, providing the user consults their local Mitsubishi representative outlining the special requirements of the project, and providing that all parties concerned agree to the special circumstances, solely at the users discretion.



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