General Specifications

GS 34M06H21-01E

FA-M3

Personal Computer Link Modules
UT Link Module
RS-232-C / RS-422-A Communication Modules
Ladder Communication Modules

Contents

GS 34M06H21-01E

10th Edition Mar. 2012

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General Specifications

F3LC11-1F
Personal Computer Link Module

FA-M3

General

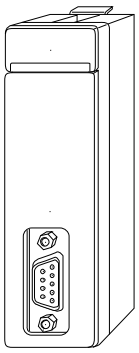
The F3LC11-1F is connected to a higher-level computer, such as a personal computer or FA computer, or a display for RS-232-C communications.

- It enables reading and writing of all FA-M3 devices.
- It does not require a transmission application program.
- It allows reading and writing of devices even when a ladder program is not running.
- It enables direct connection to a display having a programmable controller interface.
- It enables remote running and stopping of programs on FA-M3.
- It enables loading and saving of programs.
- It enables reading of program-related information (program name, size, block name, etc.) and error logs.
- It supports several types of external modems, allowing for use of a cellular phone where a 56kbps fast communication interface or public telephone line is not available.

Specifications

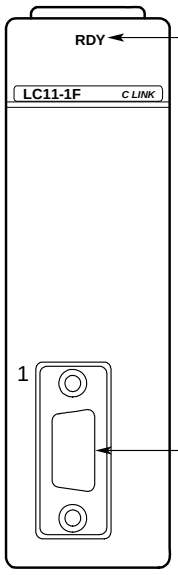
Item	Specification	
Interface	Conforms to the EIA RS-232-C standard	
Transmission mode	Half-duplex	
Synchronization	Start-stop synchronization	
Transmission speed	300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57.6k, 115.2 kbps	
Transmission distance	15 m max.	
Number of ports	1 (not isolated)	
Data format	Start bit	1
	Data length	7 or 8 bits
	Parity bit	None, even or odd
	Stop bit	1 or 2 bits
Error detection	Parity check, checksum	
Control line	RS always on, ER always on	
Xon/Xoff control	None	
Setup items	Transmission speed, data format, checksum, ending character, protection	
Protocol	Proprietary protocol	
Ending character	Yes or No	
Protection feature	Yes or No	
Access range	All sequence devices, BASIC common area, upload/download ladder program, RUN/STOP, read error log, read user log	
Number of modules	F3SP21: 2 max. F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67, F3SP71, F3SP76, F3BP20 and F3BP30: 6 max. * Total number of modules including those which have similar functions (Ethernet interface modules, and GP-IB communication modules [slave])	
Current consumption	320 mA	
External connection	D-sub 9-pin connector (female), M2.6 screw	
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*	
Weight	110 g	

*: Excluding protrusions (see external dimensions for details).



Components and Functions

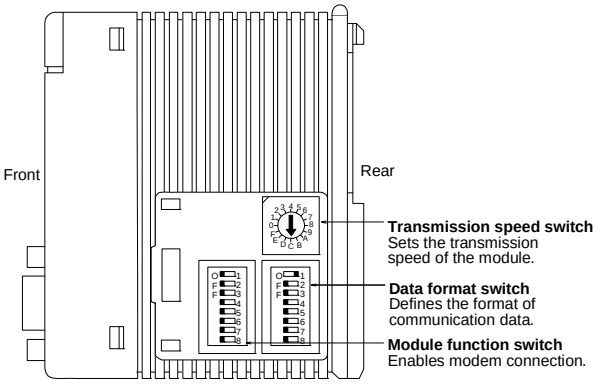
■ Front View



RDY indicator
Lit when the internal circuit is functioning normally.

RS-232-C connector
D-sub 9-pin connector (M2.6 screw) for connection to a higher level computer or display.

■ Right Side View



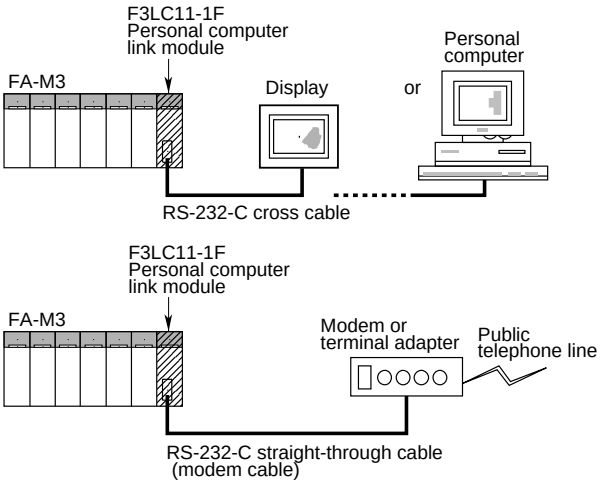
Transmission speed switch
Sets the transmission speed of the module.

Data format switch
Defines the format of communication data.

Module function switch
Enables modem connection.

Note: This figure is drawn with the panel cover removed.

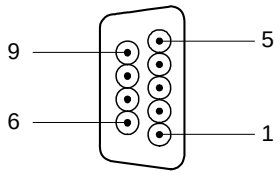
Configuration Example



External Connection Diagram

The module is connected to a personal computer or display through an RS-232-C connector.

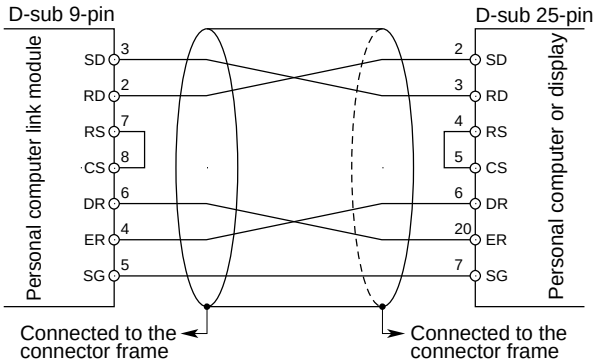
■ Connector Specifications



D-sub 9-pin connector (female)

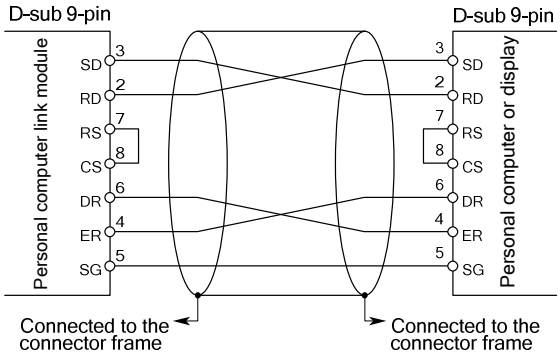
Pin No.	Signal Name	Name	Signal Direction FA- M3	Signal Direction PC	Description
2	RD	Receive data	←		
3	SD	Send data	→		
4	ER	Data Terminal ready	→		Always output ON in RDY state
5	SG	Signal ground	↔		
6	DR	Data set ready	←		Always on
7	RS	Request to send	→		Always output ON in RDY state
8	CS	Clear to send	←		Always input ON. Sending not allowed when input is OFF.

■ Cabling Example (for 25-pin device)



Note: The pin assignments on the personal computer or display shown in this example assumes a D-sub 25-pin connector.

■ Cabling Example (for 9-pin device)



Note: The pin assignments on the personal computer or display shown in this example assumes a D-sub 9-pin connector.

Operating Environment

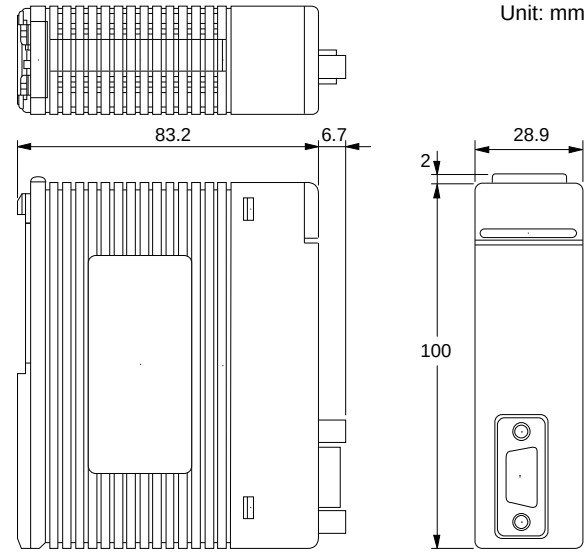
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3LC11	-1F	.....	.....	One RS-232-C port

External Dimensions

Unit: mm



General Specifications

F3LC12-1F
Personal Computer Link Module

FA-M3

General

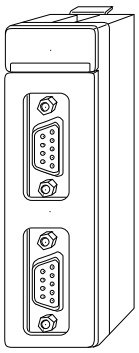
The F3LC12-1F is connected to a higher-level computer, such as a personal computer or FA computer, or a display for RS-232-C communications.

- It enables reading and writing of all FA-M3 devices.
- It does not require a transmission application program.
- It allows reading and writing of devices even when a ladder program is not running.
- It enables direct connection to a display having a programmable controller interface.
- It enables remote running and stopping of programs on FA-M3.
- It enables loading and saving of programs.
- It enables reading of program-related information (program name, size, block name, etc.) and error logs.
- It has two personal computer link ports for simultaneous connections.

Specifications

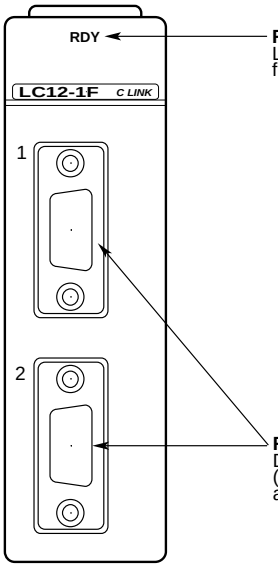
Item	Specification	
Interface	Conforms to the EIA RS-232-C standard	
Transmission mode	Half-duplex	
Synchronization	Start-stop synchronization	
Transmission speed	300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57.6k, 115.2 kbps	
Transmission distance	15 m max.	
Number of ports	2 (not isolated)	
Data format	Start bit	1
	Data length	7 or 8 bits
	Parity bit	None, even or odd
	Stop bit	1 or 2 bits
Error detection	Parity check, checksum	
Control line	RS always on, ER always on	
Xon/Xoff control	None	
Setup items	Transmission speed, data format, checksum, ending character, protection	
Protocol	Proprietary protocol	
Ending character	Yes or No	
Protection feature	Yes or No	
Access range	All sequence devices, BASIC common area, upload/download ladder program, RUN/STOP, read error log, read user log	
Number of modules	F3SP21: 2 max. F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67, F3SP71, F3SP76, F3BP20 and F3BP30: 6 max. * Total number of modules including those which have similar functions (Ethernet interface modules, and GP-IB communication modules)	
Current consumption	350 mA	
External connection	D-sub 9-pin connector (female), M2.6 screw	
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*	
Weight	120 g	

*: Excluding protrusions (see external dimensions for details).



Components and Functions

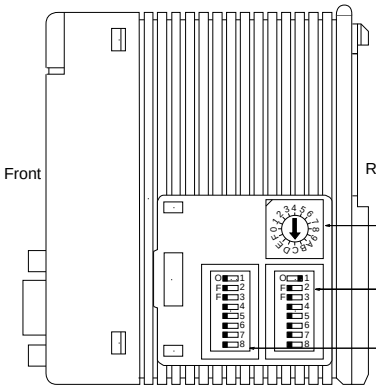
■ Front View



RDY indicator
Lit when the internal circuit is functioning normally.

RS-232-C connector
D-sub 9-pin connector (M2.6 screw) for connection to a higher level computer or display.

■ Right Side View



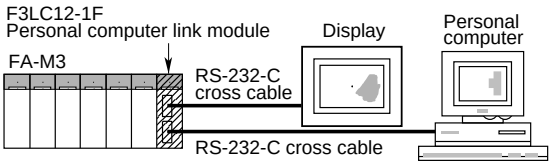
Transmission speed switch
Sets the transmission speed of the module.

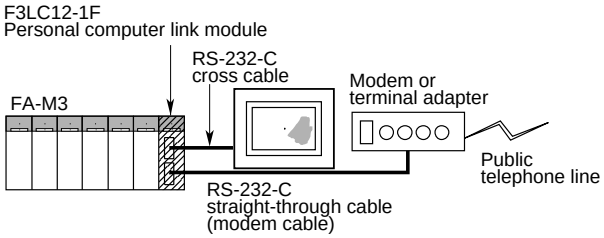
Data format switch
Defines the format of communication data.

Module function switch
Enables modem connection.

Note: This figure is drawn with the panel cover removed.

Configuration Example

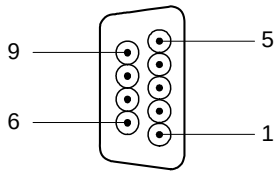




External Connection Diagram

The module is connected to a personal computer or display through an RS-232-C connector.

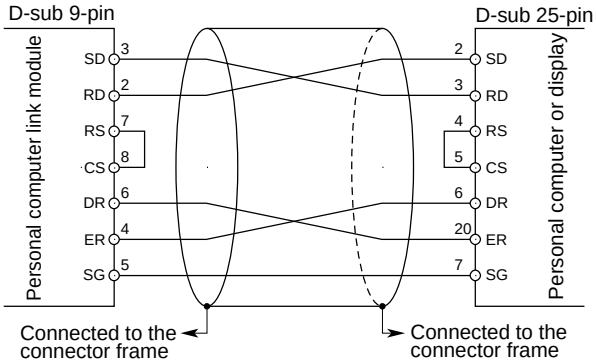
■ Connector Specifications



D-sub 9-pin connector (female)

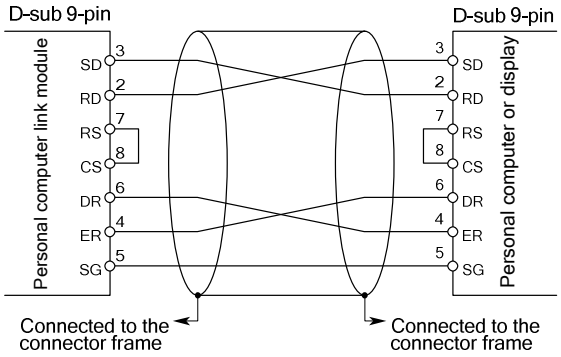
Pin No.	Signal Name	Name	Signal Direction FA-M3	Signal Direction PC	Description
2	RD	Receive data	←		
3	SD	Send data	→		
4	ER	Data Terminal ready	→		Always output ON in RDY state
5	SG	Signal ground	↔		
6	DR	Data set ready	←		Always on
7	RS	Request to send	→		Always output ON in RDY state
8	CS	Clear to send	←		Always input ON. Sending not allowed when input is OFF.

■ Cabling Example (for 25-pin device)



Note: The pin assignments on the personal computer or display shown in this example assumes a D-sub 25-pin connector.

■ Cabling Example (for 9-pin device)



Note: The pin assignments on the personal computer or display shown in this example assumes a D-sub 9-pin connector.

Operating Environment

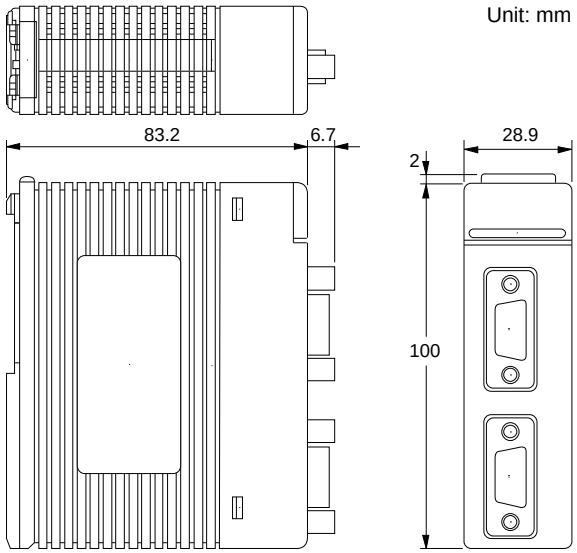
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3LC12	-1F	.....	.....	Two RS-232-C ports

External Dimensions

Unit: mm



General Specifications

F3LC11-2F
Personal Computer Link Module

FA-M3

General

This F3LC11-2F Personal Computer Link Module is connected to a higher-level computer such as a personal computer or FA computer through an RS-422-A/RS-485 interface to provide a communication channel.

With the higher-level computer configured as the master station, the F3LC11-2F allows a maximum of 32 FA-M3 modules to be connected to the higher-level computer.

- It enables reading and writing of all FA-M3 devices.
- It does not require a transmission application program.
- It allows reading and writing of devices even when a ladder program is not running.
- It enables direct connection to a display having a programmable controller interface.
- It enables remote running and stopping of programs on FA-M3.
- It enables loading and saving of programs.
- It enables reading of program-related information (program name, size, block name, etc.) and error logs
- Up to 32 modules can be linked through an RS-422-A/ RS-485 interface.

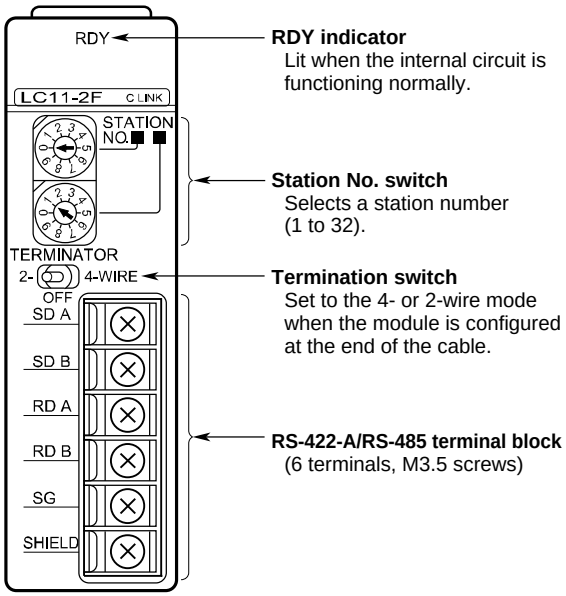
Specifications

Item	Specification	
Interface	Conforms to the EIA RS-422-A and EIA RS-485 standards	
Transmission mode	Half-duplex, 4- or 2-wire system	
Synchronization	Start-stop synchronization	
Transmission speed	300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57.6k, 76.8k, 115.2 kbps	
Transmission media	Shielded twisted-pair cable (AWG20 - 16)	
Transmission distance	1200 m max.	
Terminating resistance	220 Ω (built-in resistor to be enabled for a terminal station using a switch)	
Number of ports	1 (isolated)	
Data format	Start bit	1
	Data length	7 or 8 bits
	Parity bit	None, even or odd
	Stop bit	1 or 2 bits
Error detection	Parity check, checksum	
Xon/Xoff control	None	
Setup items	Transmission speed, data format, checksum, ending character, protection	
Protocol	Proprietary protocol	
Ending character	Yes or No	
Protection feature	Yes or No	
Access range	All sequence devices, BASIC common area, upload/download ladder program, RUN/STOP, read error log, read user log	
Number of modules	F3SP21: 2 max. F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67, F3SP71, F3SP76, F3BP20 and F3BP30: 6 max. * Total number of modules including those which have similar functions (Ethernet interface module, FL-net interface module)	
Current consumption	350 mA	
External connection	6-point terminal block, M3.5 screws	
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*	
Weight	120 g	

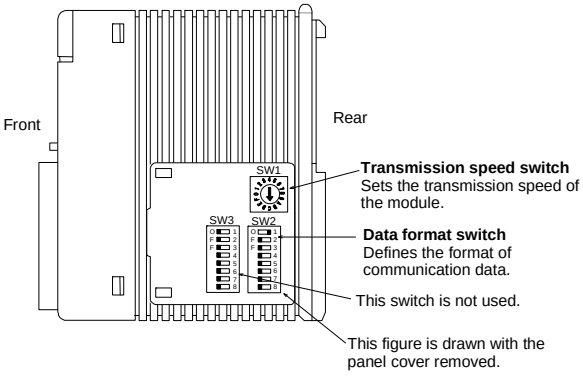
*: Excluding protrusions (see external dimensions for details).

Components and Functions

■ Front View

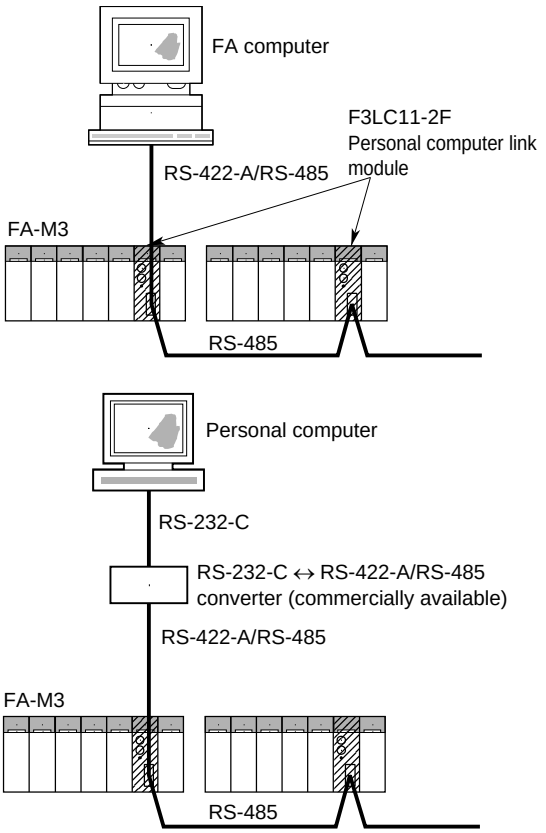


■ Right Side View



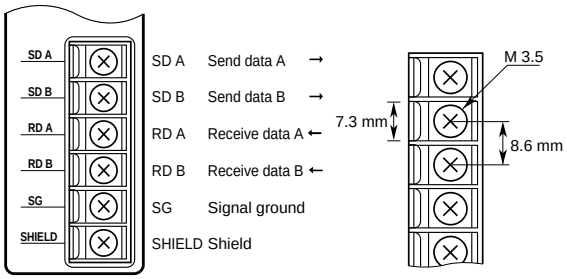
Configuration Example

The maximum total number of linked modules is 32.



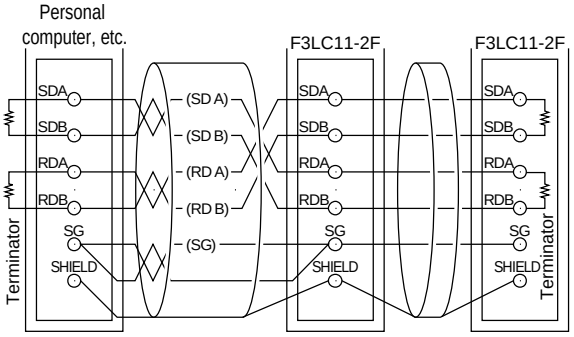
■ RS422-A/RS-485 Terminal Block & Cabling

● Terminal Block

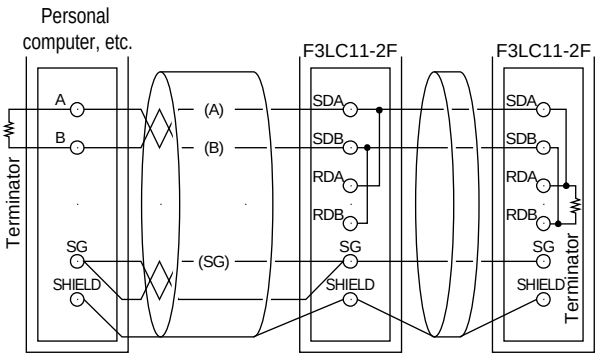


● Wiring Diagram

(1) 4-wire System



(2) 2-wire System



How to connect the shielding conductor (for 4-wire or 2-wire system)

(1) Ground (connect to the SHIELD terminal) both ends of the shielding conductor of the twisted-pair cable. The SHIELD terminal of the F3LC11-2F module is connected internally to the FG terminal of the FA-M3 power supply module.

(2) The F3LC11-2F module has a built-in terminator (220 Ω). When configuring the module at the end of a cable, set the terminator switch to either a 4- or 2-wire system.

Cables

Recommended cables for 2-wire systems:
KM80-□□□/KM81-□□□ (to be purchased separately).

* For details on KM80-□□□ and KM81-□□□, see “FA-M3 YHLS Master Module, YHLS Slave Units and YHLS Communication Cables” (GS 34M06H46-03E).

Operating Environment

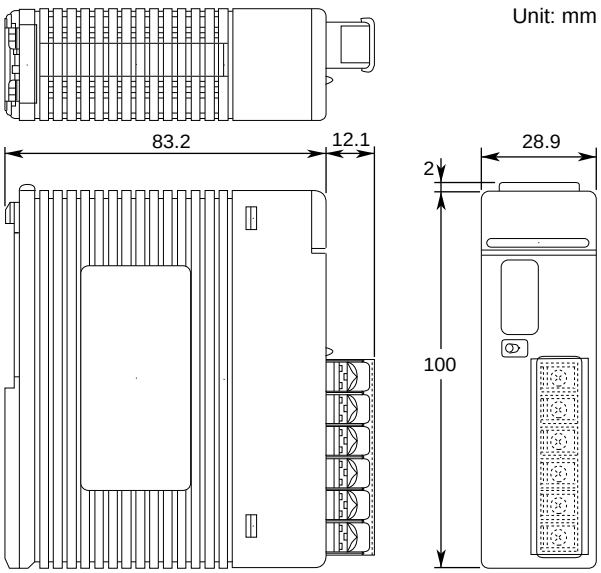
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3LC11	-2F	.....	.....	One RS-422-A/RS-485 port

External Dimensions

Unit: mm



General Specifications

F3LC11-1N
Personal Computer Link Module

FA-M3

General

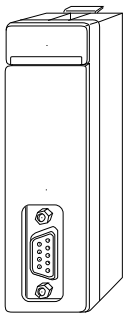
The F3LC11-1N is connected to a higher-level computer such as a personal computer, FA computer or a display for point-to-point communication.

- It enables reading and writing of all FA-M3 devices.
- It does not require a transmission application program.
- It allows reading and writing of devices even when a ladder program is not running.
- It enables direct connection to a display having a programmable controller interface.
- It enables remote running and stopping of programs on FA-M3.
- It enables loading and saving of programs.
- It enables reading of program-related information (program name, size, block name, etc.) and error logs.

Specifications

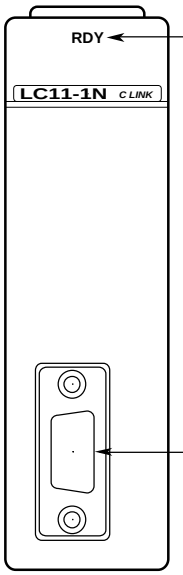
Item	Specification	
Interface	Conforms to the EIA RS-232-C standard	
Transmission mode	Half-duplex	
Synchronization	Start-stop synchronization	
Transmission speed	300, 600, 1200, 2400, 4800, 9600, 19200 bps	
Transmission distance	15 m max.	
Number of ports	1 (not isolated)	
Data format	Start bit	1
	Data length	7 or 8 bits
	Parity bit	None, even or odd
	Stop bit	1 or 2 bits
Error detection	Parity check, checksum	
Control line	RS always on, ER always on	
Xon / Xoff control	None	
Setup items	Transmission speed, data format, checksum, ending character, protection	
Protocol	Proprietary protocol	
Ending character	Yes or No	
Protection feature	Yes or No	
Access range	All control data, upload/download ladder program, RUN/STOP, read error log	
Number of modules	F3SP21: 2 max. F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67, F3SP71, F3SP76, F3BP20 and F3BP30: 6 max. * Total number of modules including those which have similar functions (Ethernet interface module, FL-net interface module)	
Current consumption	100 mA	
External connection	D-sub 9-pin connector (female)	
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*	
Weight	110 g	

*: Excluding protrusions (see external dimensions for details).



Components and Functions

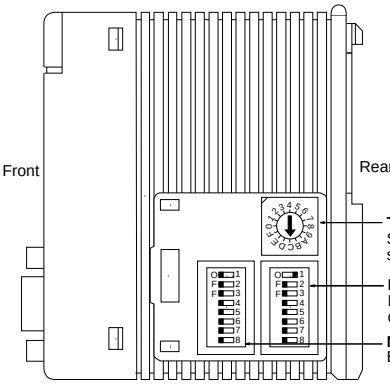
■ Front View



RDY indicator
Lit when the internal circuit is functioning normally.

RS-232-C connector
D-sub 9-pin connector for connection to a higher level computer.

■ Right Side View



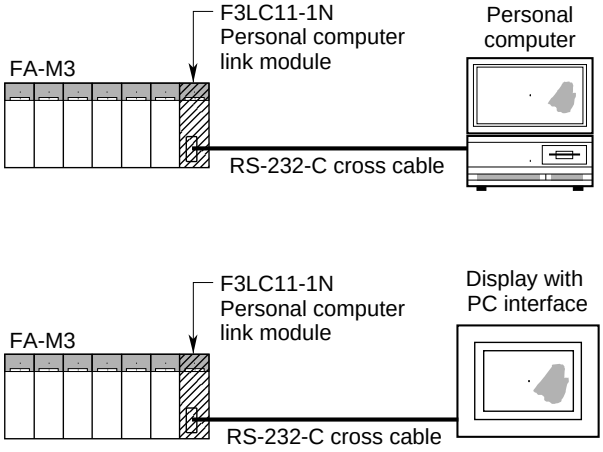
Transmission speed switch
Sets the transmission speed of the module.

Data format switch
Defines the format of communication data.

Module function switch
Enables modem connection.

Note: This figure is drawn with the panel cover removed.

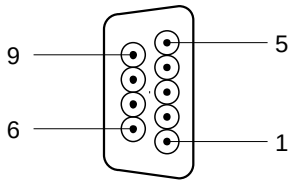
Configuration Example



External Connection Diagram

The module is connected to a personal computer or display through an RS-232-C connector.

■ Connector Specifications

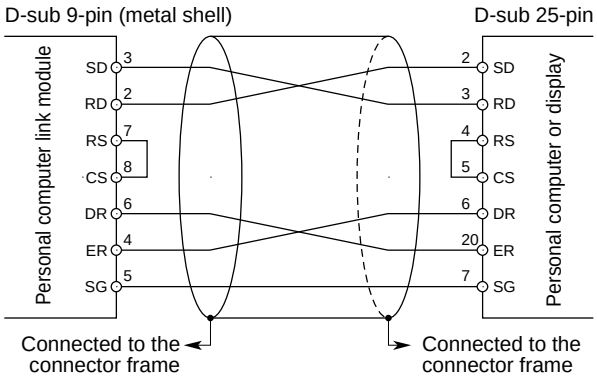


D-sub 9-pin connector (female)

	Signal Name	Name	Signal Direction FA- M3	Signal Direction PC	Description	Terminal Name on Remote PC
1	—	(Not Used)	—			
2	RD	Receive data	←			SD
3	SD	Send data	→			RD
4	ER	Data Terminal ready	→		Always output ON in RDY state	DR
5	SG	Signal ground	↔			SG
6	DR	Data set ready	←		Always on	ER
7	RS	Request to send	→		Always output ON in RDY state	— (Connected to CS of module*)
8	CS	Clear to send	←		Always input ON. Sending not allowed when input is OFF.	— (Connected to the RS of this module*)
9	—	(Not Used)	—			—

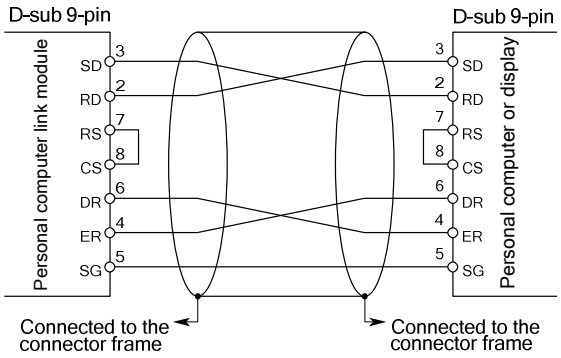
*: Connection of a connector is detected using a RS-CS loopback.??ugaji

■ Cabling Example (for 25-pin device)



Note: The pin assignments on the personal computer or display shown in this example assumes a D-sub 25-pin connector.

■ Cabling Example (for 9-pin device)



Note: The pin assignments on the personal computer or display shown in this example assumes a D-sub 9-pin connector.

Operating Environment

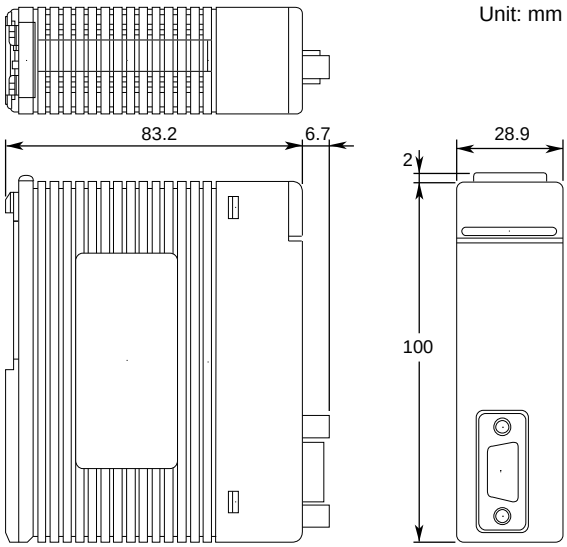
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3LC11	-1N	. . . . .	. . . . .	One RS-232-C port

External Dimensions

Unit: mm



General Specifications

F3LC11-2N
Personal Computer Link Module

FA-M3

General

This F3LC11-2N Personal Computer Link Module is connected to a higher-level computer such as a personal computer or FA computer through an RS-422-A/RS-485 interface to provide a communication channel.

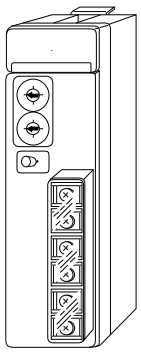
With the higher-level computer configured as the master station, the F3LC11-2N allows a maximum of 32 FA-M3 modules to be connected to the higher-level computer.

- It enables reading and writing of all FA-M3 devices.
- It does not require a transmission application program.
- It allows reading and writing of devices even when a ladder program is not running.
- It enables direct connection to a display having a programmable controller interface.
- It enables remote running and stopping of programs on FA-M3.
- It enables loading and saving of programs.
- It enables reading of program-related information (program name, size, block name, etc.) and error logs.
- Up to 32 modules can be linked through an RS-422-A/ RS-485 interface.

Specifications

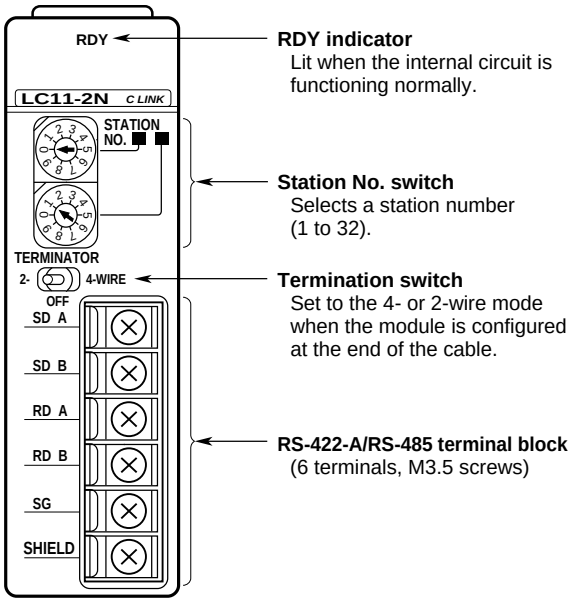
Item	Specification	
Interface	Conforms to the EIA RS-422-A and EIA RS-485 standards	
Transmission mode	Half-duplex, 4- or 2-wire system	
Synchronization	Start-stop synchronization	
Transmission speed	300, 600, 1200, 2400, 4800, 9600, 19200 bps	
Transmission media	Shielded twisted-pair cable (AWG20 - 16)	
Transmission distance	1200 m max.	
Terminating resistance	220 Ω (built-in resistor to be enabled for a terminal station using a switch)	
Number of ports	1 (isolated)	
Data format	Start bit	1
	Data length	7 or 8 bits
	Parity bit	None, even or odd
	Stop bit	1 or 2 bits
Error detection	Parity check, checksum	
Xon/Xoff control	None	
Setup items	Transmission speed, data format, checksum, ending character, protection	
Protocol	Proprietary protocol	
Ending character	Yes or No	
Protection feature	Yes or No	
Access range	All control data, upload/download ladder program, RUN/STOP, read error log	
Number of modules	F3SP21:2 max. F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67, F3SP71, F3SP76, F3BP20 and F3BP30: 6 max. * Total number of modules including those which have similar functions (Ethernet interface module)	
Current consumption	170 mA	
External connection	6-point terminal block, M3.5 screws	
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*	
Weight	140 g	

*: Excluding protrusions (see external dimensions for details).

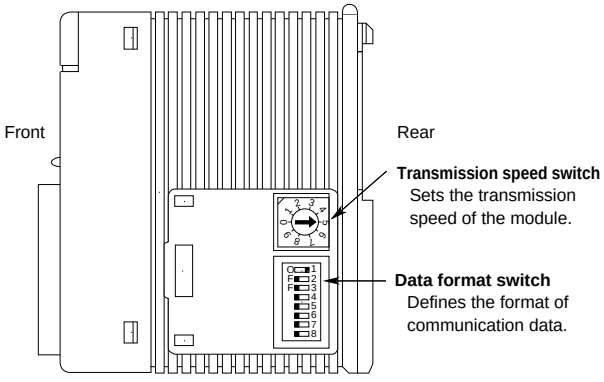


Components and Functions

■ Front View



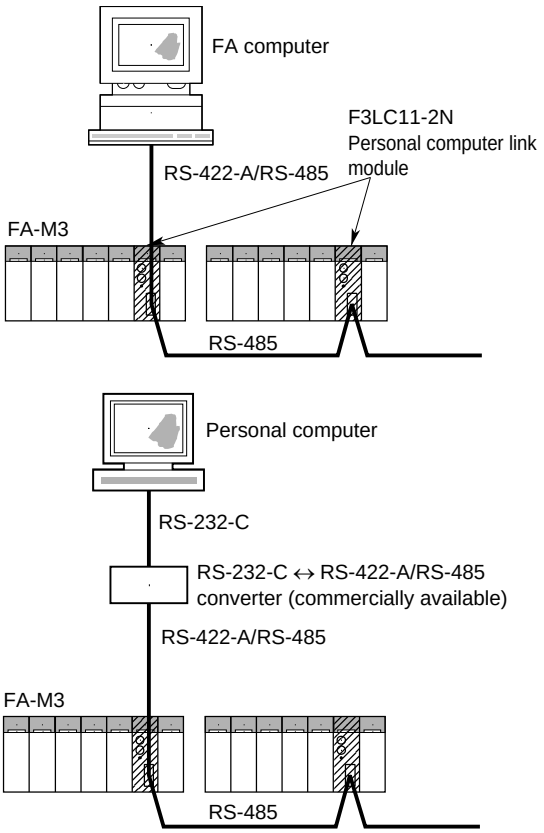
■ Right Side View



Note: This figure is drawn with the panel cover removed.

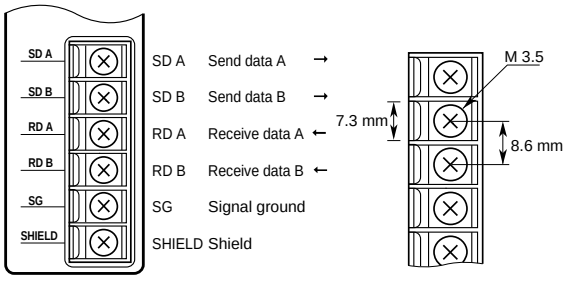
Configuration Example

The maximum total number of linked modules is 32.



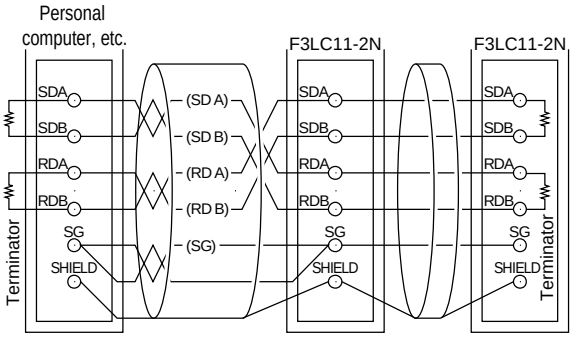
■ RS422-A/RS-485 Terminal Block & Cabling

● Terminal Block

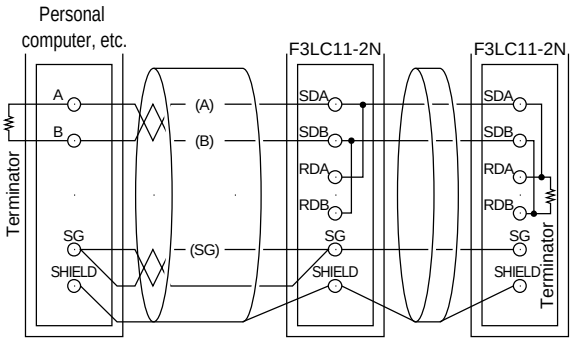


● Wiring Diagram

(1) 4-wire System



(2) 2-wire System



How to connect the shielding conductor (for 4-wire or 2-wire system)

(1) Ground (connect to the SHIELD terminal) both ends of the shielding conductor of the twisted-pair cable. The SHIELD terminal of the F3LC11-2N module is connected internally to the FG terminal of the FA-M3 power supply module.

(2) The F3LC11-2N module has a built-in terminator (220 Ω). When configuring the module at the end of a cable, set the terminator switch to either a 4- or 2-wire system.

Cables

Recommended cables for 2-wire systems:
KM80-□□□/KM81-□□□ (to be purchased separately).

* For details on KM80-□□□ and KM81-□□□, see "FA-M3 YHLS Master Module, YHLS Slave Units and YHLS Communication Cables" (GS 34M06H46-03E).

Operating Environment

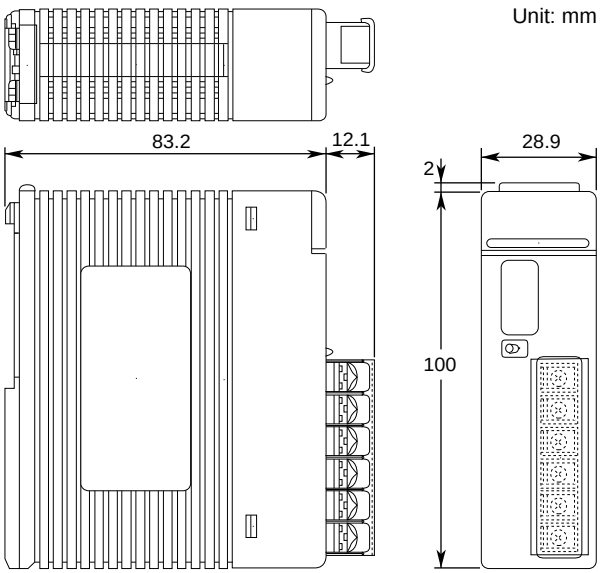
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3LC11	-2N	. . . . .	. . . . .	One RS-422-A/RS-485 port

External Dimensions

Unit: mm



General Specifications

F3LC51-2N
UT Link Module

FA-M3

General

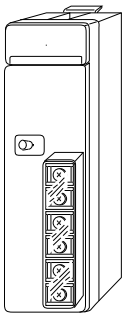
The F3LC51-2N UT Link Module enables the FA-M3 to be easily connected to external devices such as temperature controllers that support the FA-M3 personal computer link protocol and commands.

- Data of external devices are always refreshed. The module exchanges data with the external devices by directly accessing the module's registers, without requiring a communication program.
- It can also exchange data when events occur.
- A single module can support up to 32 external devices at a maximum cable distance of 1200 m using RS-485 communications.

Specifications

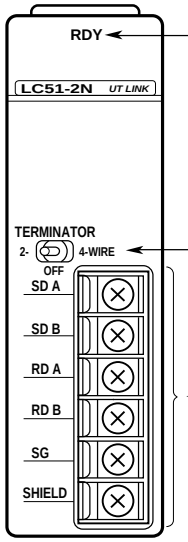
Item	Specification	
Interface	Conforms to the EIA RS-422-A and EIA RS-485 standards.	
Transmission mode	Half-duplex, 4- or 2-wire system	
Synchronization	Start-stop synchronization	
Transmission speed	300, 600, 1200, 2400, 4800, 9600, 19200, 31250, 38400 bps	
Transmission media	Shielded twisted-pair cable (AWG20 - 16)	
Transmission distance	1200 m max.	
Number of connected stations	32 max. (depending on external instruments)	
Terminating resistance	220 Ω (built-in resistor to be enabled for a terminal station using a switch)	
Number of ports	1 (isolated)	
Data format	Start bit	1
	Data length	7 or 8 bits
	Parity bit	None, even or odd
	Stop bit	1 or 2 bits
Protocol	Proprietary protocol	
Access range	All control data	
Current consumption	290 mA	
External connection	6-point terminal block, M3.5 screws	
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*	
Weight	130 g	

*: Excluding protrusions (see external dimensions for details).



Components and Functions

■ Front View

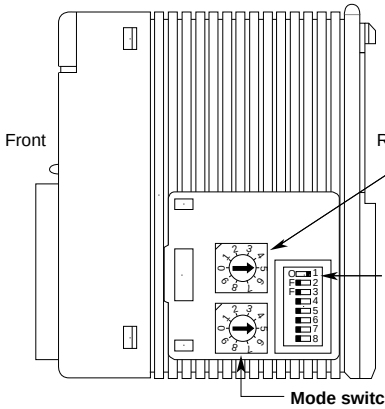


RDY indicator :
Lit when the internal circuit is functioning normally.

Terminator switch
Set to the 4- or 2-wire mode when the module is configured at the end of the cable.

RS-422-A/RS-485 terminal block
(6 terminals, M3.5 screws)

■ Right Side View



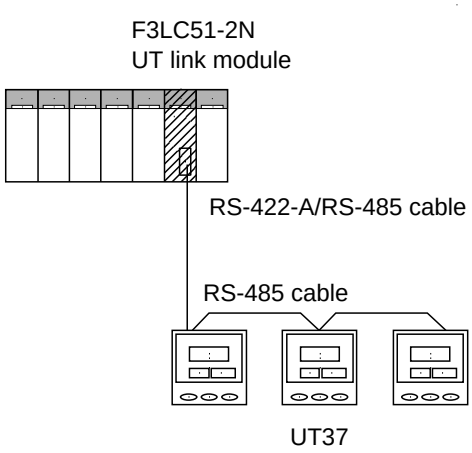
Transmission speed switch
Sets the transmission speed of the module.

Data format switch
Defines the format of communication data.

Mode switch
Sets the communication mode.

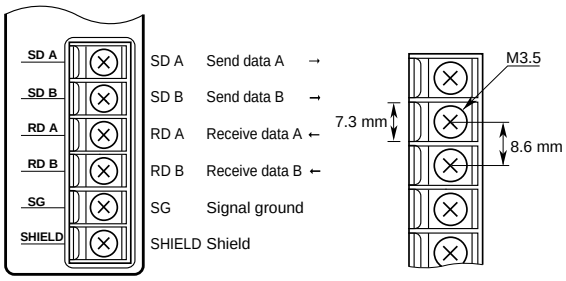
Note: This figure is drawn with the panel cover removed.

Configuration Example



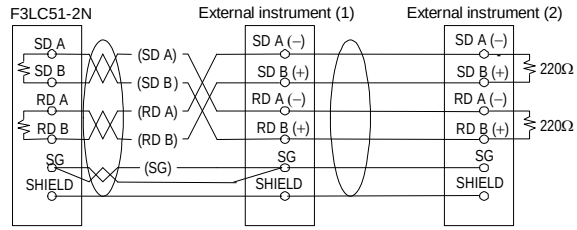
■ RS422-A/RS-485 Terminal Block & Cabling

● **Terminal Block**

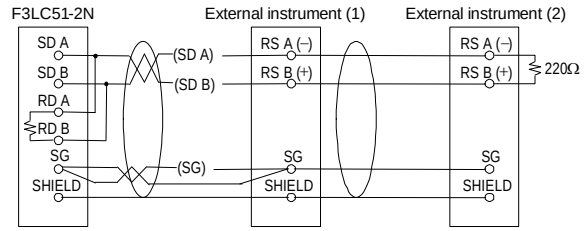


● **Wiring Diagram**

4-wire System



2-wire System



How to connect the shielding conductor (for 4-wire or 2-wire system)

(1) Ground (connect to the SHIELD terminal) both ends of the shielding conductor of the twisted-pair cable. The SHIELD terminal of the F3LC51-2N module is connected internally to the FG terminal of the FA-M3 power supply module.

(2) The F3LC51-2N module has a built-in terminator (220 Ω). When configuring the module at the end of a cable, set the terminator switch to either a 4- or 2-wire system.

Cables

Recommended cables for 2-wire systems:
KM80-□□□/KM81-□□□ (to be purchased separately).

* For details on KM80-□□□ and KM81-□□□, see “FA-M3 YHLS Master Module, YHLS Slave Units and YHLS Communication Cables” (GS 34M06H46-03E).

Operating Environment

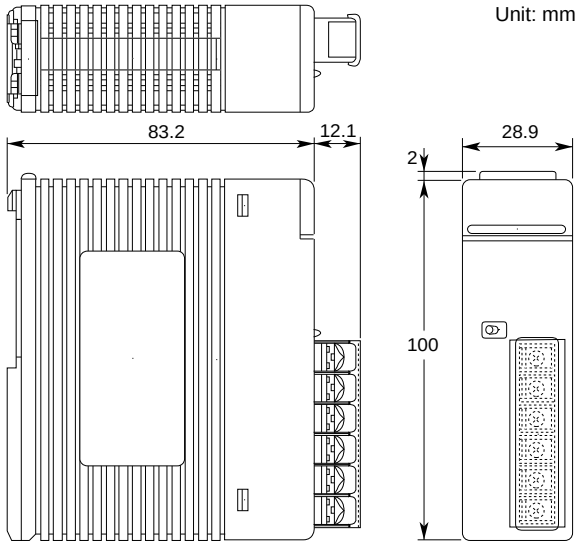
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3LC51	-2N	.....	.....	One RS-422-A / RS-485 port connected to a temperature controller.

External Dimensions

Unit: mm



General Specifications

F3RS22-0N
RS-232-C Communication Module

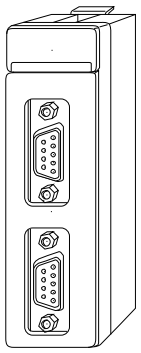
FA-M3

General

The F3RS22-0N RS-232-C Communication Module is used with the F3BP20 and F3BP30 BASIC CPU modules to establish RS-232-C communication. It has two ports and uses D-sub 9-pin connectors. It can drive devices at a maximum distance of 15 m.

The module supports BASIC statements for providing the means of sending and receiving data to and from communications lines.

Note: This module is dedicated to the F3BP20 and F3BP30 BASIC CPU modules.

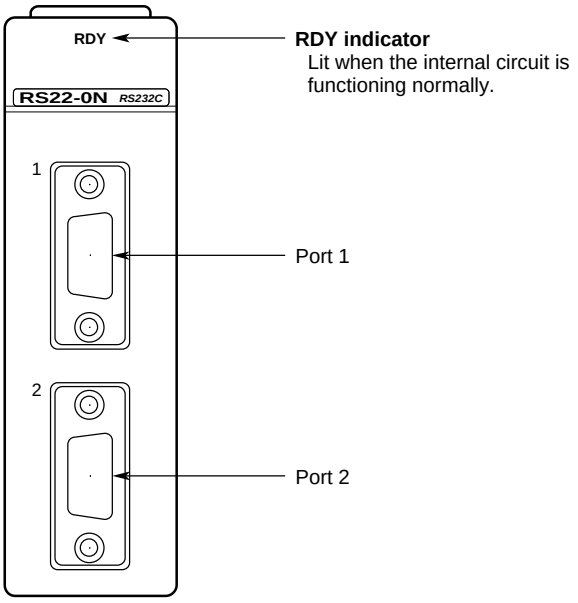


Specifications

Item	Specification
Interface	Conforms to the EIA RS-232-C standard
Connection method	Point to point
Transmission mode	Full-duplex or half-duplex
Synchronization	Start-stop synchronization
Communication protocol	No protocol
Character length	7 or 8 bits
Stop bit length	1, 1.5 or 2 bits
Parity bit	None, even or odd
Transmission speed	75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 bps
Transmission distance	15 m max.
Number of ports	2 (not isolated)
Current consumption	350 mA
External connection	D-sub 9-pin connector (female), M2.6 screw
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*
Weight	120 g

*: Excluding protrusions (see external dimensions for details).

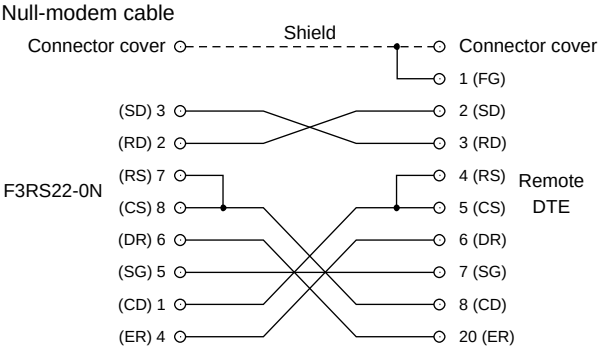
Components and Functions



External Connection Diagram

■ Connecting an RS-232-C Device (DTE: Data Terminal Equipment)

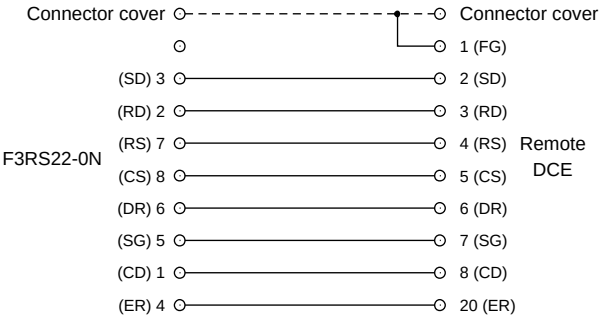
Null-modem cable



Note: The remote DTE is assumed to have a D-sub 25-pin connector. An example of a cable suitable for the above configuration is Yokogawa's YCB215.

■ Connecting a Modem (DCE: Data Communication Equipment)

Modem cable

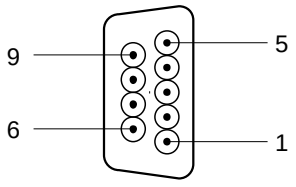


Note: The remote DCE is assumed to have a D-sub 25- pin connector. Examples of cables suitable for the above configuration are Yokogawa's YCB211 and YCB212.

How to connect the shielding conductor (for DTE or DCE)

(1) Use a cable with connectors protected by metal covers or metal-plated covers. Connect the shielding conductor directly to the metal covers.
(2) The connector shell of the F3RS22-0N module is connected internally to the FG terminal of the FA-M3 power supply module.

■ Connector Specifications



D-sub 9-pin connector (female)

Pin No.	Signal Name	Name	Signal Direction FA- M3 | PC	Signal Monitor	Description*
1	CD	Data carrier detect	←	Yes	The module receives data only when this signal is on and sends data as follows: 1. Sends data regardless of the state of CD (default). 2. Sends data only when CD is off.
2	RD	Receive data	←	—	
3	SD	Send data	→	—	
4	ER	Data terminal ready	→	—	1. ER goes on when power is turned on and stays on thereafter (default). 2. The on/off state of ER is controlled by software.
5	SG	Signal ground	↔	—	
6	DR	Data set ready	←	Yes	Used to check whether the remote station can receive data. 1. Sends data regardless of the state of DR (default). 2. Sends data only when DR is on.
7	RS	Request to send	→	—	Used when sending data to the remote station. 1. Always set to on (default). 2. Set to on only when sending data.
8	CS	Clear to send	←	Yes	Clear to send signals from the remote station. The module can send data only when this signal is on.
9	—	(Not used)	—	—	

* Specify 1 or 2 using a BASIC program.

Operating Environment

There is no restriction on the type of CPU modules that can be used with this module.

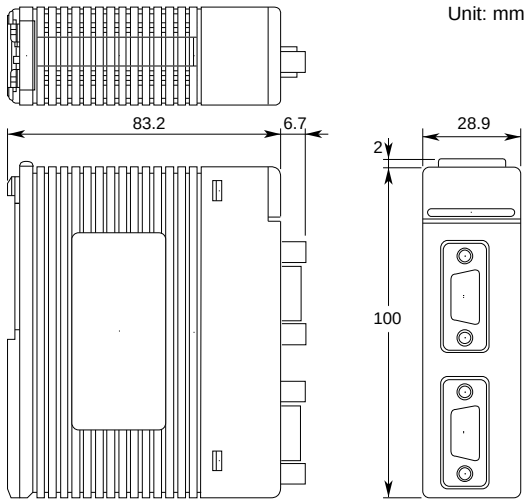
CPU Module	Style	
BASIC CPU Module	F3BP20	—
	F3BP30	—

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3RS22	-0N	. . . . .	. . . . .	19200 bps max., 2 ports

External Dimensions

Unit: mm



General Specifications

F3RS41-0N
RS-422 Communication Module

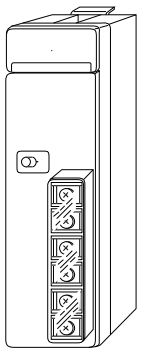
FA-M3

General

The F3RS41-0N RS-422 Communication Module is used with the F3BP20 and F3BP30 BASIC CPU modules to establish RS-422-A or RS-485 communication. It has one port that is connected via the built-in terminal block. It can communicate with devices at a maximum distance of 1200 m.

The module supports BASIC statements for providing the means of sending and receiving data to and from communications lines.

Note: This module is dedicated to the F3BP20 and F3BP30 BASIC CPU modules.

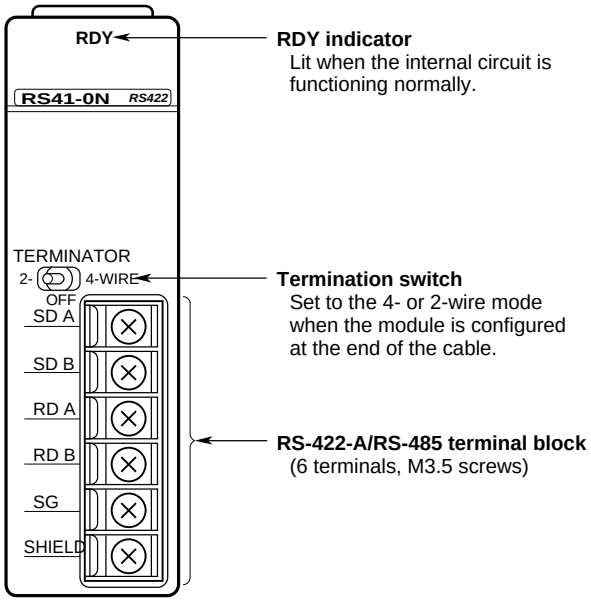


Specifications

Item	Specification
Interface	Conforms to the EIA RS-422-A and EIA RS-485 standards
Connection method	Point to point (multipoint configuration is also supported)
Transmission mode	Full-duplex or half-duplex, 4- or 2-wire system
Synchronization	Start-stop synchronization
Communication protocol	No protocol
Character length	7 or 8 bits
Stop bit length	1, 1.5 or 2 bits
Parity bit	None, even or odd
Transmission speed	75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 bps
Transmission media	Shielded twisted-pair cable (AWG20 - 16)
Transmission distance	1200 m max.
Number of ports	1 (isolated)
Terminating resistance	220 Ω
Current consumption	350 mA
External connection	6-point terminal block, M3.5 screws
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*
Weight	140 g

*: Excluding protrusions (see external dimensions for details).

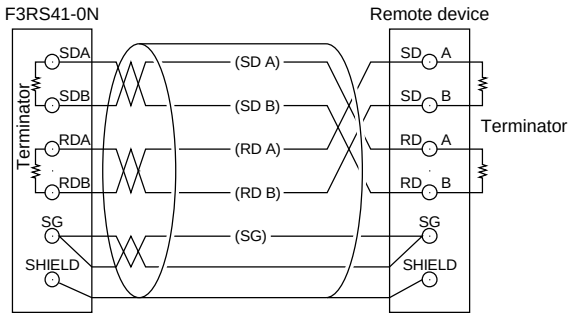
Components and Functions



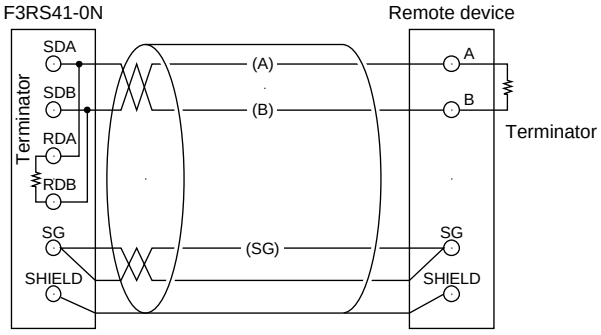
External Connection Diagram

■ Point-to-point Configuration

(1) 4-wire System



(2) 2-wire System

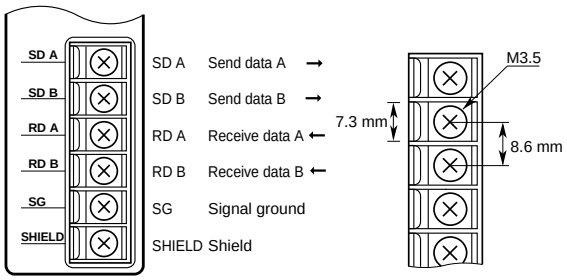


How to connect the shielding conductor (for 4-wire or 2-wire system)

(1) Ground (connect to the SHIELD terminal) both ends of the shielding conductor of the twisted-pair cable. The SHIELD terminal of the F3RS41-0N module is connected internally to the FG terminal of the FA-M3 power supply module.

(2) The F3RS41-0N module has a built-in terminator (220 Ω). When configuring the module at the end of the cable, set the terminator switch to either a 4- or 2-wire system.

■ Terminal Block



Cables

Recommended cables for 2-wire systems:
KM80-□□□/KM81-□□□ (to be purchased separately).

* For details on KM80-□□□ and KM81-□□□, see “FA-M3 YHLS Master Module, YHLS Slave Units and YHLS Communication Cables” (GS 34M06H46-03E).

Operating Environment

There is no restriction on the type of CPU modules that can be used with this module.

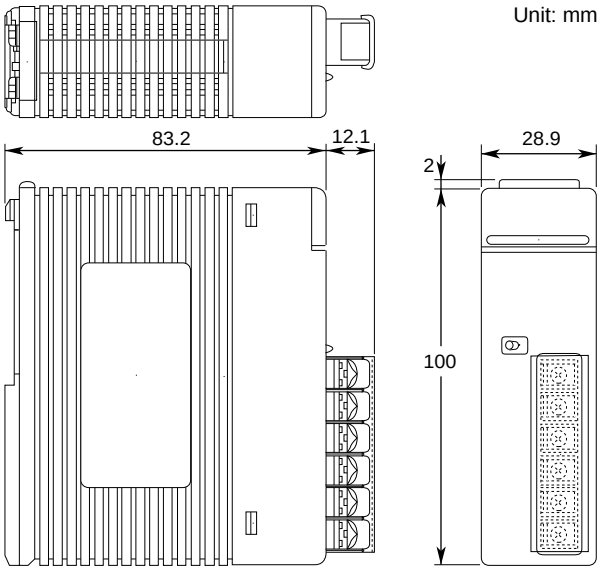
CPU Module	Style	
BASIC CPU Module	F3BP20	—
	F3BP30	—

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3RS41	-0N	.....	.....	19200 bps max., 1 port

External Dimensions

Unit: mm



General Specifications

F3RZ81-0F
Ladder Communication Module
(RS-232-C)

FA-M3

General

The F3RZ81-0F Ladder Communication Module provides RS-232-C communication capability from a sequence CPU module under the control of a ladder program. It has one port using a D-sub 9-pin connector. It can communicate with devices at a maximum distance of 15 m.

Features

- Maximum transmission rate of 115.2 kbps.
- All input relays are interrupt-capable.

Specifications

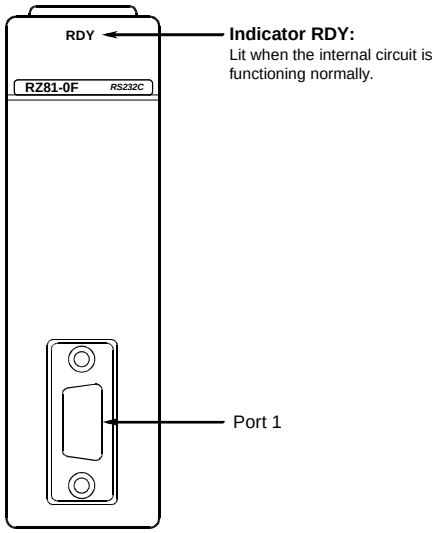
Item		Specification
Connection method		Point to point
Transmission mode		Full-duplex/half-duplex
Synchronization		Start-stop synchronization
Communication protocol		No protocol
Data format	Character length	7 or 8 bits
	Stop bit length	1 or 2 bits
	Parity bit	None, even or odd
Transmission speed		300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 76800, or 115200 bps
Control lines	RS control	1: Always on. 2: Turn on before sending.
	DR check	1: Ignore DR when sending. 2: Send only when DR is on.
	CD check	1: Ignore CD when sending. 2: Send only when CD is off.
	ER control	1: On (ready) 2: Off (not ready)
Communication buffers	Send buffer	Text buffer (3584 bytes max.)*1
	Receive buffer	8192-byte rotary buffer (FIFO buffer)
Format of received text	Start character	- Yes or No - Any single character
	End character (terminator)	- Yes or No - Up to 2 characters long, any characters - Also used as send terminator.
	Text length	Can be specified as any number between 1 and 3584 *1
	Character-to-character timeout interval	0 to 32760 ms in 1 ms increments, accurate to 1 ms (0 means not monitored)
Clear-to-send timeout interval		0 to 32760 ms in 1 ms increments, accurate to 1 ms (0 means not monitored)
Break transmission interval		1 to 32760 ms in 1 ms increments, accurate to 1 ms
Transmission distance		15 m max.
Number of ports		1 (not isolated)
Current consumption		320 mA
External dimensions		28.9 (W) x 100 (H) x 83.2 (D) mm*
Weight		120 g

*: Excluding protrusions (see external dimensions for details).

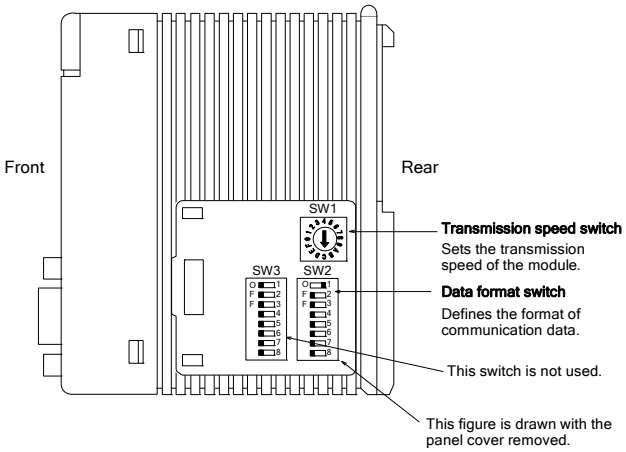
*1: The send/receive data register size can be changed to accommodate up to 3584 bytes.

Components and Functions

■ Front View

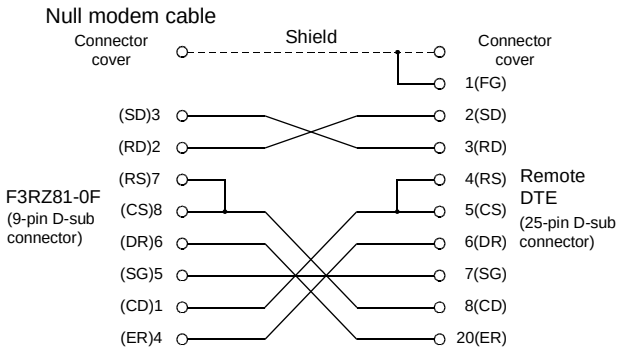


■ Right Side View



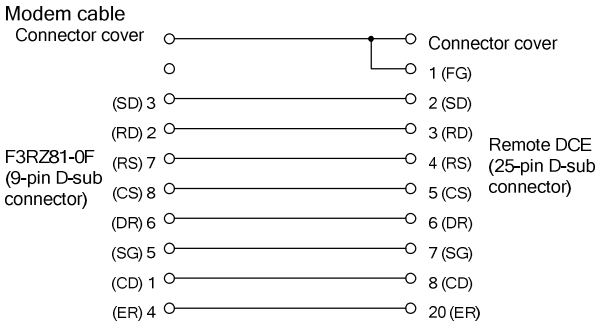
External Connection Diagram

■ Connecting an RS-232-C Device (DTE: Data Terminal Equipment)



Note: The remote DTE is assumed to have a D-sub 25-pin connector. An example of a cable suitable for the above configuration is Yokogawa's YCB215.

■ Connecting a Modem (DCE: Data Communication Equipment)

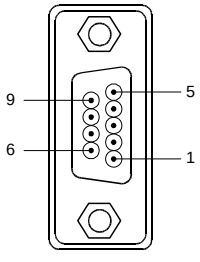


Note: The remote DCE is assumed to have a D-sub 25- pin connector. An example of a cable suitable for the above configuration is Yokogawa's YCB211.

How to connect the shielding conductor (for DTE or DCE)

(1) Use a cable with connectors protected by metal covers or metal-plated covers. Connect the shielding conductor directly to the metal covers.
(2) The connector shell of the F3RZ81-0F module is connected internally to the FG terminal of the FA-M3 power supply module.

■ Connector Specifications



9-pin D-sub connector (female)

Pin No.	Signal Name	Name	Signal Direction FA- M3	Signal Direction PC	Signal Monitored	Description*
1	CD	Data carrier detect	←		Yes	The module receives data only when this signal is on and sends data as follows: 1. Ignore CD when sending (default). 2. Send only when CD is off.
2	RD	Receive data	←		—	
3	SD	Send data	→		—	
4	ER	Data terminal ready	→		—	1. On when powered (default). 2. On/off by software.
5	SG	Signal ground	↔		—	
6	DR	Data set ready	←		Yes	Used to check whether the remote station can receive data. 1. Ignore DR when sending (default). 2. Send data only when DR is on.
7	RS	Request to send	→		—	Used when sending data to the remote station. 1. Always on (default). 2. Turn on before sending
8	CS	Clear to send	←		Yes	Clear to send signal from the remote station. The module can send data only when this signal is on.
9	—	(Not used)	—		—	

*: Specify 1 or 2 using software.

Operating Environment

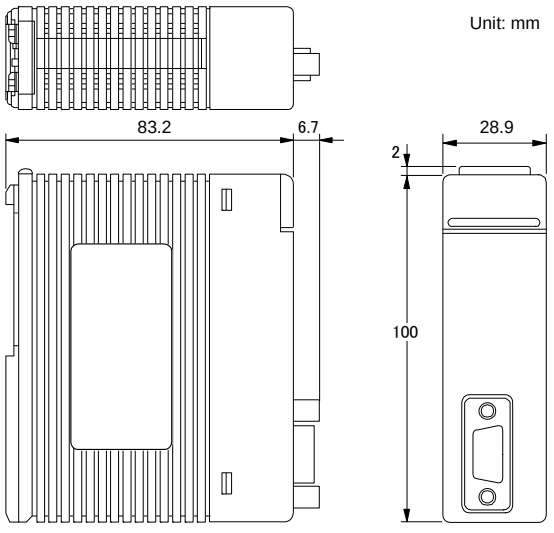
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3RZ81	-0F	. . . . .	. . . . .	115200 bps max., 2 ports

External Dimensions

Unit: mm



General Specifications

F3RZ82-0F
Ladder Communication Module
(RS-232-C)

FA-M3

General

The F3RZ82-0F Ladder Communication Module provides RS-232-C communication capability from a sequence CPU module under the control of a ladder program. It has two ports using two D-sub 9-pin connectors. It can communicate with devices at a maximum distance of 15 m.

Features

- The two ports operate independently at a maximum transmission rate of 115.2 kbps.
- All input relays are interrupt-capable.

Specifications

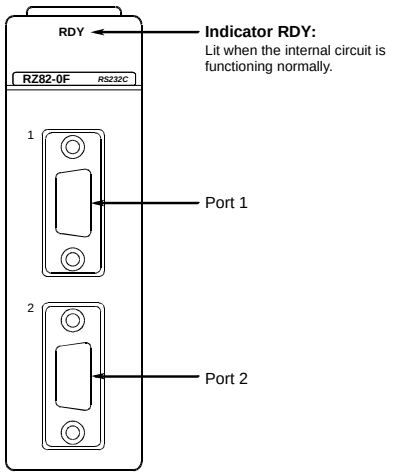
Item		Specification
Connection method		Point to point
Transmission mode		Full-duplex/half-duplex
Synchronization		Start-stop synchronization
Communication protocol		No protocol
Data format	Character length	7 or 8 bits
	Stop bit length	1 or 2 bits
	Parity bit	None, even or odd
Transmission speed		300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 76800, or 115200 bps
Control lines	RS control	1: Always on. 2: Turn on before sending.
	DR check	1: Ignore DR when sending. 2: Send only when DR is on.
	CD check	1: Ignore CD when sending. 2: Send only when CD is off.
	ER control	1: On (ready) 2: Off (not ready)
Communication buffers	Send buffer	Text buffer (3584 bytes max.)*1
	Receive buffer	8192-byte rotary buffer (FIFO buffer)
Format of received text	Start character	- Yes or No - Any single character
	End character (terminator)	- Yes or No - Up to 2 characters long, any characters - Also used as send terminator.
	Text length	Can be specified as any number between 1 and 3584 *1
	Character-to-character timeout interval	0 to 32760 ms in 1 ms increments, accurate to 1 ms (0 means not monitored)
Clear-to-send timeout interval		0 to 32760 ms in 1 ms increments, accurate to 1 ms (0 means not monitored)
Break transmission interval		1 to 32760 ms in 1 ms increments, accurate to 1 ms
Transmission distance		15 m max.
Number of ports		2 (not isolated)
Current consumption		350 mA
External dimensions		28.9 (W) x 100 (H) x 83.2 (D) mm*
Weight		110 g

*: Excluding protrusions (see external dimensions for details).

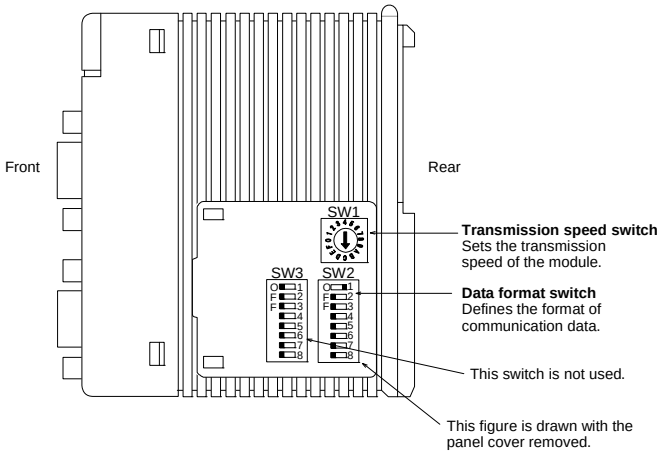
*1: The send/receive data register size can be changed to accommodate up to 3584 bytes.

Components and Functions

■ Front View

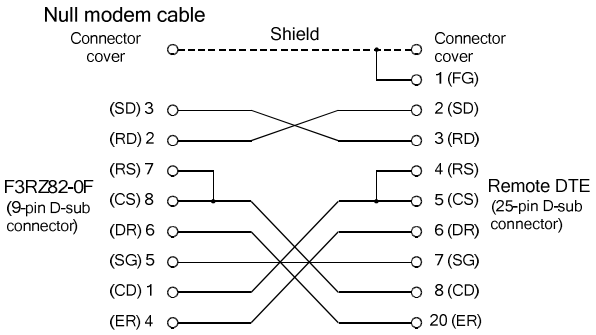


■ Right Side View



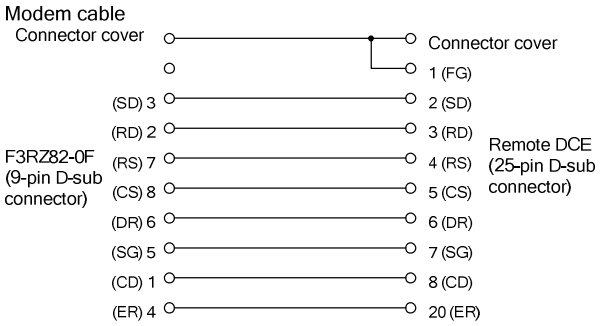
External Connection Diagram

■ Connecting an RS-232-C Device (DTE: Data Terminal Equipment)



Note: The remote DTE is assumed to have a D-sub 25-pin connector. An example of a cable suitable for the above configuration is Yokogawa's YCB215.

■ Connecting a Modem (DCE: Data Communication Equipment)

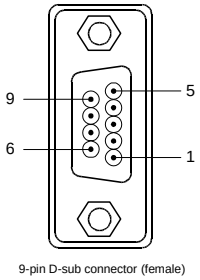


Note: The remote DCE is assumed to have a D-sub 25- pin connector. An example of a cable suitable for the above configuration is Yokogawa's YCB211.

How to connect the shielding conductor (for DTE or DCE)

(1) Use a cable with connectors protected by metal covers or metal-plated covers. Connect the shielding conductor directly to the metal covers.
(2) The connector shell of the F3RZ82-0F module is connected internally to the FG terminal of the FA-M3 power supply module.

■ Connector Specifications



9-pin D-sub connector (female)

Pin No.	Signal Name	Name	Signal Direction FA- M3 | PC	Signal Monitored	Description*
1	CD	Data carrier detect	←	Yes	The module receives data only when this signal is on and sends data as follows: 1. Ignore CD when sending (default). 2. Send only when CD is off.
2	RD	Receive data	←	—	
3	SD	Send data	→	—	
4	ER	Data terminal ready	→	—	1. On when powered (default). 2. On/off by software.
5	SG	Signal ground	↔	—	
6	DR	Data set ready	←	Yes	Used to check whether the remote station can receive data. 1. Ignore DR when sending (default). 2. Send data only when DR is on.
7	RS	Request to send	→	—	Used when sending data to the remote station. 1. Always on (default). 2. Turn on before sending
8	CS	Clear to send	←	Yes	Clear to send signal from the remote station. The module can send data only when this signal is on.
9	—	(Not used)	—	—	

*: Specify 1 or 2 using software.

Operating Environment

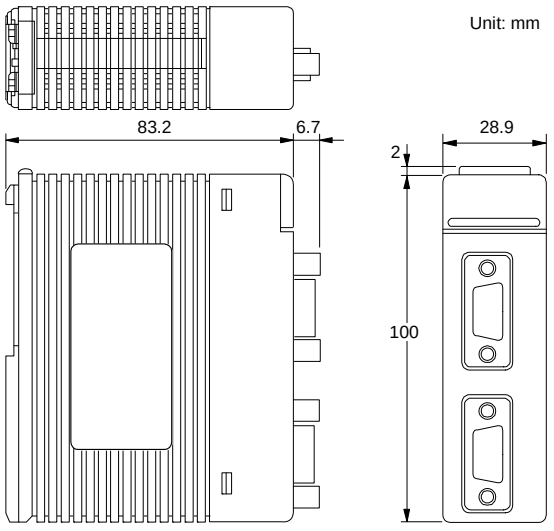
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3RZ82	-0F	. . . . .	. . . . .	115200 bps max., 2 ports

External Dimensions

Unit: mm



General Specifications

F3RZ91-0F
Ladder Communication Module
(RS-422-A/RS-485)

FA-M3

General

The F3RZ91-0F Ladder Communication Module provides RS-422-A or RS-485 communication capability from a sequence CPU module under the control of a ladder program. It has one port using a terminal block. It can communicate with devices at a maximum distance of 1200 m.

Features

- The maximum transmission rate is 115.2 kbps.
- All input relays are interrupt-capable.

Specifications

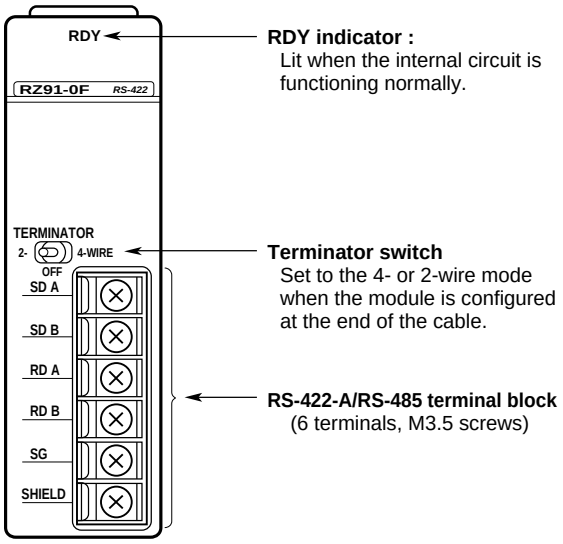
Item		Specification
Connection method		Point to point
Transmission mode		Full-duplex/half-duplex
Synchronization		Start-stop synchronization
Communication protocol		No protocol
Data format	Character length	7 or 8 bits
	Stop bit length	1 or 2 bits
	Parity bit	None, even or odd
Transmission speed		300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 76800, or 115200 bps
Communication buffers	Send buffer	Text buffer (1792 bytes max.)*1
	Receive buffer	8192-byte rotary buffer (FIFO buffer)
Format of received text	Start character	- Yes or No - Any single character
	End character (terminator)	- Yes or No - Up to 2 characters long, any characters - Also used as send terminator.
	Text length	Can be specified as any number between 1 and 1792 *1
	Character-to-character timeout interval	0 to 32760 ms in 1 ms increments, accurate to 1 ms (0 means not monitored)
Break transmission interval		1 to 32760 ms in 1 ms increments, accurate to 1 ms
Transmission distance		1200 m max.
Number of ports		1 (isolated)
Current consumption		350 mA
External dimensions		28.9 (W) x 100 (H) x 83.2 (D) mm*
Weight		120 g

*: Excluding protrusions (see external dimensions for details).

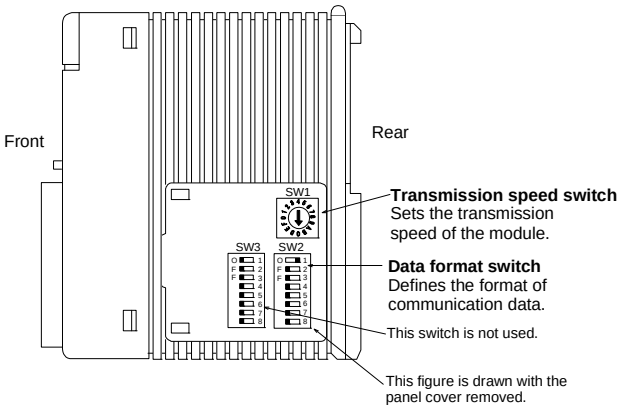
*1: The send/receive data register size can be changed to accommodate up to 1792 bytes.

Components and Functions

■ Front View



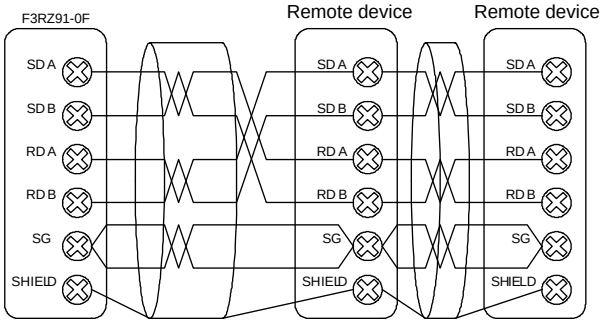
■ Right Side View



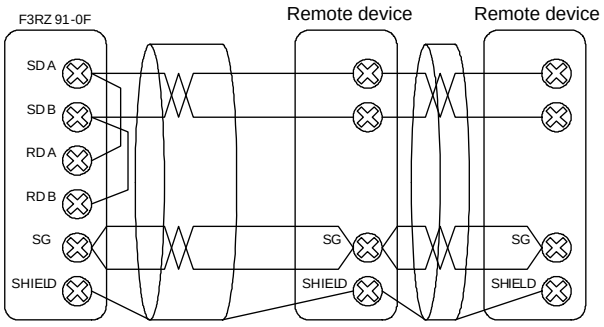
External Connection Diagram

■ Point-to-point Configuration

(1) 4-wire System



(2) 2-wire System



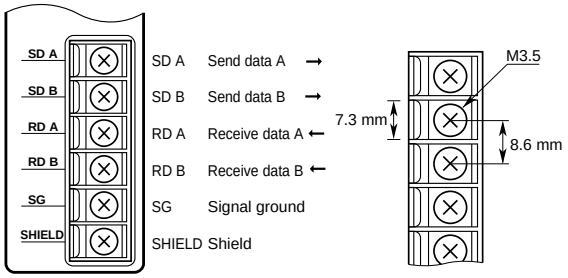
Note: In a 2-wire system, SDA and RDA, as well as SDB and RDB, must be shorted with a wire at the terminal block.

How to connect the shielding conductor (for 4-wire or 2-wire system)

(1) Ground (connect to the SHIELD terminal) both ends of the shielding conductor of the twisted-pair cable. The SHIELD terminal of the F3RZ91-0F module is connected internally to the FG terminal of the FA-M3 power supply module.

(2) The F3RZ91-0F module has a built-in terminator (220 Ω). When configuring the module at the end of a cable, set the terminator switch to either a 4- or 2-wire system.

Terminal Block



Cables

Recommended cables for 2-wire systems:
KM80-□□□/KM81-□□□ (to be purchased separately).

* For details on KM80-□□□ and KM81-□□□, see "FA-M3 YHLS Master Module, YHLS Slave Units and YHLS Communication Cables" (GS 34M06H46-03E).

Operating Environment

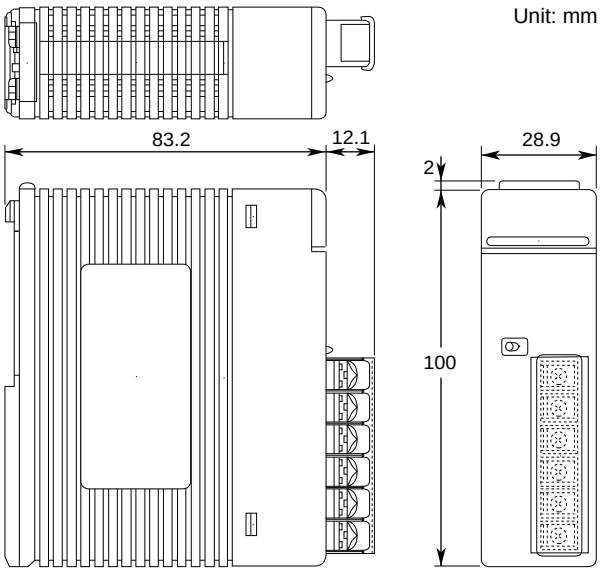
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3RZ91	-0F	. . . . .	. . . . .	19200 bps max., 1 port

External Dimensions

Unit: mm



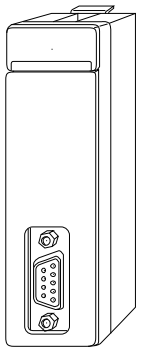
General Specifications

F3RZ81-0N
Ladder Communication Module
(RS-232-C)

FA-M3

General

The F3RZ81-0N Ladder Communication Module provides RS-232-C communication capability from a sequence CPU module under the control of a ladder program. It has one port and uses a D-sub 9-pin connector. It can communicate with devices at a maximum distance of 15 m.

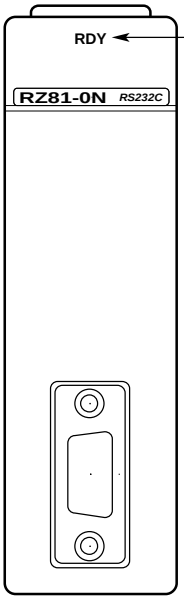


Specifications

Item	Specification
Interface	Conforms to the EIA RS-232-C standard
Connection method	Point to point
Transmission mode	Full-duplex or half-duplex
Synchronization	Start-stop synchronization
Communication protocol	No protocol
Character length	7 or 8 bits
Stop bit length	1, 1.5 or 2 bits
Parity bit	None, even or odd
Transmission speed	75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 bps
Transmission distance	15 m max.
Number of ports	1 (not isolated)
Current consumption	100 mA
External connection	Dsub 9-pin connector (female)
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*
Weight	120 g

*: Excluding protrusions (see external dimensions for details).

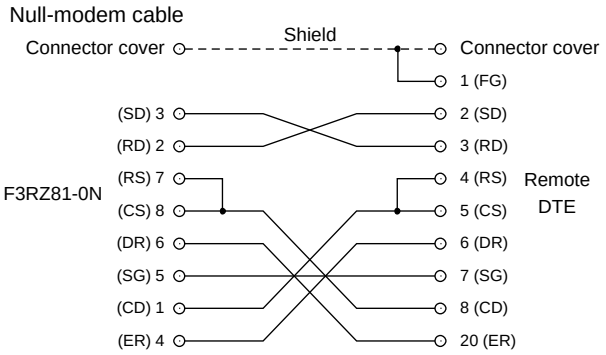
Components and Functions



RDY indicator
Lit when the internal circuit is functioning normally.

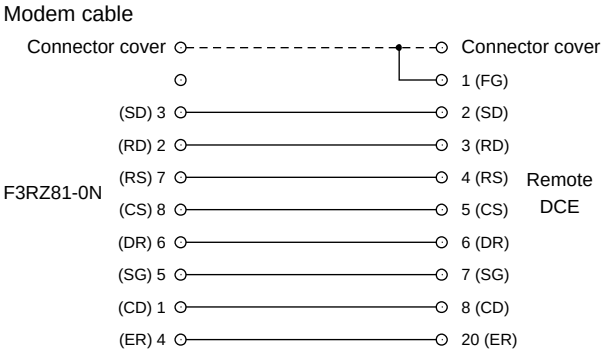
External Connection Diagram

■ Connecting an RS-232-C Device (DTE: Data Terminal Equipment)



Note: The remote DTE is assumed to have a D-sub 25-pin connector. An example of a cable suitable for the above configuration is Yokogawa's YCB215.

■ Connecting a Modem (DCE: Data Communication Equipment)

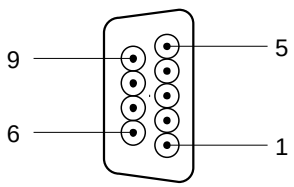


Note: The remote DCE is assumed to have a D-sub 25- pin connector. Examples of cables suitable for the above configuration are Yokogawa's YCB211 and YCB212.

How to connect the shielding conductor (for DTE or DCE)

(1) Use a cable with connectors protected by metal covers or metal-plated covers. Connect the shielding conductor directly to the metal covers.
(2) The connector shell of the F3RZ81-0N module is connected internally to the FG terminal of the FA-M3 power supply module.

■ Connector Specifications



D-sub 9-pin connector (female)

Pin No.	Signal Name	Name	Signal Direction FA- M3 | PC	Signal Monitor	Description*
1	CD	Data carrier detect	←	Yes	The module receives data only when this signal is on and sends data as follows: 1. Sends data regardless of the state of CD (default). 2. Sends data only when CD is off.
2	RD	Receive data	←	—	
3	SD	Send data	→	—	
4	ER	Data terminal ready	→	—	1. ER goes on when power is turned on and stays on thereafter (default). 2. The on/off state of ER is controlled by software.
5	SG	Signal ground	↔	—	
6	DR	Data set ready	←	Yes	Used to check whether the remote station can receive data. 1. Sends data regardless of the state of DR (default). 2. Sends data only when DR is on.
7	RS	Request to send	→	—	Used when sending data to the remote station. 1. Always set to on (default). 2. Set to on only when sending data.
8	CS	Clear to send	←	Yes	Clear to send signals from the remote station. The module can send data only when this signal is on.
9	—	(Not used)	—	—	

*: Specify 1 or 2 using a ladder diagram support program.

Operating Environment

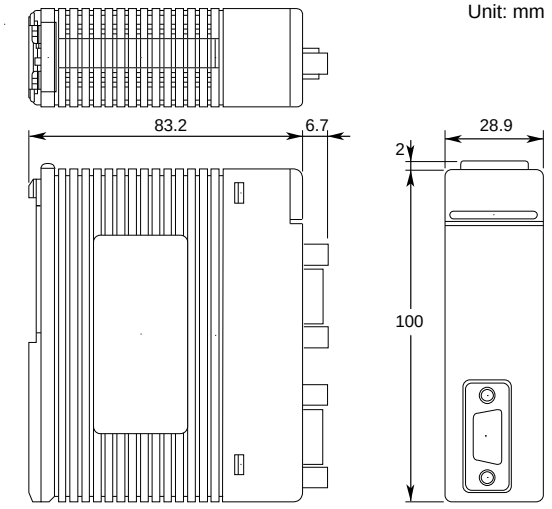
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3RZ81	-0N	. . . . .	. . . . .	19200 bps max., 1 port

External Dimensions

Unit: mm



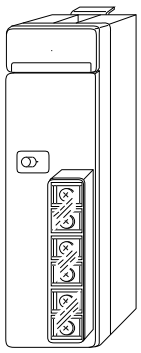
General Specifications

F3RZ91-0N
Ladder Communication Module
(RS-422-A/RS-485)

FA-M3

General

The F3RZ91-0N Ladder Communication Module provides RS-422-A or RS-485 communication capability from a sequence CPU module under the control of a ladder program. It has one port and uses a terminal block. It can communicate with devices at a maximum distance of 1200 m.

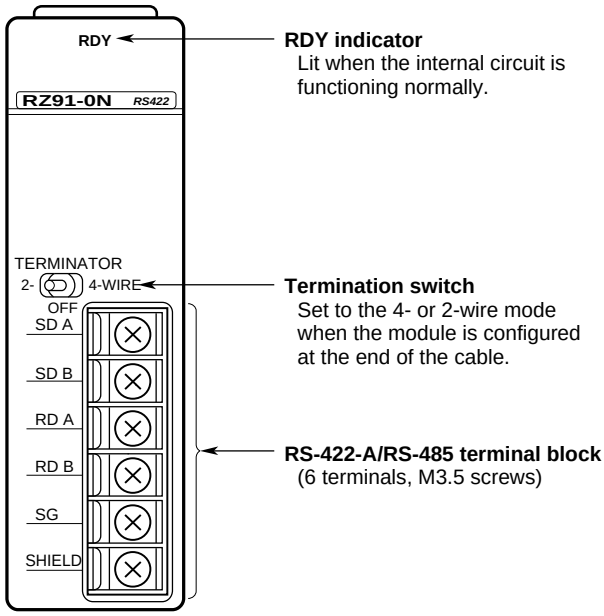


Specifications

Item	Specification
Interface	Conforms to the EIA RS-422-A and EIA RS-485 standards
Connection method	Point to point (multipoint configuration is also supported)
Transmission mode	Full-duplex or half-duplex, 4- or 2-wire system
Synchronization	Start-stop synchronization
Communication protocol	No protocol
Character length	7 or 8 bits
Stop bit length	1, 1.5 or 2 bits
Parity bit	None, even or odd
Transmission speed	75, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 bps
Transmission media	Shielded twisted-pair cable (AWG20 - 16)
Transmission distance	1200 m max.
Number of ports	1 (isolated)
Terminating resistance	220 Ω
Current consumption	210 mA
External connection	6-point terminal block, M3.5 screws
External dimensions	28.9 (W) x 100 (H) x 83.2 (D) mm*
Weight	140 g

*: Excluding protrusions (see external dimensions for details).

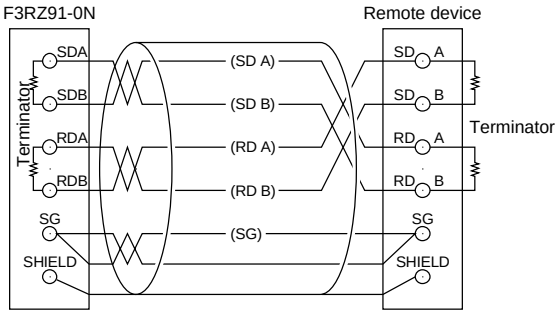
Components and Functions



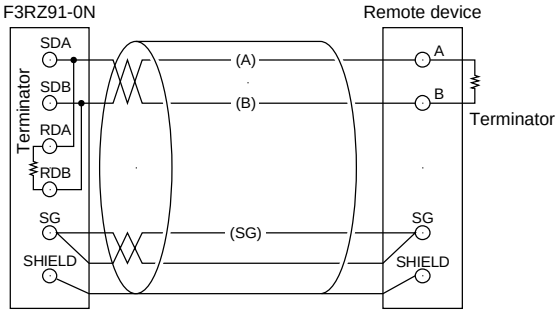
External Connection Diagram

■ Point-to-point Configuration

(1) 4-wire System



(2) 2-wire System

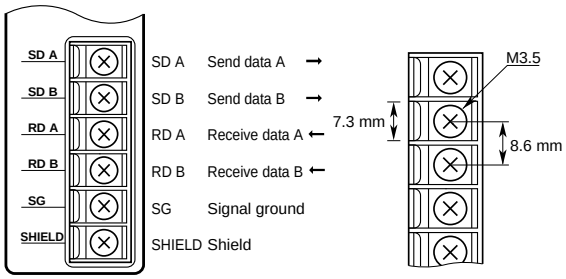


How to connect the shielding conductor (for 4-wire or 2-wire system)

(1) Ground (connect to the SHIELD terminal) both ends of the shielding conductor of the twisted-pair cable. The SHIELD terminal of the F3RZ91-0N module is connected internally to the FG terminal of the FA-M3 power supply module.

(2) The F3RZ91-0N module has a built-in terminator (220 Ω). When configuring the module at the end of a cable, set the terminator switch to either a 4- or 2-wire system.

Terminal Block



Cables

Recommended cables for 2-wire systems:
KM80-□□□/KM81-□□□ (to be purchased separately).

* For details on KM80-□□□ and KM81-□□□, see “FA-M3 YHLS Master Module, YHLS Slave Units and YHLS Communication Cables” (GS 34M06H46-03E).

Operating Environment

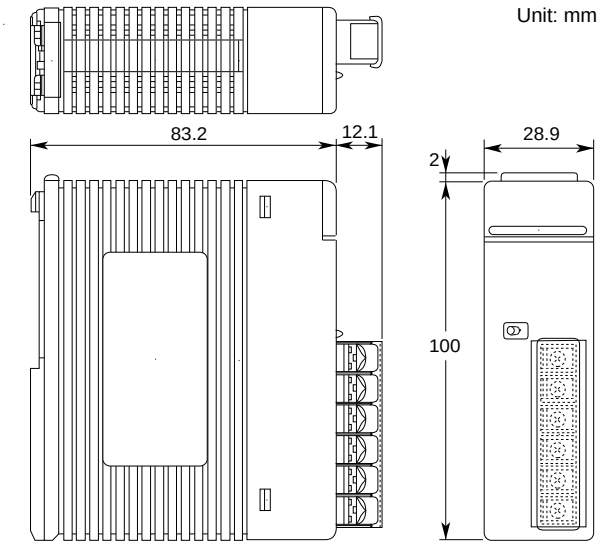
There is no restriction on the type of CPU modules that can be used with this module.

Model and Suffix Codes

Model	Suffix Code	Style Code	Option Code	Description
F3RZ91	-0N	.....	.....	19200 bps max., 1 port

External Dimensions

Unit: mm



Items to Specify When Ordering

1. Model and suffix codes