

## Contents

F3LC11-1F Personal Computer Link Module .....	3
F3LC12-1F Personal Computer Link Module .....	5
F3LC11-2F Personal Computer Link Module .....	7
F3LC31-2F Modbus Interface Module .....	9
F3LC51-2N UT Link Module .....	11
F3RZ81-0F Ladder Communication Module (RS-232-C) .....	13
F3RZ82-0F Ladder Communication Module (RS-232-C) .....	15
F3RZ91-0F Ladder Communication Module (RS-422-A/RS-485) .....	17

For information on the Discontinued Modules, refer to GS34M06H21-99E.



# General Specifications

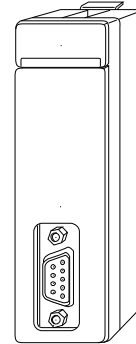
## F3LC11-1F Personal Computer Link Module

FA-M3

### General

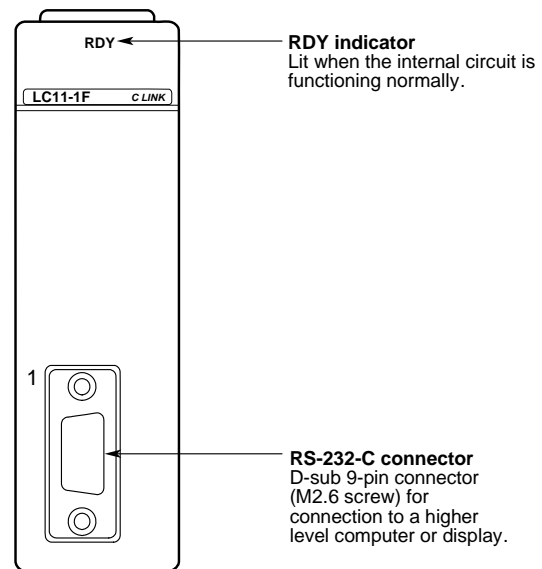
The F3LC11-1F is connected to a higher-level computer, such as a personal computer or FA computer, or a display for RS-232-C communications.

- 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.

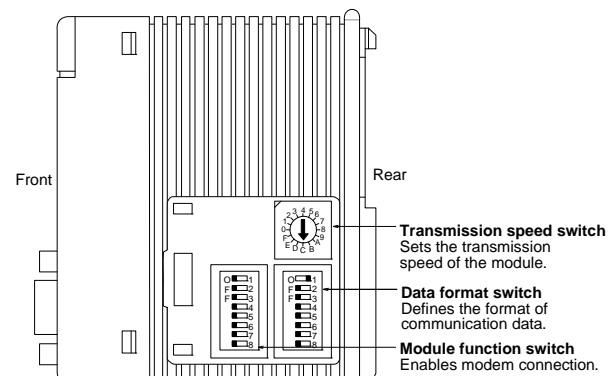


### Components and Functions

#### ■ Front View



#### ■ Right Side View



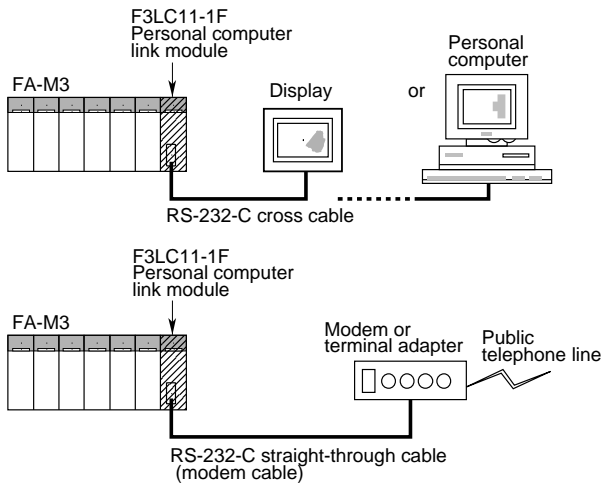
Note: This figure is drawn with the panel cover removed.

### 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. F3SP22, 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	120 g	
Surrounding air temperature range	Operating : 0 to 55°C	
	Storage : -20°C to 75°C	
Surrounding humidity range	Operating : 10 to 90% RH (non-condensing)	
	Storage : 10 to 90% RH (non-condensing)	
Surrounding atmosphere	Must be free of corrosive gases, flammable gases or heavy dust.	

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

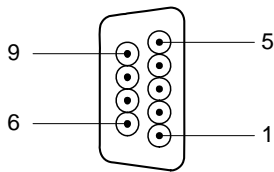
### Configuration Example



### External Connection Diagram

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

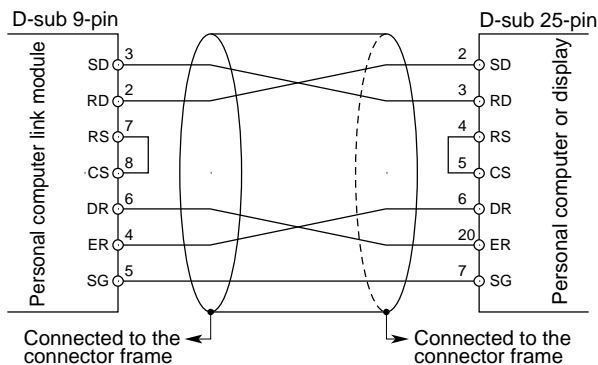
#### Connector Specifications



D-sub 9-pin connector (female)

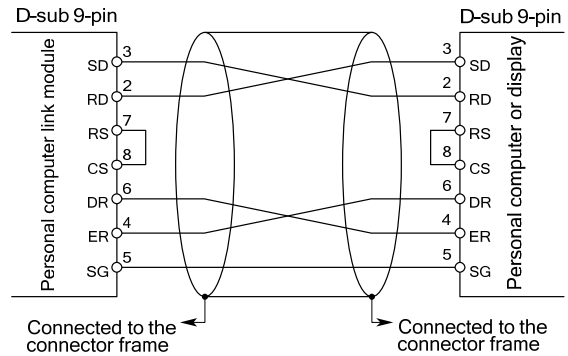
Pin No.	Signal Name	Name	Signal Direction		Description
			FA-M3	PC	
2	RD	Receive data	←		
3	SD	Send data		→	
4	ER	Data Terminal ready		→	Always output ON in RDY state
5	SG	Signal ground	↔	↔	
6	DR	Data set ready	←		Always on
7	RS	Request to send		→	Always output ON in RDY state
8	CS	Clear to send	←		Always 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.

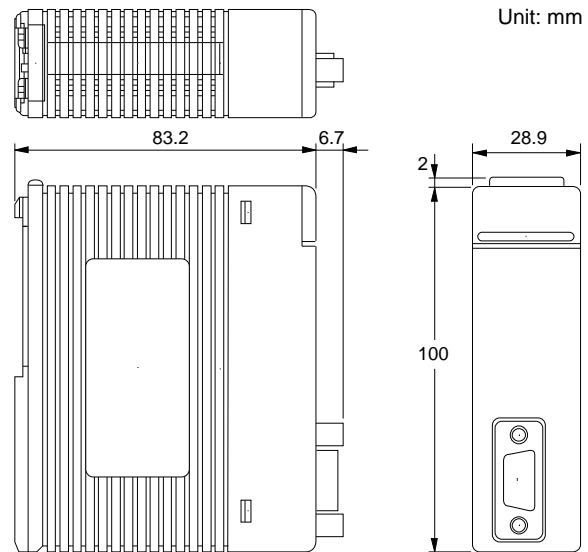
### Operating Environment

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



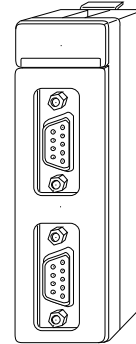
# General Specifications

## F3LC12-1F Personal Computer Link Module

### 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.



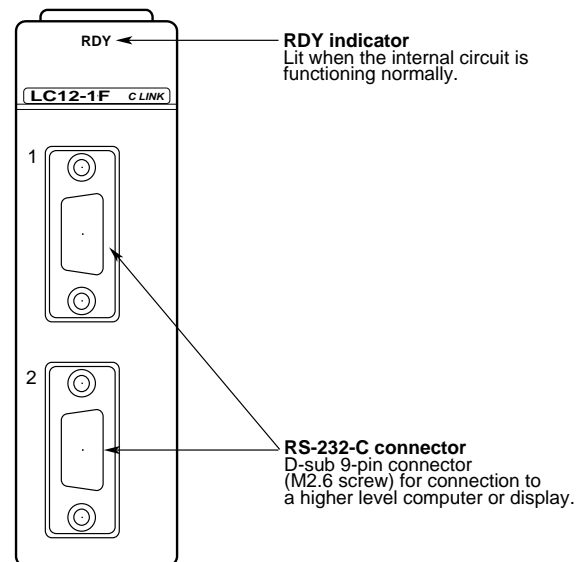
### Specifications

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. F3SP22, 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	
Surrounding air temperature range	Operating : 0 to 55°C	
	Storage : -20°C to 75°C	
Surrounding humidity range	Operating : 10 to 90% RH (non-condensing)	
	Storage : 10 to 90% RH (non-condensing)	
Surrounding atmosphere	Must be free of corrosive gases, flammable gases or heavy dust.	

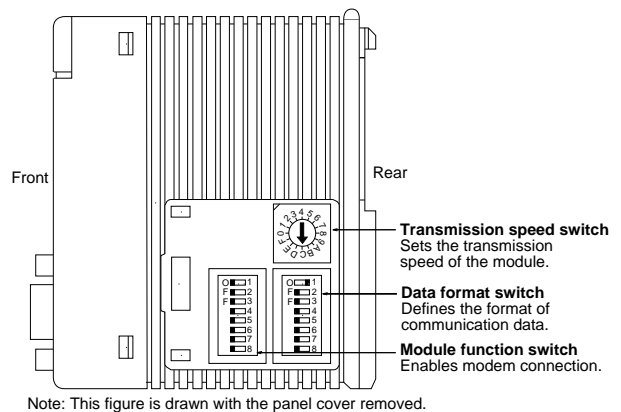
\*: Excluding protrusions (see external dimensions for details).

### Components and Functions

#### Front View

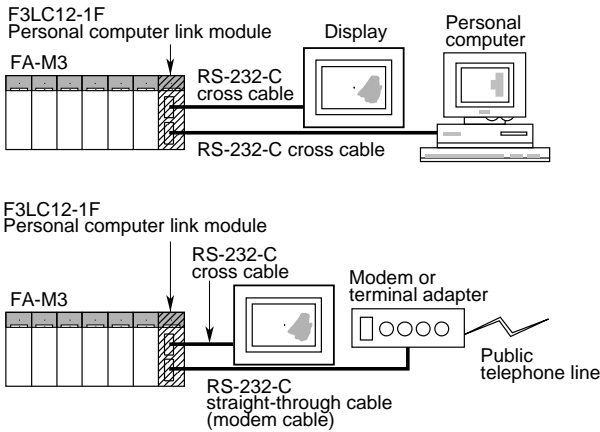


#### Right Side View



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

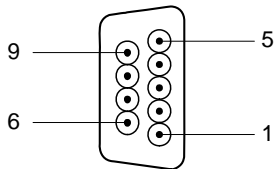
### Configuration Example



### External Connection Diagram

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

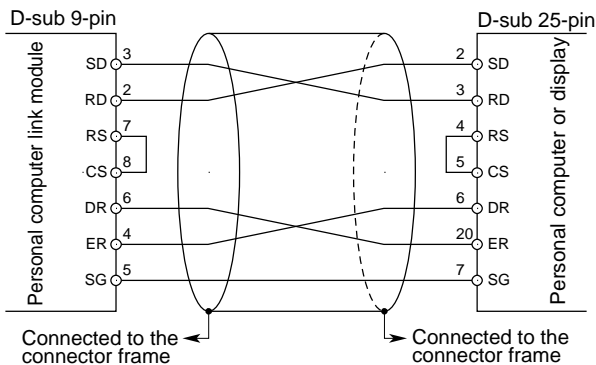
#### ■ Connector Specifications



D-sub 9-pin connector (female)

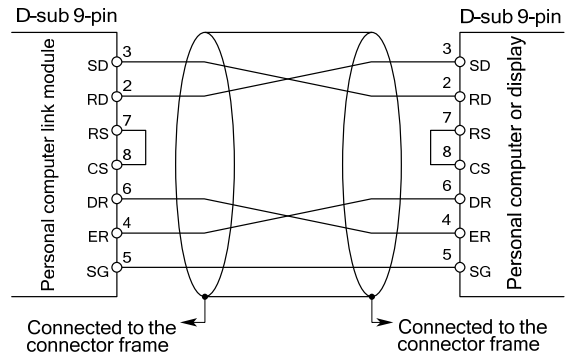
Pin No.	Signal Name	Name	Signal Direction		Description
			FA- M3	PC	
2	RD	Receive data	←		
3	SD	Send data	→		
4	ER	Data Terminal ready	→		Always output ON in RDY state
5	SG	Signal ground	↔	↔	
6	DR	Data set ready	←		Always on
7	RS	Request to send	→		Always output ON in RDY state
8	CS	Clear to send	←		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.

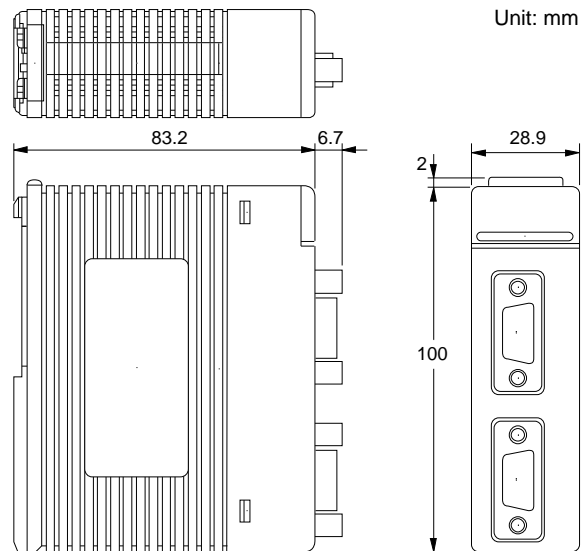
### Operating Environment

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



# General Specifications

FA-M3

## F3LC11-2F Personal Computer Link Module

### 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

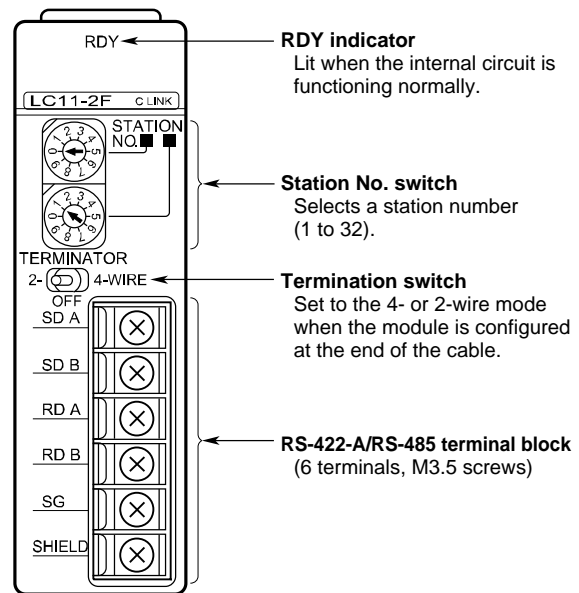
Item	Specification	
Interface	Conforms to the EIA RS-422-A and EIA RS-485 standards	
Transmission mode	Half-duplex, 4- or 2-wire system	
Synchronization	Start-stop synchronization	
Transmission speed	300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57.6k, 76.8k, 115.2 kbps	
Transmission 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. F3SP22, 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	
Surrounding air temperature range	Operating	: 0 to 55°C
	Storage	: -20°C to 75°C
Surrounding humidity range	Operating	: 10 to 90% RH (non-condensing)
	Storage	: 10 to 90% RH (non-condensing)
Surrounding atmosphere	Must be free of corrosive gases, flammable gases or heavy dust.	

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

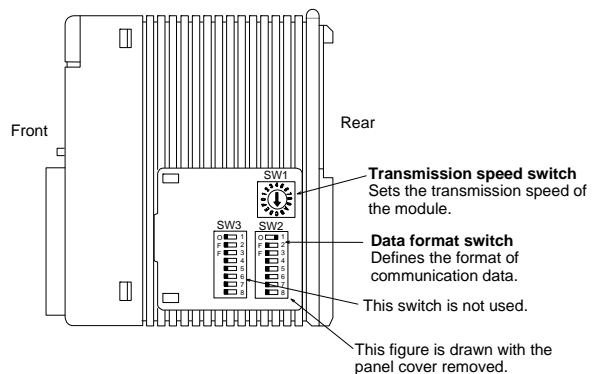


### Components and Functions

#### Front View

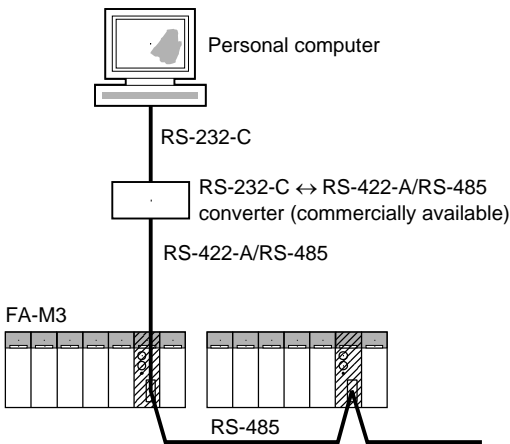
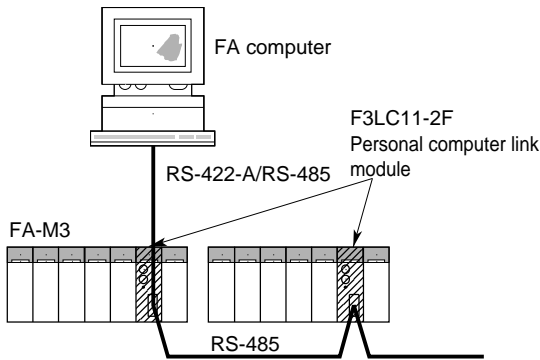


#### Right Side View



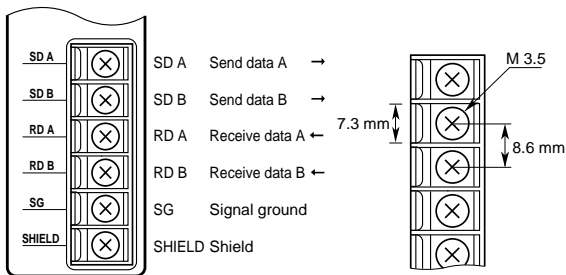
## Configuration Example

The maximum total number of linked modules is 32.



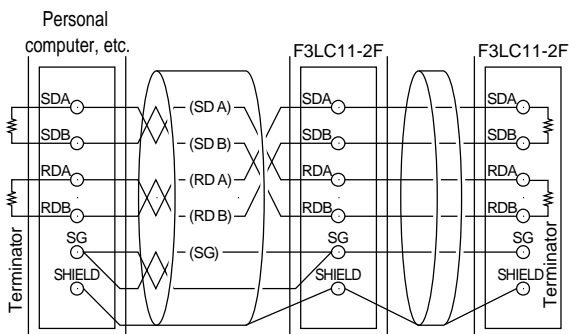
### ■ RS422-A/RS-485 Terminal Block & Cabling

#### ● Terminal Block

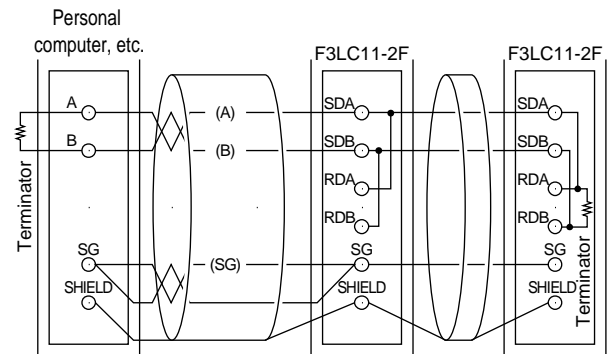


#### ● Wiring Diagram

##### (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).

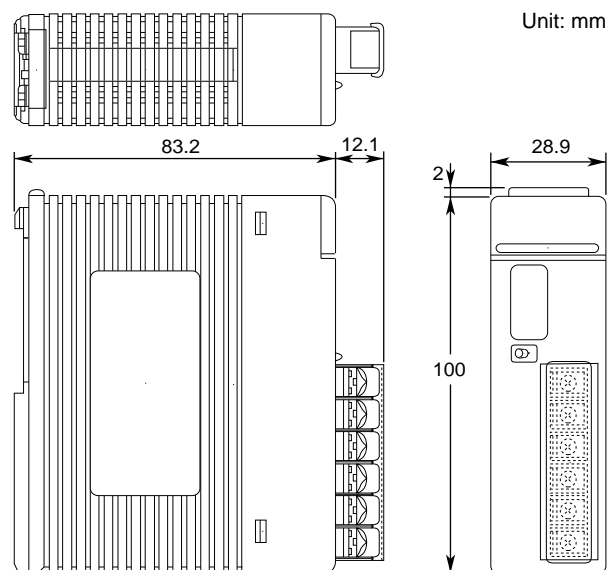
### Operating Environment

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





# General Specifications

## F3LC31-2F Modbus Interface Module

### General

This module is an interface module for connecting to Modbus<sup>\*1</sup> RTU / Modbus ASCII.

It supports the master function of Modbus communication which is an open network and can communicate with various slave devices of other companies. It also supports slave function and can communicate with other manufacturer's master devices.

\* 1: MODBUS is a registered trademark of Schneider Automation Inc..

### Specifications

Item	Specification	
Interface	Conforms to the EIA RS-422 and EIA RS-485 standards.	
Transmission mode	Half-duplex, 4- or 2-wire system	
Transmission speed	300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200 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 bit
	Data length	7 or 8 bits
	Stop bit	1 or 2 bits
	Parity bit	None, even or odd
Xon/Xoff control	None	
Transmission mode	Modbus RTU/Modbus ASCII	
Error check	CRC-16(RTU)/LRC-8(ASCII)	
Write protection	Yes or No(Slave function only)	
Master function	Communicate on demand	10 Function codes supported Request data area 250Byte Response data area 250Byte
	Broadcast	Broadcast address 0
Slave function	Auto answer	10 Function codes supported
	Device size	64K Discrete inputs
		64K Coils
		64K Input registers 64K Holding registers
Station Address	1 to 247	
Multi-slave function	Number of slaves	8 max.
	Auto answer	10 Function codes supported
	Device size	64K Discrete inputs
		64K Coils
64K Input registers 64K Holding registers		
Station Address	1 to 247	
Number of modules <sup>*1</sup>	F3SP21: 2 max. F3SP22, F3SP25, F3SP28, F3SP35, F3SP38, F3SP53, F3SP58, F3SP59, F3SP66, F3SP67, F3SP71, F3SP76, F3BP20 and F3BP30: 6 max.	
External connection	6-point terminal block, M3.5 screws	
Current consumption	290 mA	
External dimensions <sup>*2</sup>	28.9 (W) x 100 (H) x 83.2 (D) mm	
Weight	130 g	
Surrounding air temperature range	Operating	: 0 to 55°C
	Storage	: -20°C to 75°C
Surrounding humidity range	Operating	: 10 to 90% RH (non-condensing)
	Storage	: 10 to 90% RH (non-condensing)
Surrounding atmosphere	Must be free of corrosive gases, flammable gases or heavy dust.	

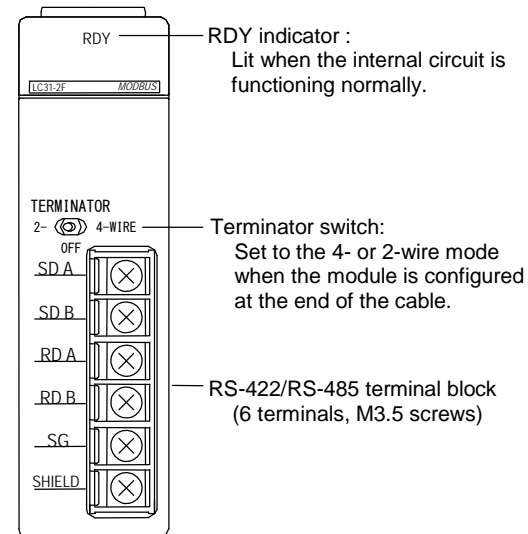
\*1: Total number of modules including those which have similar functions (Ethernet interface module, FL-net interface module)

\*2: Excluding protrusions (see external dimensions for details).

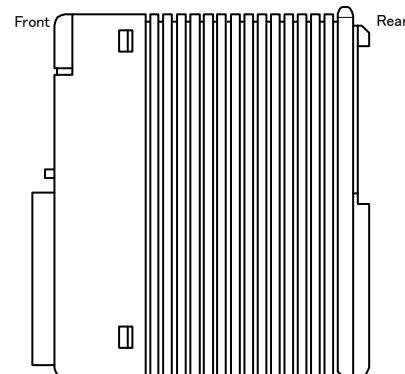


### Components and Functions

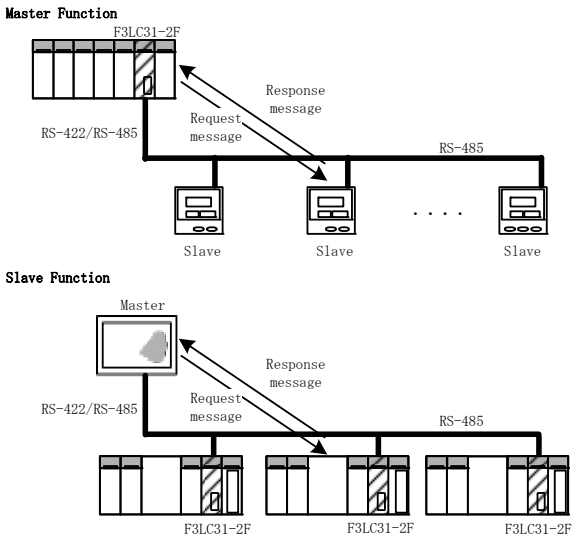
#### Front View



#### Right Side View

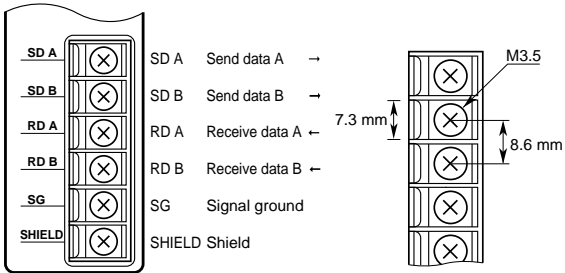


## Configuration Example



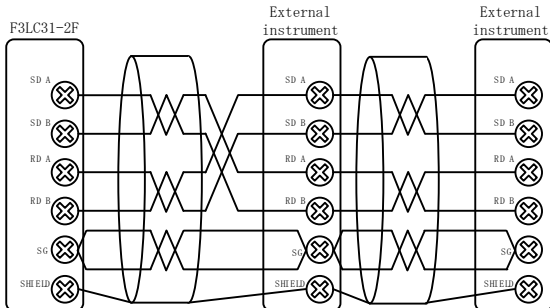
### ■ RS422-A/RS-485 Terminal Block & Cabling

#### ● Terminal Block

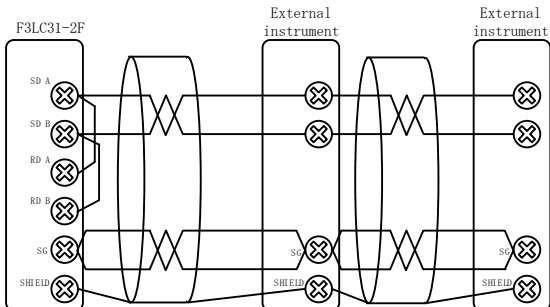


#### ● Wiring Diagram

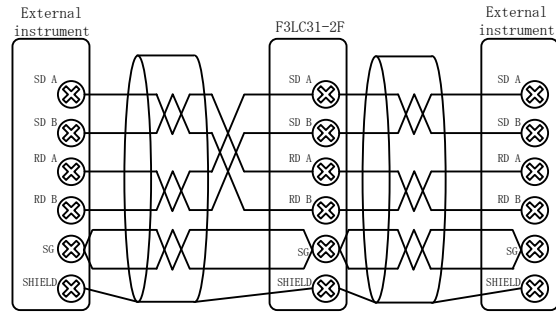
##### Master Function / 4-wire System



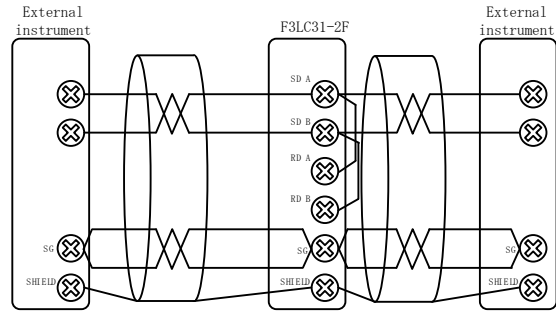
##### Master Function / 2-wire System



##### Slave Function / 4-wire System



##### Slave Function / 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.

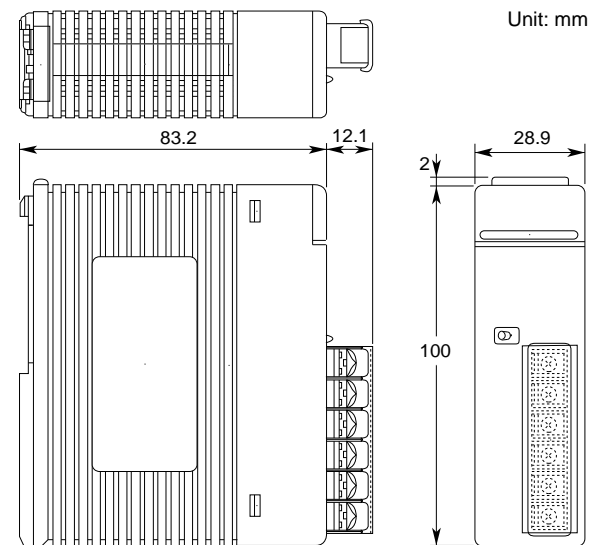
## Operating Environment

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
F3LC31	-2F	.....	.....	One Modbus RTU/ASCII port

## External Dimensions



# General Specifications

## F3LC51-2N UT Link Module

### 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.



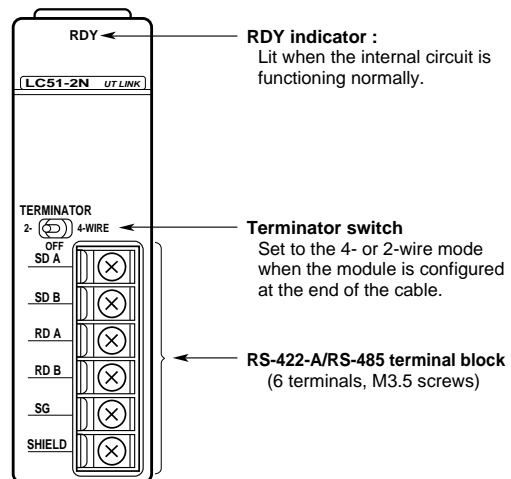
### Specifications

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
Error detection	Parity check, checksum	
Xon/Xoff control	None	
Protocol	Proprietary protocol	
Ending character	Yes or No	
Access range	All control data	
Setup items	Transmission speed, data format, checksum, ending character	
Number of modules	4 max	
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	
Surrounding air temperature range	Operating	: 0 to 55°C
	Storage	: -20°C to 75°C
Surrounding humidity range	Operating	: 10 to 90% RH (non-condensing)
	Storage	: 10 to 90% RH (non-condensing)
Surrounding atmosphere	Must be free of corrosive gases, flammable gases or heavy dust.	

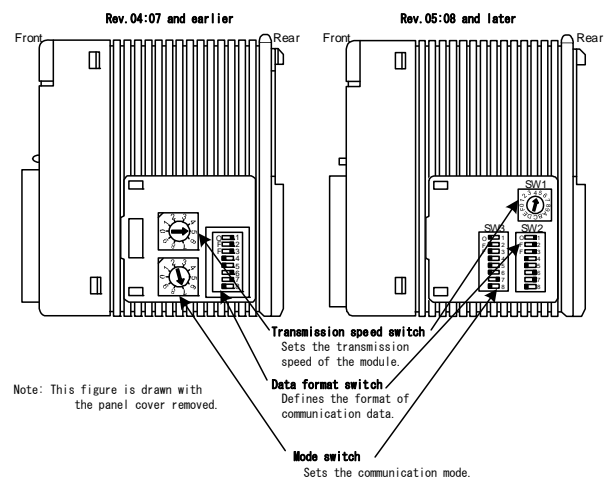
\*: Excluding protrusions (see external dimensions for details).

### Components and Functions

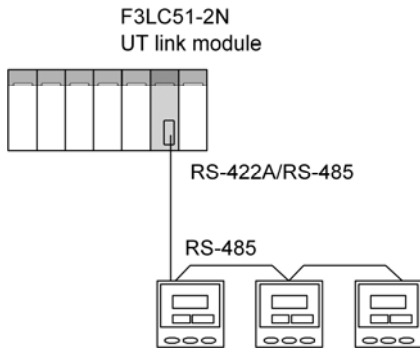
#### ■ Front View



#### ■ Right Side View

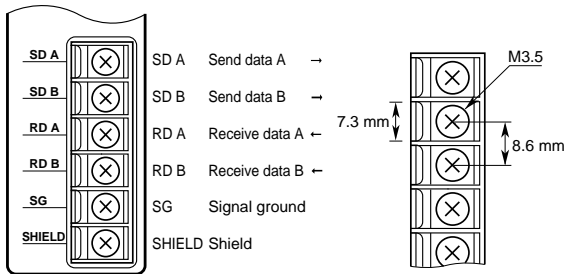


## Configuration Example



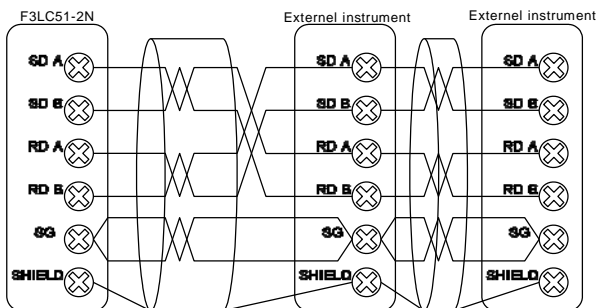
### ■ RS422-A/RS-485 Terminal Block & Cabling

#### ● Terminal Block

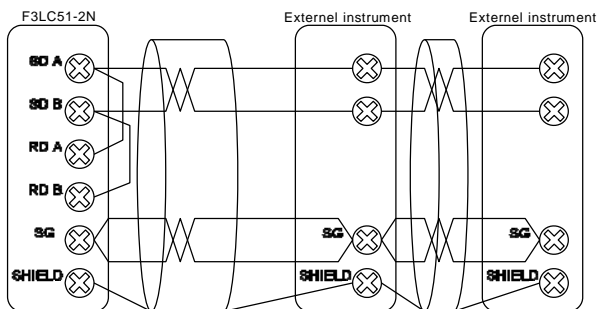


#### ● Wiring Diagram

##### 4-wire System



##### 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 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).

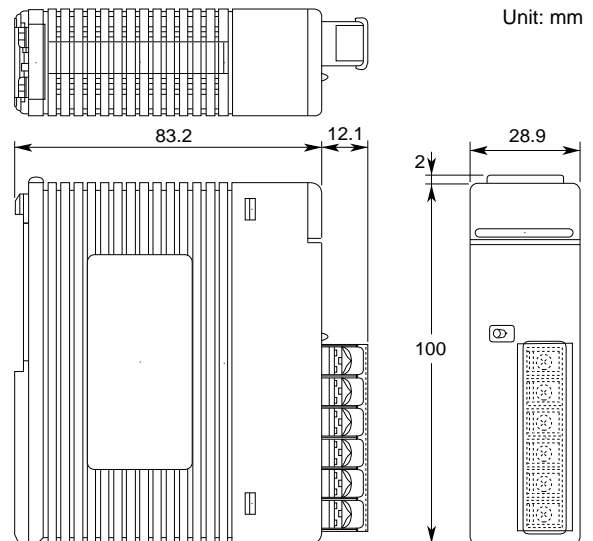
### Operating Environment

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-422A / RS-485 port

### External Dimensions



# General Specifications

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

### 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
	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	
Surrounding air temperature range	Operating	: 0 to 55°C
	Storage	: -20°C to 75°C
Surrounding humidity range	Operating	: 10 to 90% RH (non-condensing)
	Storage	: 10 to 90% RH (non-condensing)
Surrounding atmosphere	Must be free of corrosive gases, flammable gases or heavy dust.	

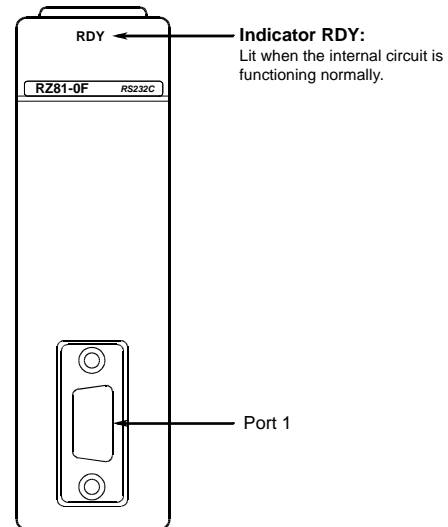
\*: Excluding protrusions (see external dimensions for details).

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

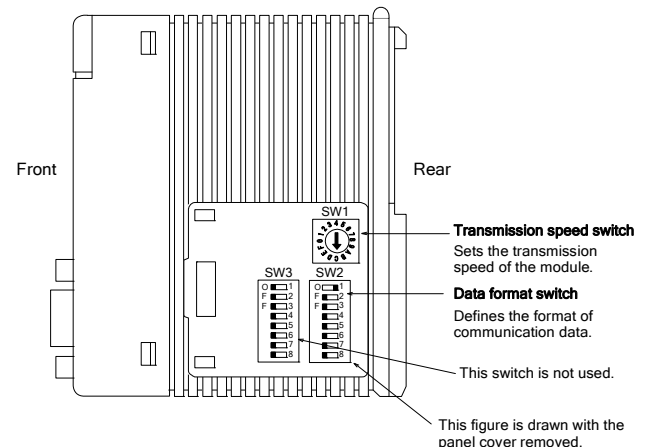


### Components and Functions

#### Front View

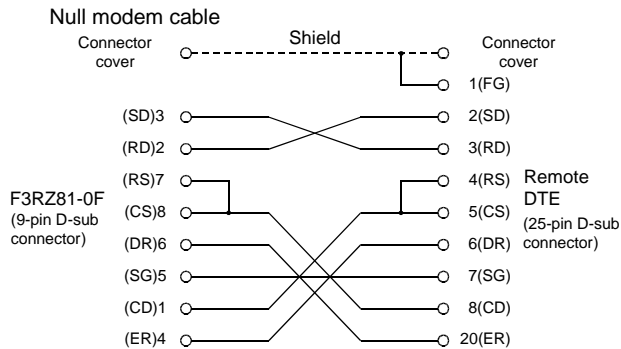


#### Right Side View



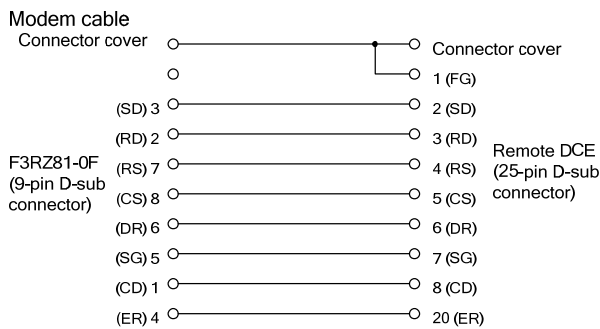
## External Connection Diagram

### ■ 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)

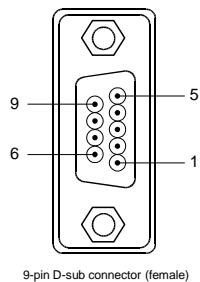


Note: The remote DCE is assumed to have a D-sub 25-pin connector. An example of a cable suitable for the above configuration is Yokogawa's YCB211.

### 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



Pin No.	Signal Name	Name	Signal Direction		Signal Monitored	Description*
			FA- M3	PC		
1	CD	Data carrier detect	←		Yes	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.

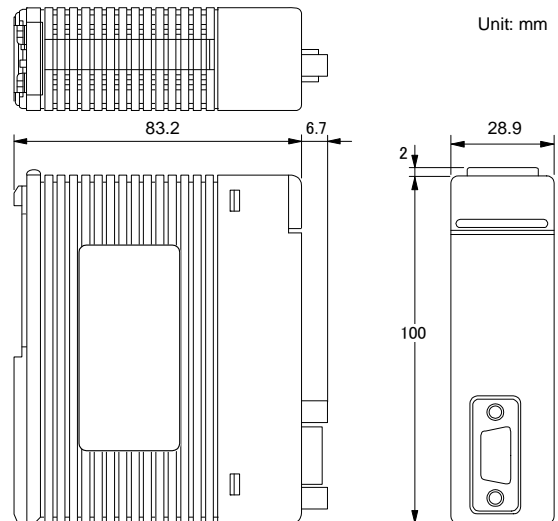
## Operating Environment

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., 1 ports

## External Dimensions



# General Specifications

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

### 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.) <sup>*1</sup>
	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
	Text length	Can be specified as any number between 1 and 3584 <sup>*1</sup>
	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 <sup>*</sup>	
Weight	120 g	
Surrounding air temperature range	Operating	: 0 to 55°C
	Storage	: -20°C to 75°C
Surrounding humidity range	Operating	: 10 to 90% RH (non-condensing)
	Storage	: 10 to 90% RH (non-condensing)
Surrounding atmosphere	Must be free of corrosive gases, flammable gases or heavy dust.	

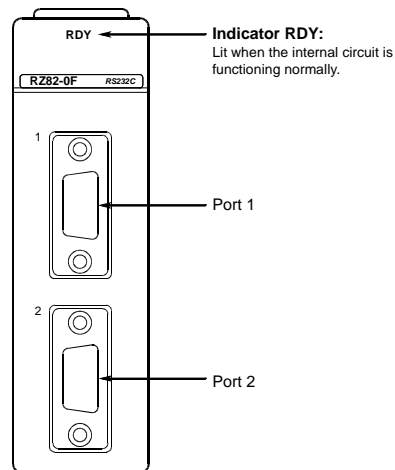
\*: Excluding protrusions (see external dimensions for details).

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

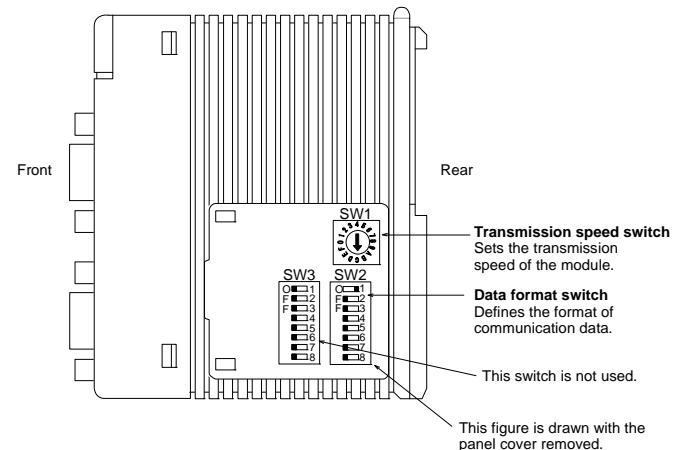


### Components and Functions

#### ■ Front View

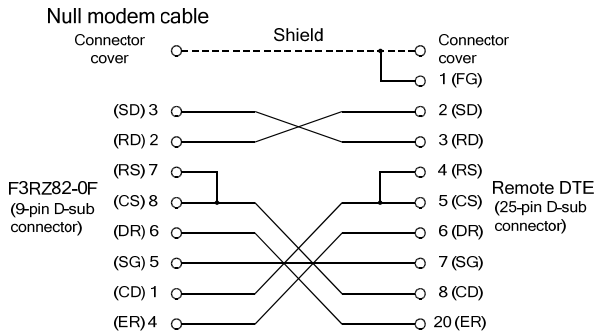


#### ■ Right Side View



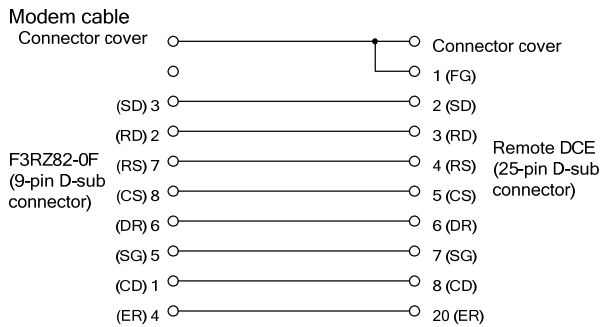
## External Connection Diagram

### ■ 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)

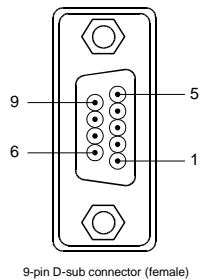


Note: The remote DCE is assumed to have a D-sub 25-pin connector. An example of a cable suitable for the above configuration is Yokogawa's YCB211.

### 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



Pin No.	Signal Name	Name	Signal Direction		Signal Monitored	Description*
			FA-M3	PC		
1	CD	Data carrier detect	←		Yes	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.

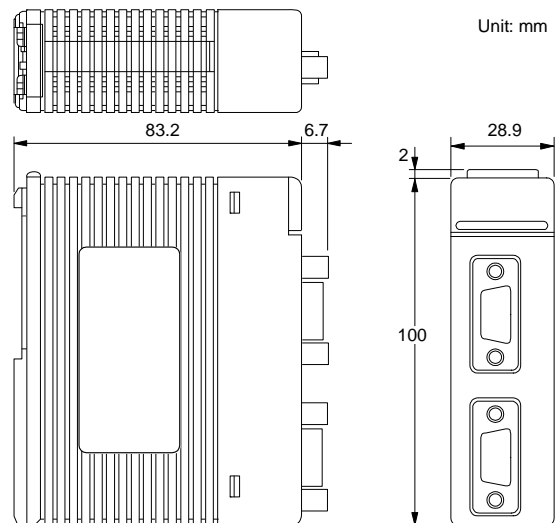
## Operating Environment

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





# 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.) <sup>1</sup>
	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
	Text length	Can be specified as any number between 1 and 1792 <sup>1</sup>
	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	
Surrounding air temperature range	Operating	: 0 to 55°C
	Storage	: -20°C to 75°C
Surrounding humidity range	Operating	: 10 to 90% RH (non-condensing)
	Storage	: 10 to 90% RH (non-condensing)
Surrounding atmosphere	Must be free of corrosive gases, flammable gases or heavy dust.	

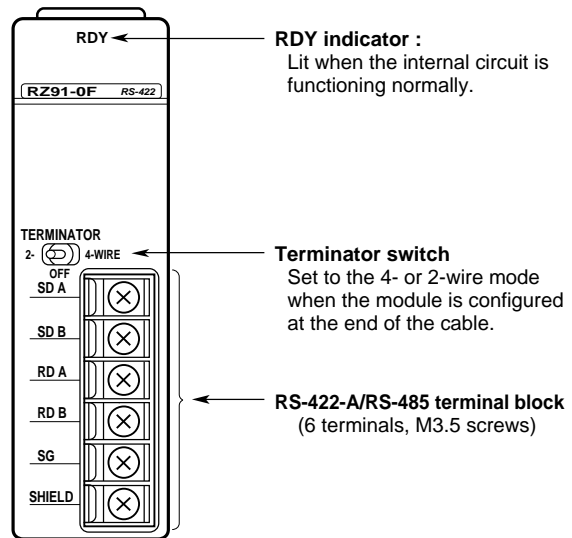
\*: Excluding protrusions (see external dimensions for details).

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

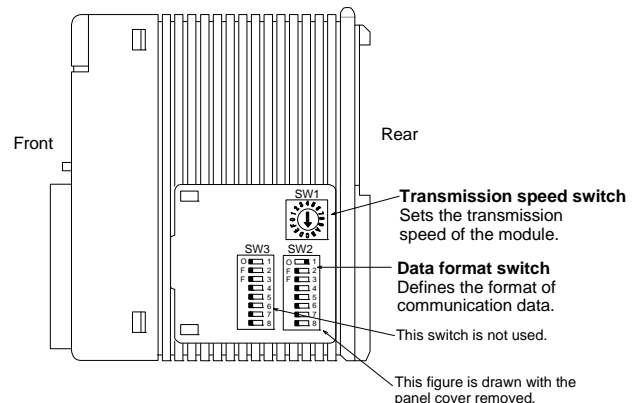


### Components and Functions

#### Front View



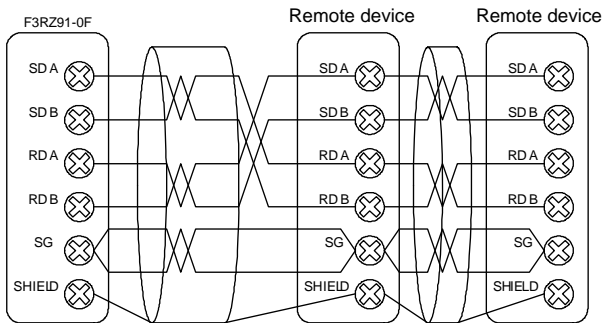
#### Right Side View



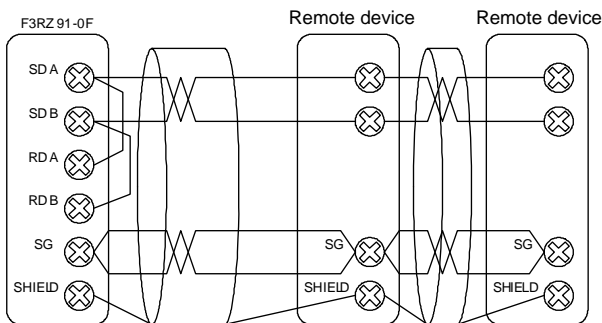
## External Connection Diagram

### ■ Point-to-point Configuration

#### (1) 4-wire System



#### (2) 2-wire System

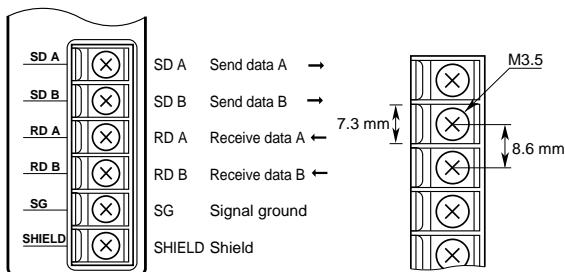


Note: In a 2-wire system, SDA and RDA, as well as SDB and RDB, must be shorted with a wire at the terminal block.

#### 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	.....	.....	115200 bps max., 1 port

## External Dimensions

