

# MITSUBISHI

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# Serial Communication Module

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## User's Manual

(Hardware)

QJ71C24N, QJ71C24N-R2

QJ71C24N-R4

QJ71C24, QJ71C24-R2

Thank you for purchasing the Mitsubishi programmable controller  
MELSEC-Q Series.

Prior to use, please read this and relevant manuals thoroughly to  
fully understand the product.

**MELSEC-Q**  
Mitsubishi Programmable  
Controller

MODEL	QJ71C24-U-HW-JE
MODEL CODE	13JQ31
IB(NA)-0800008-I (0807)MEE	

## ● SAFETY PRECAUTIONS ●

(Be sure to read these instructions before using the product.)

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.

Note that these precautions apply only to this product. Refer to the user's manual of the CPU module for the programmable controller system safety precautions.


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



Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.



Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight personal injury or physical damage.

Note that the  **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]

### CAUTION

- Do not bunch the control wires or communication cables with the main circuit or power wires, or install them close to each other. They should be installed 100mm(3.9inch) or more from each other. Not doing so could result in noise that may cause malfunction.

## [Installation Instructions]

### CAUTION

- Use the programmable controller in an environment that meets the general specifications contained in the user's manual of the CPU module to use. Using this programmable controller 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.
- While pressing the installation lever located at the bottom of module, insert the module fixing tab into the fixing hole in the base unit until it stops. Then, securely mount the module with the fixing hole as a supporting point. Incorrect loading of the module can cause a malfunction, failure or drop. When using the programmable controller 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.
- 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 directly touch the conductive area or electronic components of the module. Doing so may cause malfunction or failure in the module.

## [Wiring Instructions]

### CAUTION

- When turning on the power and operating the module after installation and wiring are completed, always attach the terminal cover that comes with the product.  
There is a risk of electric shock if the terminal cover is not attached.
- Perform correct pressure-displacement, crimp-contact or soldering for external wire connections using the tools specified by the manufactures.  
Incorrect connection may cause short circuits, fire, or malfunction.
- Attach connectors to the module securely.
- Be sure to fix communication cables or power supply cables leading from the module by placing them in the duct or clamping them.  
Cables not placed in the duct or without clamping may hang or shift, allowing them to be accidentally pulled, which may cause a module malfunction and cable damage.
- Before connecting the cables, check the type of interface to be connected.  
Connecting or erroneous wiring to the wrong interface may cause failure to the module and external devices.
- Tighten the terminal screws within the range of specified torque.  
If the terminal screws are loose, it may result in short circuits or malfunction.  
If the screws are tightened too much, it may cause damage to the screw and/or the module, resulting in fallout, short circuits or malfunction.
- When removing the communication cable or power supply cable from the module, do not pull the cable. When removing the cable with a connector, hold the connector on the side that is connected to the module.  
When removing the cable connected to the terminal block, first loosen the screws on the part that is connected to the terminal block.  
Pulling the cable that is still connected to the module may cause malfunction or damage to the module or cable.
- Be sure there are no foreign substances such as sawdust or wiring debris inside the module. Such debris could cause fires, damage, or erroneous operation.
- 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.

## Revisions

\* The manual number is given on the bottom right of the cover.

Print Date	*Manual Number	Revision
Sep., 1999	IB(NA)-0800008-A	First printing
Dec., 1999	IB(NA)-0800008-B	<p>Addition</p> <p>"Compliance with the EMC Directive and Low Voltage Directive", Chapter 6 (1) (a) *· (c) *·(2) REMARK</p> <p>Correction</p> <p>"Safety Precautions", Chapter 2, Section 5.2 (3)</p>
Sep., 2000	IB(NA)-0800008-C	<p>Add the contents of the function version B. Put Windows® base software products together from Mitsubishi Programmable Controller MELSEC series to Mitsubishi integrated FA software MELSOFT series. Standardize the name from software package (GPP function) to product name (GX Developer).</p> <p>Correction</p> <p>"Safety Precautions", "Manuals", "Compliance with the EMC Directive and Low Voltage Directive", Chapter 2, Chapter 6(1)(b)(c).</p>
Dec., 2002	IB(NA)-0800008-D	<p>Addition model</p> <p>QJ71C24N, QJ71C24N-R2, QJ71C24N-R4</p>
Feb., 2003	IB(NA)-0800008-E	<p>Addition</p> <p>Chapter 1, Section 3.1</p>
Mar., 2006	IB(NA)-0800008-F	<p>Correction</p> <p>"Safety Precautions", "Compliance with the EMC and Low Voltage Directives", Section 3.1, 5.2, Chapter 7</p>
Sep., 2007	IB(NA)-0800008-G	<p>Change of a term</p> <p>"PLC" was changed to "programmable controller".</p> <p>Correction</p> <p>Section 3.1, Chapter 4, Section 5.1, 5.2, Chapter 7</p>
Jan., 2008	IB(NA)-0800008-H	<p>Correction</p> <p>Section 3.1, Chapter 4, 7</p>
Jul., 2008	IB(NA)-0800008-I	<p>Correction</p> <p>"Compliance with the EMC and Low Voltage Directives", Section 3.1, 5.2</p>

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## About Manuals

The following table lists manuals relating to this product.  
If necessary, obtain a proper manual in accordance with the intended use.

### Relevant Manuals

Manual name	Manual No. (Model code)
Q Corresponding Serial Communication Module User's Manual (Basic)	SH-080006 (13JL86)
Q Corresponding Serial Communication Module User's Manual (Application)	SH-080007 (13JL87)
Q Corresponding MELSEC Communication Protocol Reference Manual	SH-080008 (13JF89)

Please read the Q Corresponding Serial Communication Module User's Manual (Basic) before using this module.

## Compliance with the EMC and Low Voltage Directives

### (1) For programmable controller system

To configure a system meeting the requirements of the EMC and Low Voltage

Directives when incorporating the Mitsubishi programmable controller (EMC and Low Voltage Directives compliant) into other machinery or equipment, refer to Chapter 9 "EMC AND LOW VOLTAGE DIRECTIVES" of the QCPU User's Manual (Hardware Design, Maintenance and Inspection).

The CE mark, indicating compliance with the EMC and Low Voltage Directives, is printed on the rating plate of the programmable controller.

### (2) For the product

No additional measures are necessary for the compliance of this product with the EMC and Low Voltage Directives.

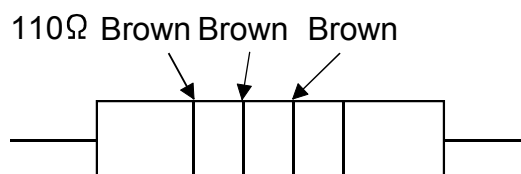
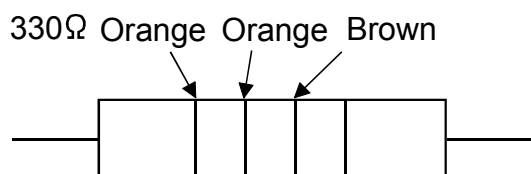
## 1. Overview

This manual is written to provide proper information and instructions on installation and wiring of the QJ71C24N, QJ71C24N-R2, QJ71C24N-R4, QJ71C24 and QJ71C24-R2 serial communication modules (hereinafter referred to as the serial communication module).

Check that the following items are included with the product package.

Model name	Product name	Quantity
QJ71C24N or QJ71C24	QJ71C24N or QJ71C24 serial communication module	1
	Terminal resistor for RS-422 communication 330Ω 1/4 W (Orange-Orange-Brown) *1	2
	Terminal resistor for RS-485 communication 110Ω 1/2 W (Brown-Brown-Brown) *1	2
QJ71C24N-R2 or QJ71C24-R2	QJ71C24N-R2 or QJ71C24-R2 serial communication module	1
QJ71C24N-R4	QJ71C24N-R4 serial communication module	1
	RS-422/485 plug-in connector socket block	2
	Terminal resistor for RS-422 communication 330Ω 1/4 W (Orange-Orange-Brown) *1	4
	Terminal resistor for RS-485 communication 110Ω 1/2 W (Brown-Brown-Brown) *1	4
	Plate terminal for braided shield cable connection	4

\*1: Differentiate the terminal resistors as follows:



## 2. Performance Specifications

The following describes the performance specifications of the serial communication module.

Use the modem function with reference to the relevant performance specifications in the user's manual (Basic).

For general specifications of the serial communication module, refer to the user's manual of the CPU module.

Item		Specifications (when the modem function is not used)						
		QJ71C24N QJ71C24	QJ71C24N-R2 QJ71C24-R2	QJ71C24N-R4				
Interface	CH1	RS-232-compliance (D-sub 9pin)	RS-232-compliance (D-sub 9pin)	RS-422/485-compliance (2-piece plug-in connector socket block)				
	CH2	RS-422/485-compliance (2-piece terminal block)	RS-232-compliance (D-sub 9pin)	RS-422/485-compliance (2-piece plug-in connector socket block)				
Synchronization method		Start-stop synchronization method						
Transmission speed		[QJ71C24N(-R2/R4)]						
		50	300	600	1200	2400	4800	9600
14400	19200	28800	38400	57600	115200	230400	(bps)	
		<ul style="list-style-type: none"> <li>• Transmission speed 230400 bps is available for only CH1. (Not available for CH2)</li> <li>• Total transmission speed of two interfaces is available up to 230400 bps.</li> <li>• Total transmission speed of two interfaces is available up to 115200 bps when the communication data monitoring function is used.</li> </ul>						
		[QJ71C24(-R2)]						
		50	300	600	1200	2400	4800	9600
14400	19200	28800	38400	57600	115200	-	(bps)	
		<ul style="list-style-type: none"> <li>• Total transmission speed of two interfaces is available up to 115200 bps.</li> </ul>						
Data format	Start bit	1						
	Data bit	7/8						
	Parity bit	1(vertical parity) or none						
	Stop bit	1/2						
Error detection	Parity check	For all protocol, select odd/even by the parameter when there is an error.						
	Sum check code	Select by the parameter for MC protocol/Bidirectional protocol. Select by the user entry frame for non-procedure protocol.						
Transmission distance (Overall distance)	RS-232	Maximum 15 m (49.2 ft.)	Maximum 15 m (49.2 ft.)					-
	RS-422/485	Maximum 1200 m (4592.4 ft.) (overall distance)	-					Maximum 1200 m (4592.4 ft.) (overall distance)
Allowable number of writes to flash ROM		Maximum 100,000 writes to the same area						
Number of occupied I/O points		32 points per slot (I/O assignment: Intelli: 32 points)						



Item		Specifications (when the modern function is not used)		
		QJ71C24N QJ71C24	QJ71C24N-R2 QJ71C24-R2	QJ71C24N-R4
Recommended cable	RS-232	7/0. 127 □P HRV-SV Outside diameter 8.5mm (0.33in.) or more (Oki Electric Cable Co., Ltd. Applicable number is specified in □.)		
	RS-422/485 (*1)	SPEV (SB)-MPC-0.2×3P Outside diameter approx. 6.5mm (0.26 in.) (Mitsubishi Cable Industries, LTD.) SPEV(SB)-0.2×3P Outside diameter approx. 7.5mm (0.3 in.) (Mitsubishi Cable Industries, LTD.)		
Applicable connector for external wiring		D-sub 9 pin (male) screw type (*2)		-
5V DC internal current consumption		0.31A	0.26A	0.39A
External dimensions		98 (3.86 in.) (H) × 27.4 (1.08 in.) (W) × 90 (3.54 in.) (D)[mm]		
Weight		0.20kg (0.44lb)		

\*1: Recommended cables SPEV (SB)-MPC-0.2 × 3P and SPEV (SB)-0.2 × 3P are equivalent in the electrical characteristics, but partially different in the outside diameter, internal wire colors, etc.

\*2: Refer to Section 5.1 for the recommended cable.

## 3. Mounting and Installation

### 3.1 Handling Precautions

- (1) Do not drop the module or subject it to heavy impact since it is made of resin.
- (2) Always make sure to touch the grounded metal to discharge the electricity charged in the body, etc., before touching the module.  
Failure to do so may cause a failure or malfunctions of the module.
- (3) Tighten the screws such as module fixing screws within the following ranges.

Screw location	Tightening torque range	Remarks
RS-422/485 terminal block terminal screw (M3 screw)	0.42 to 0.58N•m	-
RS-422/485 plug-in connector socket terminal screw for QJ71C24N-R4 (M2 screw)	0.20 to 0.25N•m	-
RS-232 cable connector screw (M2.6 screw)	0.20 to 0.39N•m	Screw hole depth: L=3.2mm or less (Internal length from the surface)
Module fixing screw (normally not required) (M3 screw) (*1)	0.36 to 0.48N•m	-

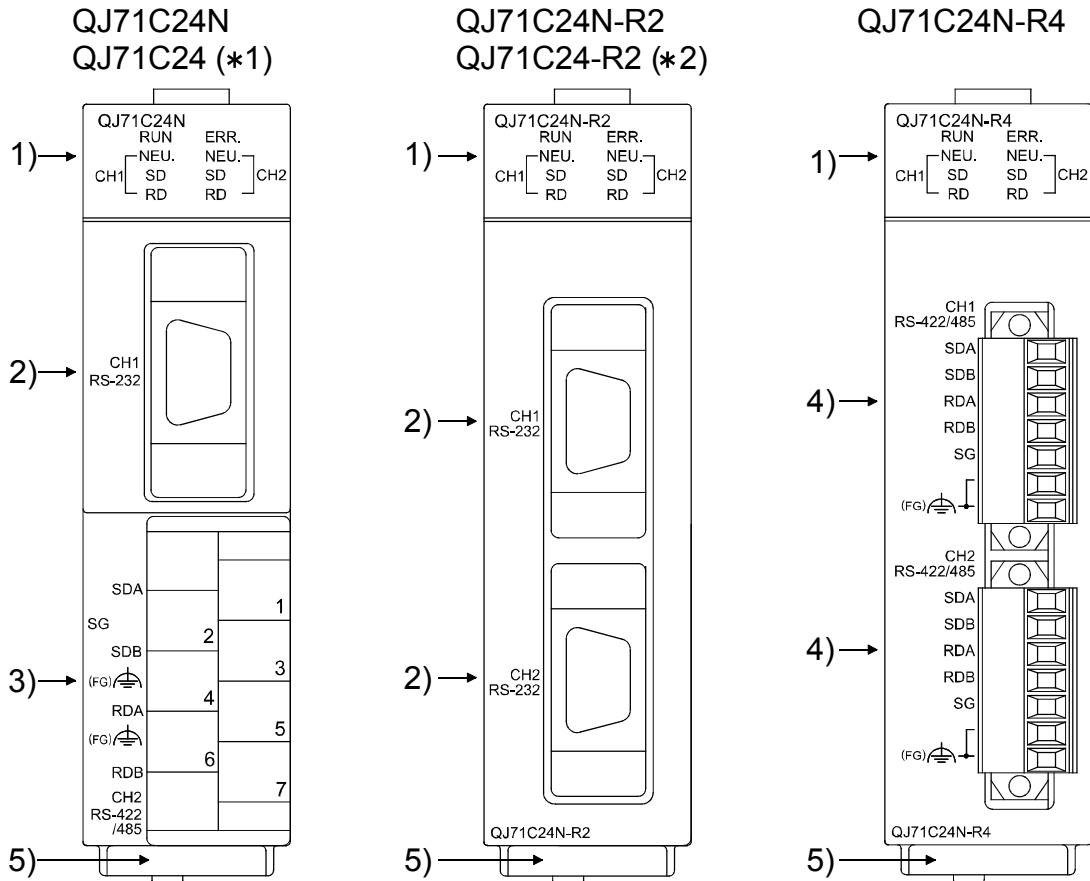
\*1: The module can be easily fixed onto the base unit using the hook at the top of the module.

However, it is recommended to secure the module with the module fixing screw if the module is subject to significant vibration.

### 3.2 Installation Environment

For further details, refer to the user's manual for the CPU module.

## 4. Part Names

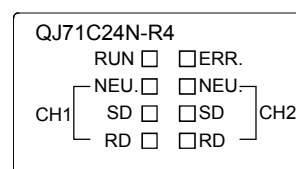
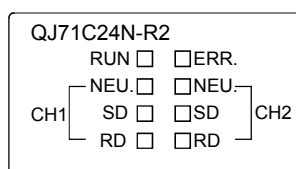
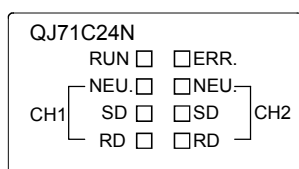


\*1: The appearance of the QJ71C24 is almost the same as that of the QJ71C24N, except for the model name part and serial number plate.

\*2: The appearance of the QJ71C24-R2 is almost the same as that of the QJ71C24N-R2, except for the model name part and serial number plate.

	Name	Contents
1)	Display LED	Display LED (For details, see Section (1).)
2)	RS-232 Interface	RS232 interface for serial communication with external devices (D-Sub 9pin)
3)	RS-422/485 Interface	RS422/485 interface for serial communication with external devices (2-piece terminal block)
4)	RS-422/485 Interface	RS422/485 interface for serial communication with external devices (2-piece plug-in socket block)
5)	Serial number plate	Indicates the serial No. of the serial communication module.

## (1) LED display list



CH	LED	Display contents	On/flashing	Off	Compatible protocol		
					MC	Non-procedural	Bidirectional
-	RUN	Normal operation display	Normal	Faulty or reset	Valid		
	ERR.	Error display (*1)	Error has occurred	Normal			
CH1	NEU. (*3)	Neutral status on the CH1 side display (*2)	Waiting for MC command message to be received	MC command message being received	Valid	Invalid (Off)	
	SD	Transmission status display	Data being transmitted	Data not transmitted	Valid		
	RD	Reception status display	Data being received	Data not received			
CH2	NEU. (*3)	Neutral status on the CH2 side display (*2)	Waiting for MC command message to be received	MC command message being received	Valid	Invalid (Off)	
	SD	Transmission status display	Data being transmitted	MC command message not transmitted	Valid		
	RD	Reception status display	Data being received	MC command message not received			

\*1: This LED comes on when an error occurs at Q series C24 hardware or during data communication.

\*2: This LED displays the data communication status via MC protocol.  
 On: Waiting for the command message to be received from the external device.

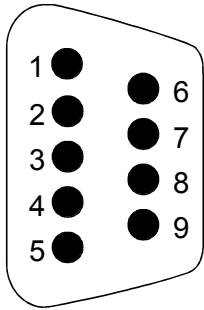
Off: Processing the command message received from the external device.

\*3: This LED can be made valid also when "GX Developer connection" (0H) is specified in communication protocol setting.

## 5. External Wiring

### 5.1 Connecting to the RS-232 line

This section explains the standard method for connecting the RS-232 line.



Pin number	Signal abbreviation	Signal name	Signal direction	
			C24 (*1)	External device
1	CD	Carrier detect	←	←
2	RD(RXD)	Receive data	←	←
3	SD(TXD)	Send data	→	→
4	DTR(ER)	Data terminal ready	→	→
5	SG	Signal ground	↔	↔
6	DSR(DR)	Datset ready	←	←
7	RS(RTS)	Request to send	→	→
8	CS(CTS)	Clear to send	←	←
9	RI(CI)	Call Indicate	←	←

\*1: QJ71C24N, QJ71C24 : CH1 side,  
 QJ71C24N-R2 QJ71C24-R2 : CH1/CH2 side

The following RS-232 interface connector is used for the module.

- DDK Ltd.  
 9-pin D-sub (female) screw type  
 17L-10090-27 (D9AC)(-FA)

Use one of the following as a connector shell for the connection cable of the module side.

- DDK Ltd.  
 Plug, shell: 17JE-23090-02 (D8A)(-CG)

#### POINT

To connect the module with a modem/TA when using modem function, install wiring as specified for the modem/TA.

(1) Connection example with an external device capable of turning on and off the CD signal (pin No. 1)

The module		Cable connection and signal direction (Connection example of full or half duplex communication)	External device
Signal name	Pin number		Signal name
CD	1		CD
RD(RXD)	2		RD(RXD)
SD(TXD)	3		SD(TXD)
DTR(ER)	4		DTR(ER)
SG	5		SG
DSR(DR)	6		DSR(DR)
RS(RTS)	7		RS(RTS)
CS(CTS)	8		CS(CTS)
RI(CI)	9		

(2) Connection example with an external device not capable of turning on and off the CD signal (pin No. 1)

(a) Example of connection for DC code control or DTR/DSR control

The module		Cable connection and signal direction (Connection example of full duplex communication)	External device
Signal name	Pin number		Signal name
CD	1		CD
RD(RXD)	2		RD(RXD)
SD(TXD)	3		SD(TXD)
DTR(ER)	4		DTR(ER)
SG	5		SG
DSR(DR)	6		DSR(DR)
RS(RTS)	7		RS(RTS)
CS(CTS)	8		CS(CTS)
RI(CI)	9		

(b) Example of connection for DC code control

The module		Cable connection and signal direction (Connection example of full duplex communication)	External device
Signal name	Pin number		Signal name
CD	1		CD
RD(RXD)	2		RD(RXD)
SD(TXD)	3		SD(TXD)
DTR(ER)	4		DTR(ER)
SG	5		SG
DSR(DR)	6		DSR(DR)
RS(RTS)	7		RS(RTS)
CS(CTS)	8		CS(CTS)
RI(CI)	9		

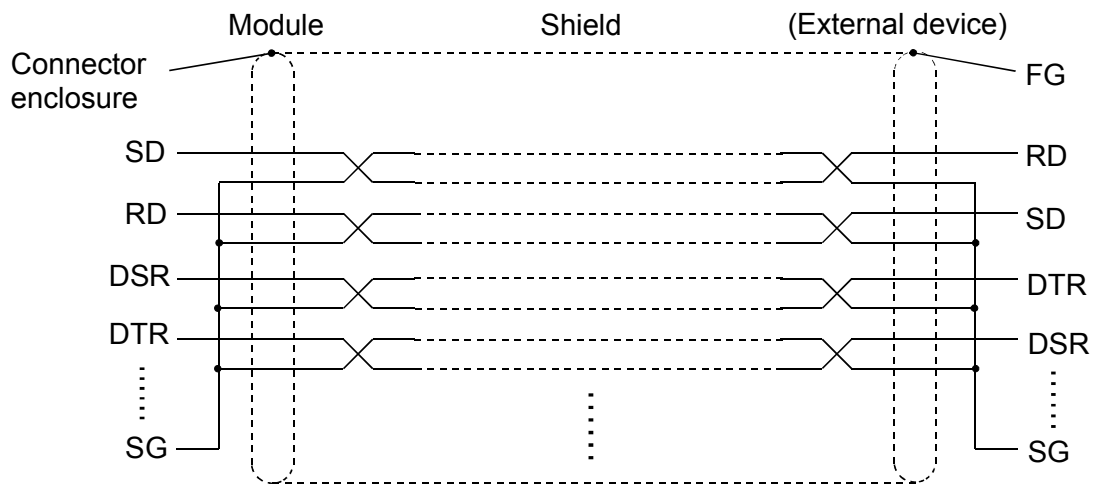
(3) Connection precaution

(a) Connect the FG signal and shield of the connection cable as indicated below:

	Connection method	Remark
FG signal	Connect to the connector enclosure of the module.	<ul style="list-style-type: none"> <li>Do not short the FG signal and SG signal of the connector cable.</li> <li>When the FG signal and SG signal are internally connected in the external device, do not connect the FG signal to the module.</li> </ul>
Shield	Connect to the FG terminal of the external device or connector enclosure of the module.	

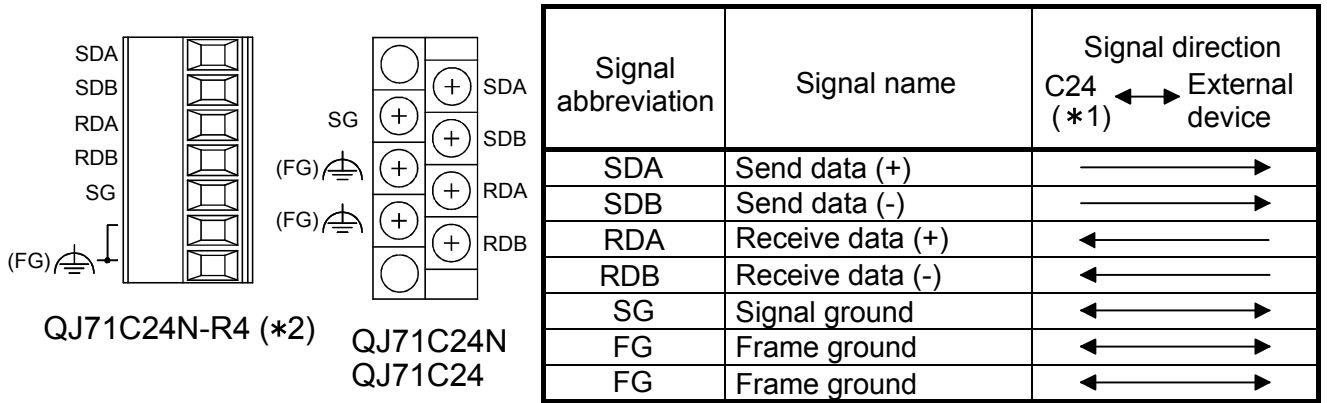
(b) When normal data communication is not obtained due to external noise, perform the wiring as follows:

- Connect the FG terminal on the external device and the connector enclosure of the module using the shield of the connection cable.
- Signals other than SG should be connected with SG signals in the twisted pair.



## 5.2 Connecting to the RS-422/485 line

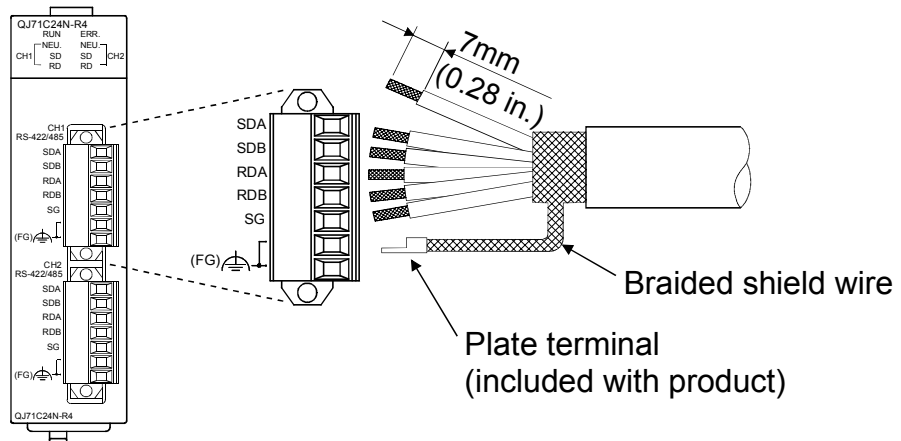
This section explains the standard method for connecting the RS-422/485 line.



\*1 QJ71C24N, QJ71C24 : CH2 side, QJ71C24N-R4 : CH1/CH2 side

\*2 Connect the RS-422/485 line of QJ71C24N-R4 while paying full attention to the followings:

- 1) Use the RS-422/485 cable recommended in chapter 2. Performance specifications. Be sure to strip the outer insulation layer by 7mm before connecting the cable to the plug-in socket block.
- 2) When connecting the braided shield wire inside the RS-422/485 cable, use the plate terminals included with the product. The braided shield wire can be connected without the plate terminal. Four plate terminals are included to connect the FG terminals of the both stations. (Refer to section 5.2 (6))
- 3) When connecting the plug-in socket block to the QJ71C24N-R4, be sure to confirm the layout of the socket block and then insert it into the RS-422/485 connector on the QJ71C24N-R4.



- 4) Connect the external device according to its specifications.
- 5) See Appendix 5 for the bend radius of the connection cable.

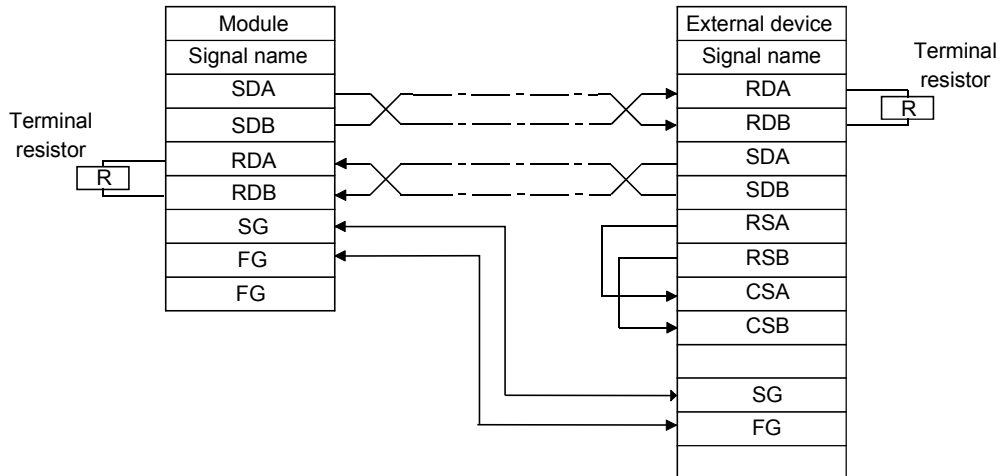
**POINT**

If the module is the first or last station on the RS-422/485 line, connect the following terminal resistor to the RS-422/485 interface with reference to the examples shown below. Data communication will be disturbed if a terminal resistor is not used.

- For RS-422 communication ..... 330 Ω 1/4 W
- For RS-485 communication ..... 110 Ω 1/2 W

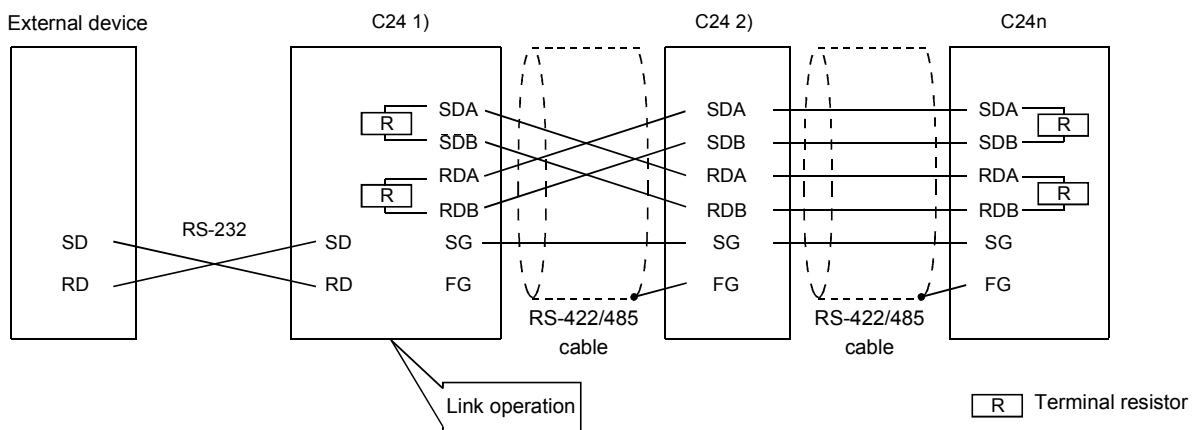
The **R** in the examples shown below indicates a terminal resistor.

**(1) Example of one-to-one connection between an external device and the module (RS-422, RS-485)**

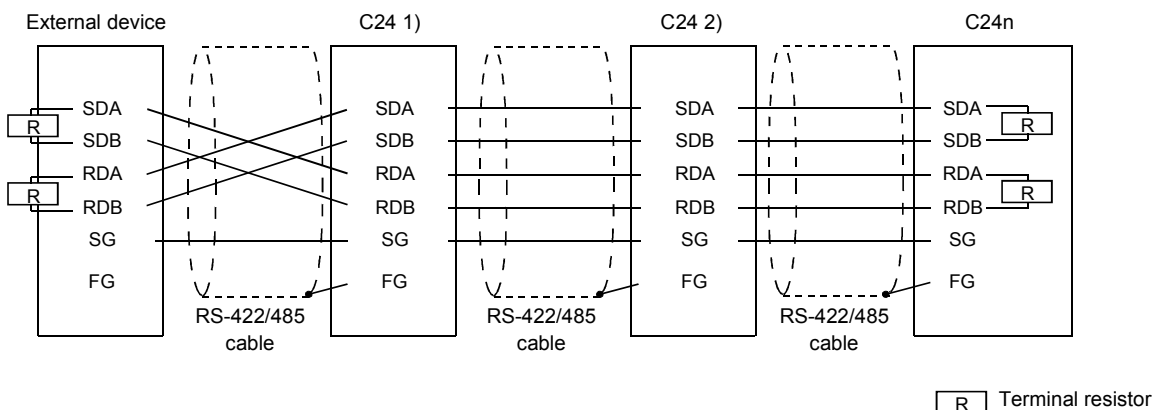


**(2) Example of one-to-n connection between an external device and the module (RS-485 between C24s)**

**(a) Connecting an external device and the module using RS-232**

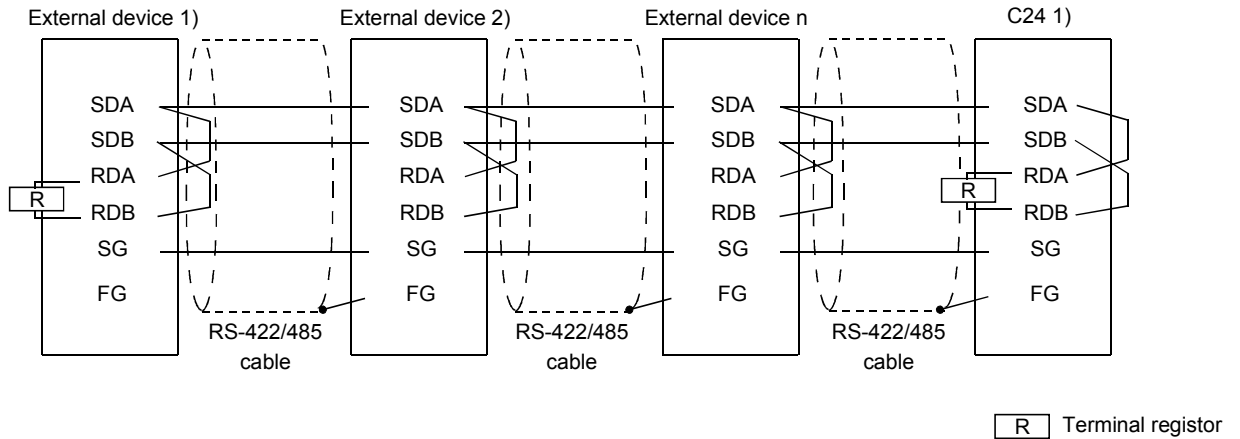


**(b) Connecting an external device and the module using RS-485**

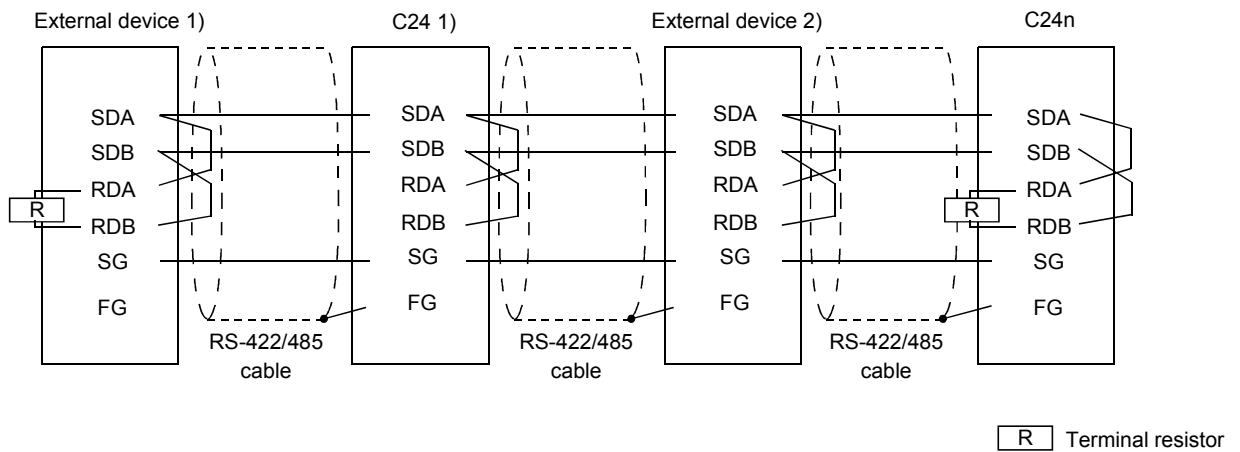




(3) Example of one-to-n connection between external devices and the module (RS-485)



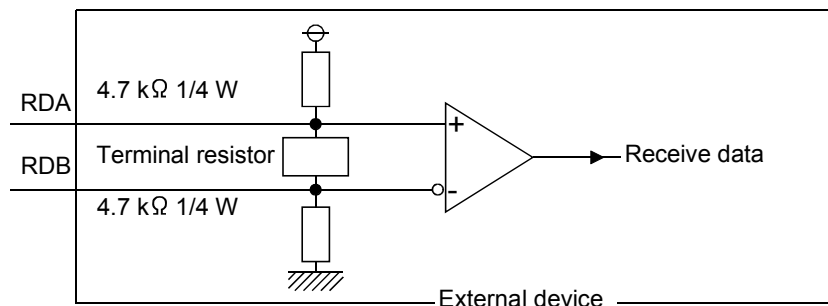
(4) Example of m-to-n connection between external devices and the modules (RS-485)



(5) Error receive data countermeasures at external device during RS-422/485 connection

If the external device may receive erroneous data, install a pull-up or pull-down resistor to the external device as follows.

Installing a pull-up or pull-down resistor (resistance value criteria: approx. 4.7 kΩ 1/4 W) can prevent the reception of erroneous data.



**POINT**

When there is a pull-up or pull-down resistor at the external device, erroneous data is not received.

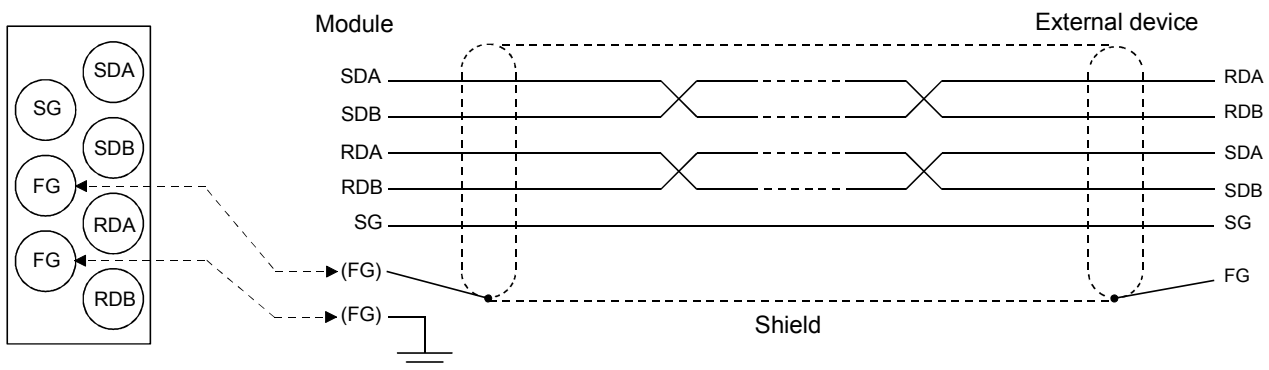
(6) Connection precautions

(a) When connecting the SG and FG signals of the module to the external device, connect them according to the specifications of the external device.

(b) Connect the shield of the connection cable to the FG terminal on either of the connected devices.

(c) If normal data communication is not obtained due to external noise even if wiring is made as shown above, perform wiring as follows:

- Connect between the FG of both stations with the shield of the connection cable.  
On the external device side, however, follow the instruction manual of the external device.  
Be sure to use the plate terminals included with the product when connecting the braided shield wire to the QJ71C24N-R4.
- Connect the FG of the module to the FG terminal of the power supply module for the station including the module or to the FG terminal on the control panel on which the programmable controller i.e., the station including the module is installed.
- Connect nnA and nnB of each signal in the connector cable as a pair.



Correspondence of the RS-422/485 terminal block and signal location.

POINT
1) For terminal resistor setting/connection described in this section, when the RS-232 to RS-422 converters or similar device is used at the external device at both ends of the circuit, a terminal resistor must be set, or connected, at the converter.
2) When using the RS-232 to RS-422 converters to connect the external devices and the module, use a converter that is compatible with the external device and programmable controller CPU system configuration (1:1, 1:n, m:n).
3) Device connected to the RS-422/485 interface of the module must be standardized as RS-422 or RS-485, including 1:n, n:1 and m:n connections.

## 6. Settings for GX Developer

To use a serial communication module, set the intelligent function module switches of GX Developer as follows:

(1) Switch 1 to 5

Set the transmission specifications and communication protocol of each interface using the combinations of setting values for each switch with 16 bit binary data according to the following table.

Switch number	Description		Remarks
Switch 1	b15 to b8	b7 to b0	Refer to (a), (b)
	CH1 Communication rate setting	CH1 Transmission setting	
Switch 2	CH1 Communication protocol setting		Refer to (c)
Switch 3	b15 to b8	b7 to b0	Refer to (a), (b)
	CH2 Communication speed setting	CH2 Transmission setting	
Switch 4	CH2 Communication protocol setting		Refer to (c)
Switch 5	Station number setting		Refer to (d)

\* Refer to 2) for the settings when linking the operation of two interfaces connected to the serial communication modules.

(a) Transmission setting

Bit	Description	OFF(1)	ON(2)
b0	Operation setting	Independent	Linked
b1	Data bit	7	8
b2	Parity bit	No	Yes
b3	Even/odd parity	Odd	Even
b4	Stop bit	1	2
b5	Sum check code	No	Yes
b6	Write during RUN	Prohibited	Allowed
b7	Setting modifications	Prohibited	Allowed

\* The interface for which "GX Developer connection" is to be set in communication protocol setting must be set to OFF.

## (b) Communication speed setting

Communication rate (Unit: bps)	Bit position	Communication rate (Unit: bps)	Bit position
	b15 to b8		b15 to b8
50	0F <sub>H</sub>	14400	06 <sub>H</sub>
300	00 <sub>H</sub>	19200	07 <sub>H</sub>
600	01 <sub>H</sub>	28800	08 <sub>H</sub>
1200	02 <sub>H</sub>	38400	09 <sub>H</sub>
2400	03 <sub>H</sub>	57600	0A <sub>H</sub>
4800	04 <sub>H</sub>	115200	0B <sub>H</sub>
9600	05 <sub>H</sub>	230400	0C <sub>H</sub>

- \* Transmission speed of 230400 bps is available for only CH1 of the QJ71C24N(-R2/R4).
- \* When connecting external devices to both of two interfaces, the total of the communication speed should be 115200bps or less (230400 bps or less in the case of the QJ71C24N(-R2/R4)). When connecting an external device to either of two interfaces, the maximum of 115200 bps is available for the interface (the maximum of 230400 bps in the case of the QJ71C24N(-R2/R4)). In this case, set 300bps for the other interface to which no external device is connected.
- \* Set "00H" to the interface for which "GX Developer connection" is set in the communication protocol setting. Serial communication module will operate at the communication speed set on the GX Developer.

## (c) Communication protocol settings (CH1 side: switch 2; CH2 side: switch 4)

Set number	Description	Remarks
0 <sub>H</sub>	GX Developer connection (For connection to MELSOFT products)	GX Developer communication rate and transmission specifications are automatically.
1 <sub>H</sub>	MC protocol	For communication with ASCII code in the specified form of an A compatible 1C frame or QnA compatible 2C/3C/4C frame. * Data communication is performed in the message format of the set type.
2 <sub>H</sub>		
3 <sub>H</sub>		
4 <sub>H</sub>		
5 <sub>H</sub>		
6 <sub>H</sub>	Non procedural protocol	For communication using non procedure protocol.
7 <sub>H</sub>	Bidirectional protocol	For communication using bidirectional protocol.
8 <sub>H</sub>	For linked operation setting	Set to the CH1 side when CH1 and CH2 interfaces are used in linked operation (operated with the communication protocol of the CH2 side).
9 <sub>H</sub> to D <sub>H</sub>	Setting prohibited	—
E <sub>H</sub>	ROM/RAM/switch test	For self-diagnosis of the modules.
F <sub>H</sub>	Individual station loopback test	For checking operation of each interface of the modules.

- \* When no external device is connected to the interface, be sure to set its communication protocol between "0H" and "7H".
- \* The communication protocol for the interfaces of both CH1 and CH2 can be set to "0H" at the same time.

(d) Station number settings

- 1) Set a value between 0 and 31 to the station number for the module used in communication via MC protocol.
- 2) For one to one connection between an external device and the module, set as 0.

(2) Link operation settings

To link the operation of two interfaces connected to the module, set the related switches as follows.

Switch number		Settings	Setting value	
Switch 1	CH1 side	Transmission setting	Operation setting	b0=OFF
			Data bit setting	Set each switch on both CH1 and CH2 sides to the same specification.
		:		
		Communication rate setting	Match the external device.	
Switch 2		Communication protocol setting	8H	
Switch 3	CH2 side	Transmission setting	Operation setting	b0=ON
			Data bit setting	Set each switch on both CH1 and CH2 sides to the same specification.
		:		
		Communication rate setting	Match the external device.	
Switch 4		Communication protocol setting (*1)	0H to 6H	
Switch 5		Station number setting	Set according to (d) of (1)	

\*1: Set the number for the function on the CH2 side.

**REMARK**

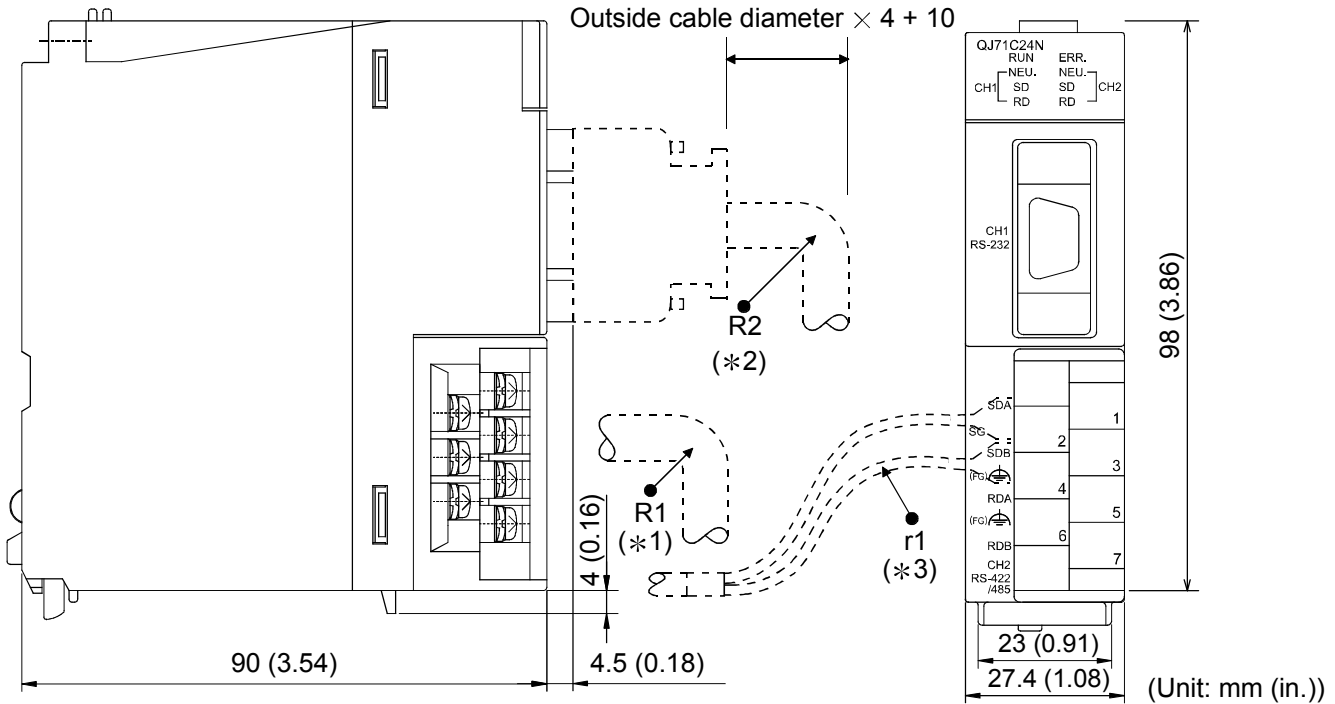
Do not use the above settings for the following cases, because linked operation cannot be performed.

- 1) When using the QJ71C24N-R2 or QJ71C24-R2.
- 2) When an external device is not connected to either of the interfaces.
- 3) When the bidirectional protocol is used for data communication.
- 4) When communicating data with an external device connected to two interfaces that are not interacting, using functions set in the communication protocol settings (MC protocol/non procedure protocol).
- 5) When communicating data using the modem function.

## 7. External Dimensions

### (1) QJ71C24N, QJ71C24

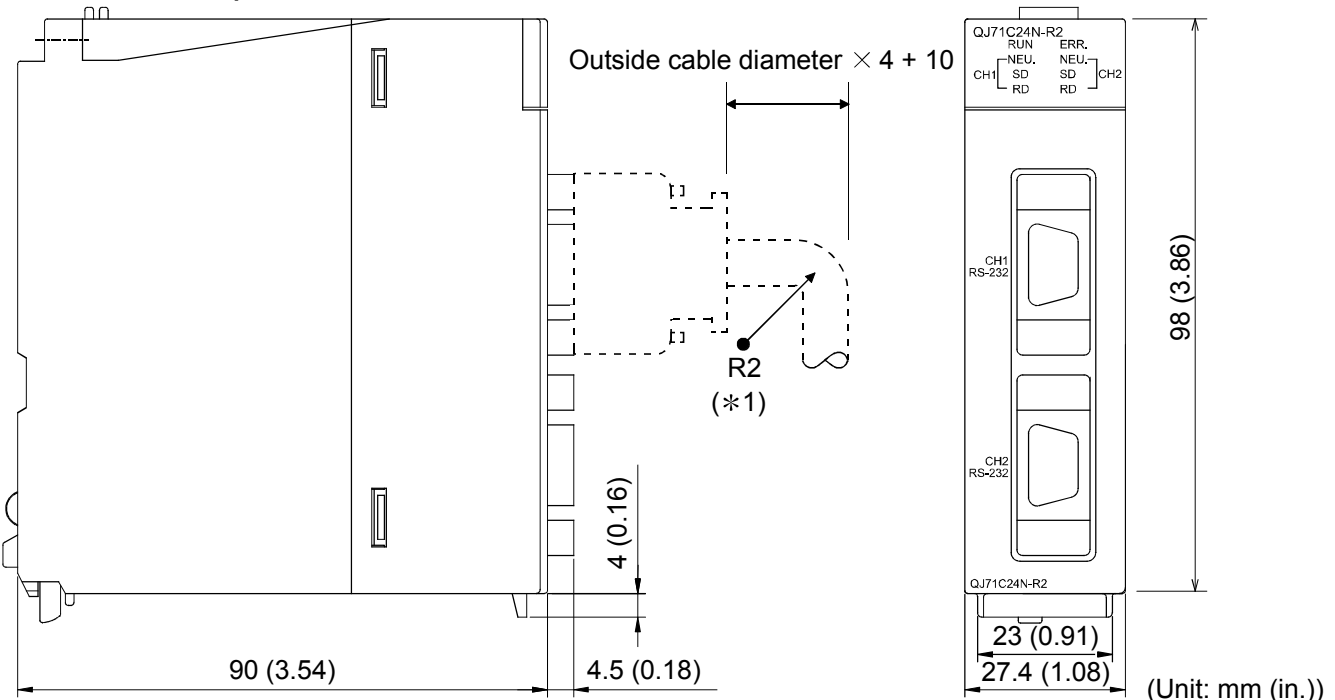
The external dimensions of the QJ71C24 are almost the same as those of the QJ71C24N, except for the model name part and serial number plate.



- \*1: R1 (Bending radius near terminal block) : Outside cable diameter  $\times$  4
- \*2: R2 (Bending radius near connector) : Outside cable diameter  $\times$  4
- \*3: r1 (Bending radius near crimp contact) : Connectable as long as not bended extremely

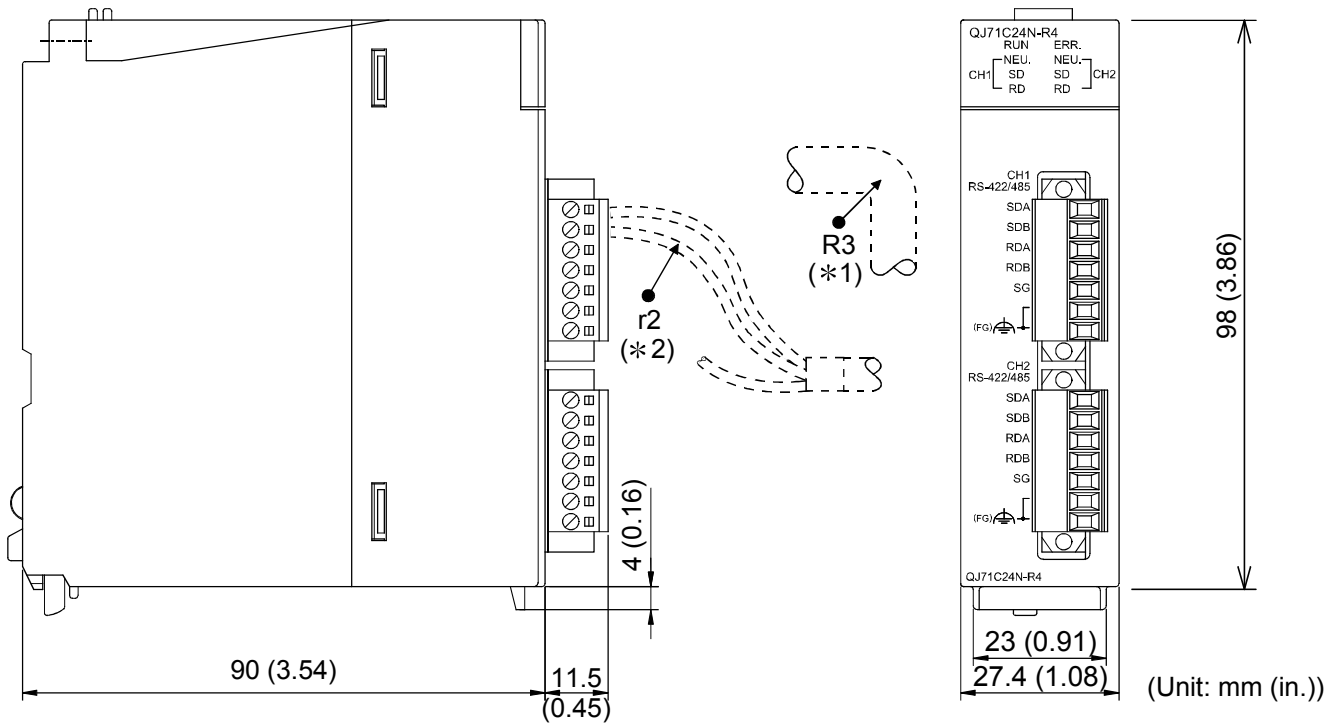
### (2) QJ71C24N-R2, QJ71C24-R2

The external dimensions of the QJ71C24-R2 are almost the same as those of the QJ71C24N-R2, except for the model name part and serial number plate.



- \*1: R2 (Bending radius near connector) : Outside cable diameter  $\times$  4

(3) QJ71C24N-R4



- \*1: R3 (Bending radius near the plug-in socket block): Outside cable diameter  $\times$  4
- \*2: r2 (Bending radius near the wire connection) : Connectable as long as not bended extremely

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- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- This product has been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

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