

PROGRAMMABLE CONTROLLER
**FP2 Computer
Communication Unit
Manual**

Safety Precautions

Observe the following notices to ensure personal safety or to prevent accidents.
To ensure that you use this product correctly, read this User's Manual thoroughly before use.
Make sure that you fully understand the product and information on safety.
This manual uses two safety flags to indicate different levels of danger.

WARNING

If critical situations that could lead to user's death or serious injury is assumed by mishandling of the product.

- Always take precautions to ensure the overall safety of your system, so that the whole system remains safe in the event of failure of this product or other external factor.
- Do not use this product in areas with inflammable gas. It could lead to an explosion.
- Exposing this product to excessive heat or open flames could cause damage to the lithium battery or other electronic parts.

CAUTION

If critical situations that could lead to user's injury or only property damage is assumed by mishandling of the product.

- To prevent excessive exothermic heat or smoke generation, use this product at the values less than the maximum of the characteristics and performance that are assured in these specifications.
- Do not dismantle or remodel the product. It could cause excessive exothermic heat or smoke generation.
- Do not touch the terminal while turning on electricity. It could lead to an electric shock.
- Use the external devices to function the emergency stop and interlock circuit.
- Connect the wires or connectors securely.
The loose connection could cause excessive exothermic heat or smoke generation.
- Do not allow foreign matters such as liquid, flammable materials, metals to go into the inside of the product. It could cause excessive exothermic heat or smoke generation.
- Do not undertake construction (such as connection and disconnection) while the power supply is on. It could lead to an electric shock.

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Table of Contents

Interchangeability with the FP3 and Precautions	iii
---	-----

Chapter 1 Functions of Computer Communication Unit

1.1 Functions and Features	1 – 3
1.1.1 Functions and Features	1 – 3
1.1.2 Unit Part No.	1 – 3
1.2 Unit Operation	1 – 4
1.2.1 Operation Overview	1 – 4
1.3 Restrictions on Units Combination	1 – 6
1.3.1 Restrictions on Current Consumption	1 – 6
1.3.2 Restrictions on Installation Position	1 – 6
1.3.3 Restrictions on Number of Units that can be Installed	1 – 7
1.4 Communication Conditions and Restrictions Relating to Functions	1 – 8
1.4.1 Precautions when Using the FP2 CPU Unit-1	1 – 8
1.4.2 Precautions when Using the FP2 CPU Unit-2	1 – 9

Chapter 2 Names and Functions of Part

2.1 Names and Functions of Parts	2 – 3
2.1.1 Names and Functions of Parts	2 – 3
2.1.2 Operating Status LEDs	2 – 4
2.1.3 COM.1 and COM.2 Ports (9 Pins)	2 – 5
2.1.4 Transmission Format Setting Switch	2 – 6

Chapter 3 Confirming Unit Settings and Design Contents

3.1 Setting the Transmission Speed (Baud Rate) and Transmission Format ..	3 – 3
3.1.1 Transmission Format Setting Using Switch	3 – 3
3.2 Confirming the I/O Allocation and Root No.	3 – 5
3.2.1 I/O Allocation	3 – 5
3.2.2 Confirming Root No.	3 – 6

Chapter 4 RS232C Port Wiring

4.1	RS232C Port Signals	4 – 3
4.2	Wiring between RS232C Ports	4 – 5
4.2.1	Connecting to a Personal Computer	4 – 5
4.2.2	Connections with Operation Display Panel	4 – 6
4.2.3	Connections with RS232C Devices	4 – 7
4.2.4	Modem Connections	4 – 8

Chapter 5 Troubleshooting

5.1	Operation if an Error Occurs	5 – 3
5.1.1	If the ALARM LED on the Computer Communication Unit Lights	5 – 3
5.1.2	If the ERROR LED on the Computer Communication Unit Lights	5 – 4
5.2	What to Do if an Error Occurs	5 – 5
5.2.1	If the ALARM LED on the Computer Communication Unit Lights	5 – 5
5.2.2	If the ERROR LED on the Computer Communication Unit Lights	5 – 5
5.2.3	Communication is Inhibited	5 – 6
5.2.4	If an Error Response is Returned to the Host Side	5 – 6

Chapter 6 Specifications

6.1	Specifications	6 – 3
6.2	Table of MEWTOCOL Command	6 – 4
6.2.1	MEWTOCOL-COM Commands	6 – 4
6.3	Table of MEWTOCOL-COM Error Code	6 – 5

Record of changes	R – 1
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Interchangeability with the FP3 and Precautions

Hardware interchangeability

The user should be aware that there are some differences between the FP2 and FP3 Computer Communication Units.

– **The DIP switch settings are different.**

With the FP2 Computer Communication Unit, only the transmission speed and the character bit can be set with the DIP switches. The settings for the parity, the stop bit length, and whether or not the CS and CD control signals are effective are fixed as shown in the table below.

– **There is no reset switch.**

The FP2 Computer Communication Unit has no reset switch.

– **Connections with serial devices are made in the same way for both units.**

The specifications for the RS232C interface of the FP2 Computer Communication Unit are the same as those for the FP3.

– **Two ports are provided, a “COM.1” port and a “COM.2” port.**

However, the COM.1 port is restricted on the functions as below.

	COM.1	COM.2
Computer link function	Available	Available
Modem connection	Not available	Available
Data transmission	Not available	Available
Hierarchy command	Not available	Available

Software interchangeability

The software is interchangeable between the FP2 and FP3 Computer Communication Units.

– **Program methods on the host side are largely the same.**

There are some differences in the transmission formats, as described below.

Comparison of specifications between the FP2 and FP3 Computer Communication Units

Setting item	Set value	FP2	FP3
No. of ports	—	2 ports	1 port
Transmission speed (Baud rate)	19,200 bits/s	φ	φ
	9,600 bits/s	φ	φ
	4,800 bits/s	φ	φ
	2,400 bits/s	—	φ
	1,200 bits/s	—	φ
	600 bits/s	—	φ
	300 bits/s	—	φ
Transmission speed (Baud rate) when modem is connected	9,600 bits/s	φ	—
	2,400 bits/s	—	φ
Character bit	7-bit	φ	φ
	8-bit	φ	φ
Parity	None	—	φ
	Odd	φ	φ
	Even	—	φ
Stop bit	1-bit	φ	φ
	2-bit	—	φ
Control signals CS and CD	Invalid	φ	φ
	Valid	—	φ
Reset switch	—	None	Provided

φ : Default setting, or can be set using DIP switches

—: Cannot be set

Chapter 1

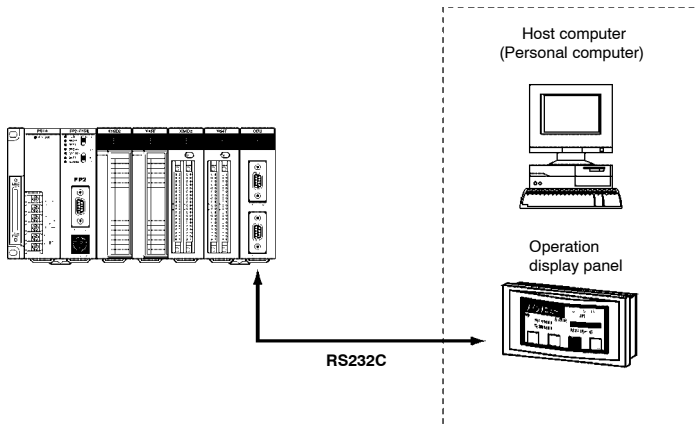
Functions of Computer Communication Unit

1.1	<i>Functions and Features</i>	1 – 3
1.1.1	<i>Functions and Features</i>	1 – 3
1.1.2	<i>Unit Part No.</i>	1 – 3
1.2	<i>Unit Operation</i>	1 – 4
1.2.1	<i>Operation Overview</i>	1 – 4
1.3	<i>Restrictions on Units Combination</i>	1 – 6
1.3.1	<i>Restrictions on Current Consumption</i>	1 – 6
1.3.2	<i>Restrictions on Installation Position</i>	1 – 6
1.3.3	<i>Restrictions on Number of Units that can be Installed</i>	1 – 7
1.4	<i>Communication Conditions and Restrictions Relating to Functions</i>	1 – 8
1.4.1	<i>Precautions when Using the FP2 CPU Unit-1</i>	1 – 8
1.4.2	<i>Precautions when Using the FP2 CPU Unit-2</i>	1 – 9

1.1 Functions and Features

1.1.1 Functions and Features

The FP2 Computer Communication Unit is designed for use with the FP2/FP2SH programmable controller. It is used as a communication interface that allows data to be read and written between an RS232C device such as a personal computer or display panel, and a CPU unit.



Can be connected to a display panel and computer.

Enables a 1:1 connection to a display panel and computer. No software program is needed for communication.

Economical peer-to-peer communication with a personal computer is possible.

This unit can be directly connected with a personal computer through RS232C to collect and write data from it without building up a large-scale network.

One unit is equipped with two ports.

One unit is equipped with two RS232C interface ports.

No communication program is needed on the PLC. (Computer link function)

The PLC automatically returns responses using the FP series' MEWTOCOL communication protocol so that there is no need to prepare a communication program at the side of the PLC.

Connection with modem (Only COM. 2)

It is possible to receive data over telephone lines from another PLC, by connecting modem with your PLC. (Receiving only)

1.1.2 Unit Part No.

Name	Part No.
Computer Communication Unit	FP2-CCU

Two D-sub connectors (9-pin) are provided as accessories with the unit.

1.2 Unit Operation

1.2.1 Operation Overview

The Computer Communication Unit reads and writes data and contacts of the CPU unit by the host computer, through an RS232C interface.

When a command is sent from a host side, a response is returned from the PLC side. The formats of commands and responses are determined by the MEWTOCOL, which is the communication protocol for the FP series of PLCs.

Programs for host side devices such as computers and display panels are created in accordance with the protocol "MEWTOCOL".

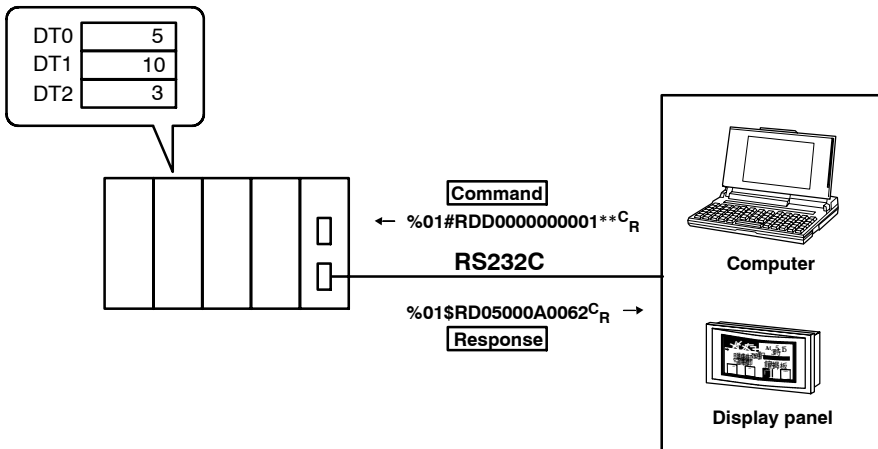
More than 20 types of commands are available, including commands for reading and writing the data area and contacts, etc.

No program is necessary on the PLC side in order to carry out communication.



Example:

When the contents of the data registers are read to a host computer:



Tip

The display panel for the FP series was designed ahead of time in conformance with the MEWTOCOL communication protocol, so there is no need to take the contents of commands into consideration.

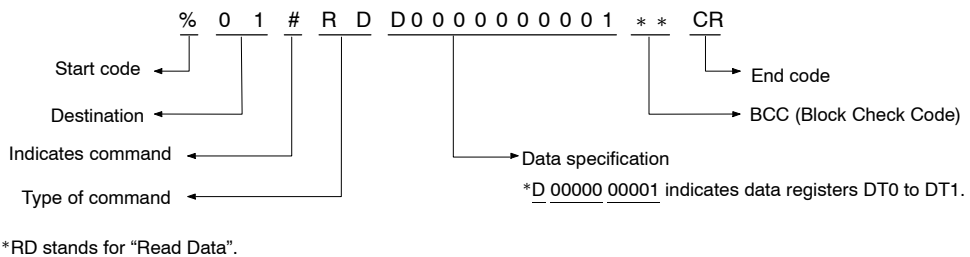
 **Note**

This unit does not support extension header (<). Use the Multi Communication Unit.

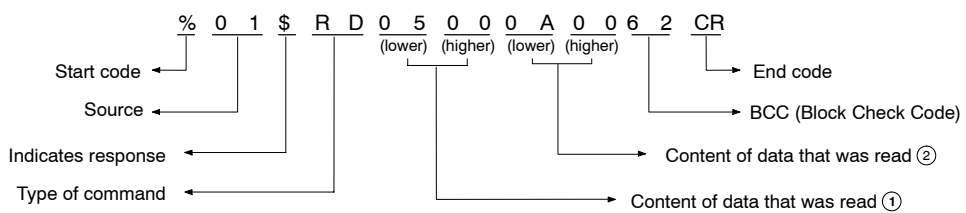
 **Tip**

MEWTOCOL communication protocol for FP series are generally configured as shown below.

Command format (Example showing command for reading data)



Response format (Example of response to data reading command)



1.3 Restrictions on Units Combination

1.3 Restrictions on Units Combination

1.3.1 Restrictions on Current Consumption

The power supply (5 V DC) used to drive the internal circuits of the Computer Communication Unit and other units is provided from the power supply unit, through the backplane.

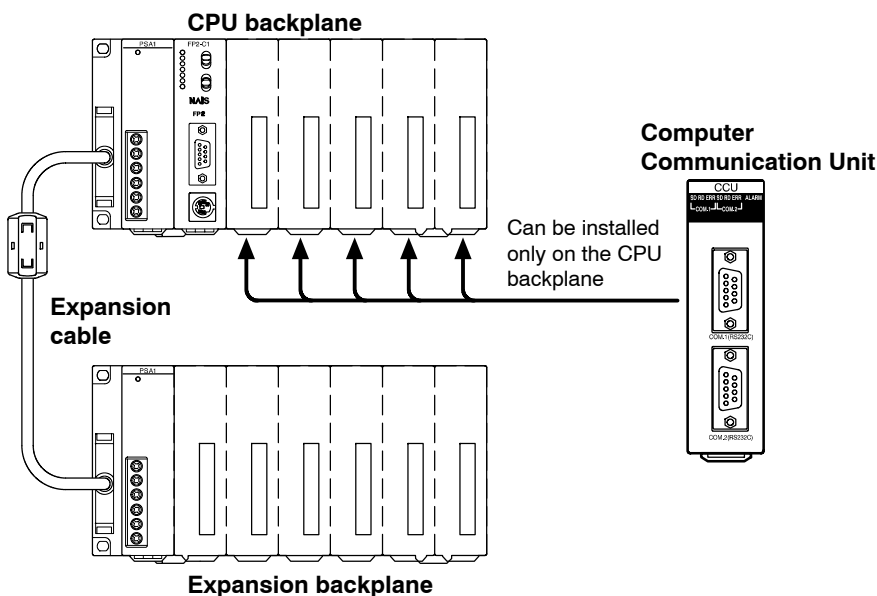
The overall current consumption, including the current used by other units, should not exceed the rated capacity of the power supply unit.

Unit name	Part No.	Current consumption (at 5 V DC)
FP2 Computer Communication Unit	FP2-CCU	60 mA or less

For information on the internal current consumptions of other units, please refer to the “FP2/FP2SH Hardware Manual” and the manuals of the pertinent units.

1.3.2 Restrictions on Installation Position

The Computer Communication Unit can only be installed on the CPU backplane side. It should not be installed on the expansion backplane. Also, it should be installed to the right of the power supply unit and the CPU unit.



1.3.3 Restrictions on Number of Units that can be Installed

The number of Computer Communication Units that can be installed is as shown in the table below.

Unit type	When FP2 CPU unit is used	When FP2SH CPU unit is used
Computer Communication Unit	Only one. Up to three units can be used if they are used within the range of restrictions described under "section 1.4 Communication Conditions and Restrictions Relating to Functions".	Up to five units, using Computer Communication Units and Multi-wire Link Unit (MEWNET-W mode) in combination.
Multi-wire Link Unit (MEWNET-W mode)	Up to three units, in combination with Computer Communication Units.	



Tip

The above restrictions do not apply to Multi-wire Link Units set to the MEWNET-F mode and MEWNET-W2 mode.



Note

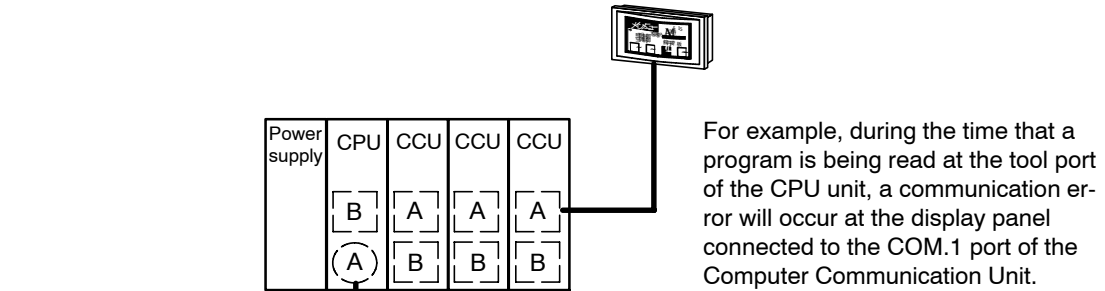
If the FP2 CPU unit is being used, make sure the restrictions relating to the following communication conditions have been carefully confirmed when deciding the number of units to be installed.

1.4 Communication Conditions and Restrictions Relating to Functions

1.4 Communication Conditions and Restrictions Relating to Functions

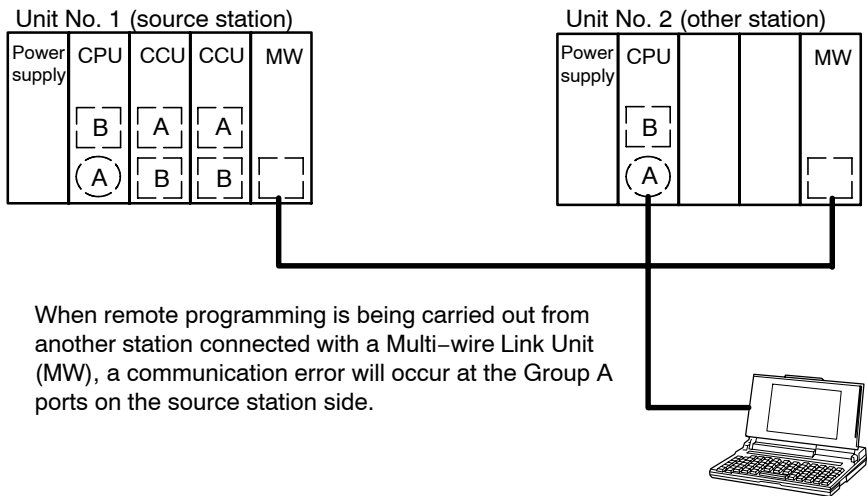
1.4.1 Precautions when Using the FP2 CPU Unit –1

If the processing of commands and responses sent from a host computer or display panel extends over multiple frames, a busy error (error code 53) will be returned to other ports if communication is currently being carried out on one port, and communication will be inhibited on those other ports. Combinations to which this restriction applies are shown in the diagram below.



- Group A Group comprising the tool port of the CPU unit and the COM.1 port of the Computer Communication Unit
- Group B Group comprising the COM. port of the CPU unit and the COM.2 port of the Computer Communication Unit

A similar restriction also applies if access is being made from another station connected with the link unit.



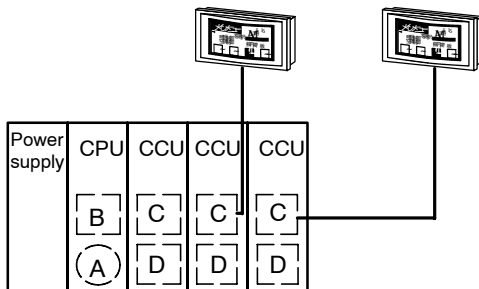
1.4 Communication Conditions and Restrictions Relating to Functions

**Tip**

- “Multiple frames” means that, if a command or response exceeds 118 bytes, the command or response is divided into multiple segments and transmitted or received.
For example, this applies in cases such as when a program is read from a tool port, when commands, which continuously read multiple data, are transmitted from a host side.
- If using the FP2SH CPU unit, the above restriction does not apply.

1.4.2 Precautions when Using the FP2 CPU Unit-2

Of the commands sent from a host computer or display panel, if the monitor commands (the MC, MD, and MG codes) are used, they cannot be read accurately if two or more devices within the same group are connected.

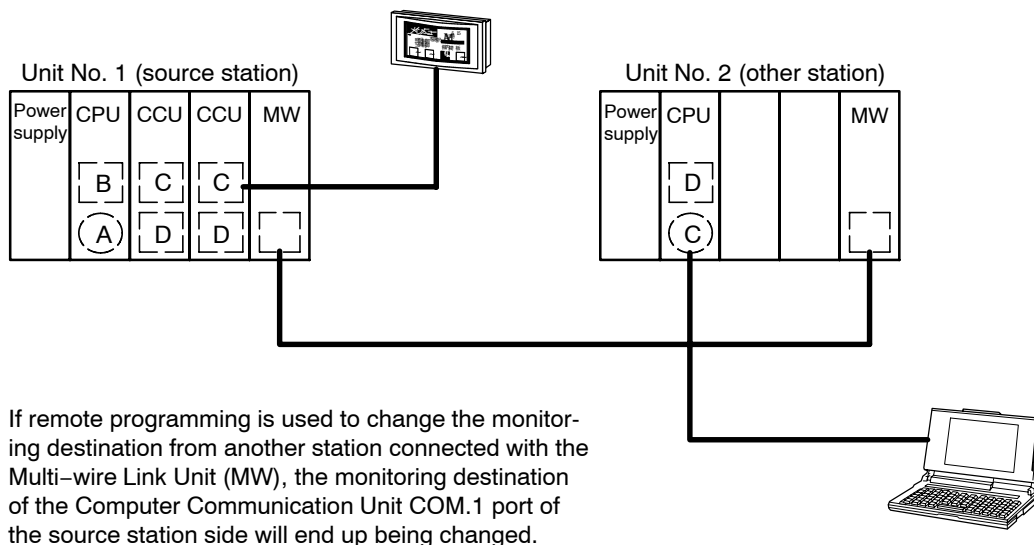


For example, if two or more display panels in the same group are connected and the command sent from the display panel side is a monitor command, it cannot be read accurately.


- Group A CPU unit tool port
- Group B CPU unit COM. port
- Group C COM.1 port group of Computer Communication Unit
- Group D COM.2 port group of Computer Communication Unit

1.4 Communication Conditions and Restrictions Relating to Functions

A similar restriction also applies if access is being made from another station connected with the link unit.



If remote programming is used to change the monitoring destination from another station connected with the Multi-wire Link Unit (MW), the monitoring destination of the Computer Communication Unit COM.1 port of the source station side will end up being changed.

 **Note**

If a monitor command is used for a port in the same group, registered data will be rewritten in sequential order starting from the most recent data, and different data will end up being monitored.



Tip

- Monitoring commands are commands used to implement monitoring after the contact or data to be monitored has been registered on the PLC side.
- The above restriction does not apply if the FP2SH CPU unit is being used.

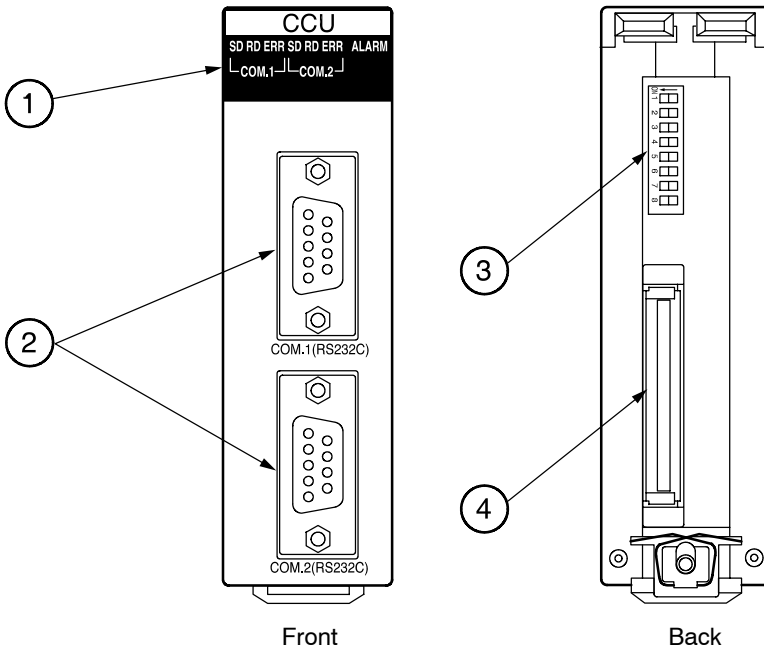
Chapter 2

Names and Functions of Parts

2.1	<i>Names and Functions of Parts</i>	2 – 3
2.1.1	<i>Names and Functions of Parts</i>	2 – 3
2.1.2	<i>Operating Status LEDs</i>	2 – 4
2.1.3	<i>COM.1 and COM.2 Ports (9 Pins)</i>	2 – 5
2.1.4	<i>Transmission Format Setting Switch</i>	2 – 6

2.1 Names and Functions of Parts

2.1.1 Names and Functions of Parts



① Operating status LEDs

This displays the operating status of the unit, such as communication conditions and error/alarm situations.

② COM.1 port (RS232C) and COM.2 port (RS232C)

These ports are used to connect the RS232C connector of an RS232C device such as a personal computer or display panel, using a shielded cable.

③ Transmission format setting switch

These switches are used to set the transmission speed (baud rate) and character bit for the COM.1 and COM.2 ports. The values set by these switches are automatically reflected when the power supply is turned on. For other information on the transmission format, please see page 3 – 3.

④ Backplane connector

This connector is used to connect the Computer Communication Unit to the backplane.

















Tip

The settings of the transmission format setting switches become effective when the power supply is turned on.

2.1 Names and Functions of Parts

2.1.2 Operating Status LEDs

These display the operating status of the unit, such as communication conditions and error/alarm situations.

Display		Operation
ALARM (red)		 Lighted: Unit error (lights on watchdog timer error)
		 Not lighted: Goes out when there is no error
COM. 1	SD (green) Send Data monitor	 Flashes while data is being sent
		 Goes out when no data is being sent
	RD (green) Receive Data monitor	 Flashes while data is being received
		 Goes out when no data is being received
	ERR (red) Communication error	 Lights if communication error occurs
		 Goes out if normal frame is received
COM. 2	SD (green) Send Data monitor	 Flashes while data is being sent
		 Goes out when no data is being sent
	RD (green) Receive Data monitor	 Flashes while data is being received
		 Goes out when no data is being received
	ERR (red) Communication error	 Lights if communication error occurs
		 Goes out if normal frame is received

LED status ( : Lighted  : Flashing  : Not lighted)

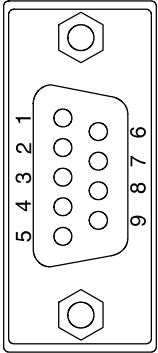
**Tip**

The communication error (ERROR LED) lights if a parity, framing, overrun, or BCC error occurs.

2.1.3 COM.1 and COM.2 Ports (9 Pins)

These are used to connect the RS232C connector of an RS232C device such as a personal computer or display panel, using a shielded cable.

Pin layout



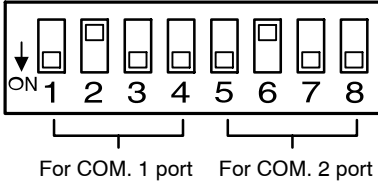
(9-pin internal)

Pin No.	Name	Mnemonic	Signal direction
1	Frame Ground	FG	—
2	Send Data	SD	Unit → External device
3	Receive Data	RD	Unit ← External device
4	Request to Send	RS	Unit → External device
5	Clear to Send	CS	Unit ← External device
6	(Not used)	—	—
7	Signal Ground	SG	—
8	Receive Carrier Detect	CD	Unit ← External device
9	Equipment Ready	ER	Unit → External device

2.1 Names and Functions of Parts

2.1.4 Transmission Format Setting Switch

These switches are used to set the transmission speed (baud rate) and character bit for the COM.1 and COM.2 ports. The values set by these switches are automatically reflected when the power supply is turned on.



Port	Data (bit position)								Function	
	1	2	3	4	5	6	7	8		
COM. 1	1								Reserved for system	
		1	0						Transmission speed (Baud rate)	19,200 bits/s
		0	1							9,600 bits/s
		1	1							4,800 bits/s
				0					Character bit	7-bit
				1						8-bit
COM. 2					1				Reserved for system	
						0	0		Modem support (9,600 bits/s)	
						1	0		Transmission speed (Baud rate)	19,200 bits/s
						0	1			9,600 bits/s
						1	1			4,800 bits/s
								0	Character bit	7-bit
								1		8-bit

In the above table, "1" indicates that the DIP switch is on, and "0" that it is off.

Transmission speed (baud rate) and transmission format settings when shipped from the factory

- Transmission speed (Baud rate) 9,600 bits/s
- Character bit 8-bit
- Parity check Odd parity
- Stop bit 1-bit
- Control signals CS and CD Invalid

Note

The No. 1 and No. 5 transmission format setting switches are reserved for system use. These are set to "on" when the unit is shipped from the factory, and should be left at that setting.

Chapter 3

Confirming Unit Settings and Design Contents

3.1	<i>Setting the Transmission Speed (Baud Rate) and Transmission Format</i>	3 – 3
3.1.1	<i>Transmission Format Setting Using Switch</i> ..	3 – 3
3.2	<i>Confirming the I/O Allocation and Root No.</i>	3 – 5
3.2.1	<i>I/O Allocation</i>	3 – 5
3.2.2	<i>Confirming Root No.</i>	3 – 6

3.1 Setting the Transmission Speed (Baud Rate) and Transmission Format

When using the Computer Communication Unit to carry out serial communication with an external device, the transmission speed (baud rate) and transmission format must be set ahead of time to match those of the external device that will be serving as the partner station.

With the FP2 Computer Communication Unit, the transmission format setting switches (DIP switches) can be used to change only the transmission speed (baud rate) and character bit to match those of the external device.

Changing the transmission speed (baud rate) and transmission format

Items	Setting when shipped from factory	Settings that can be set with the switches
Transmission speed (Baud rate)	9,600 bits/s	4,800 bits/s 9,600 bits/s 19,200 bits/s
Character bit	8-bit	7-bit 8-bit
Parity check	Valid (odd parity)	—
Stop bit	1-bit	—
Control signals CS and CD	Invalid	—

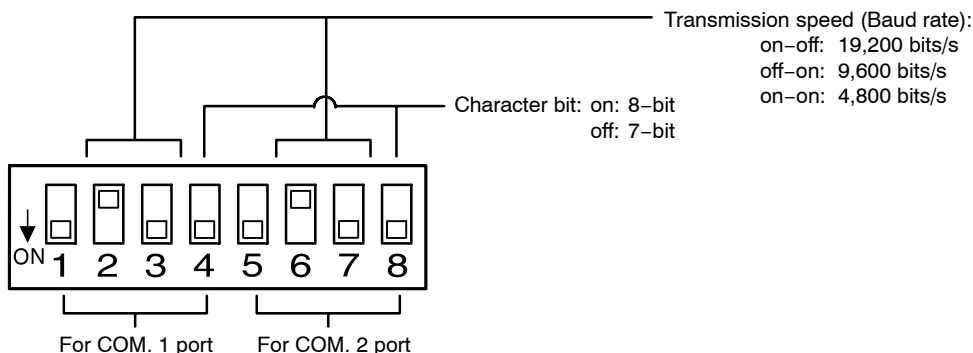


Note

If the transmission speed (baud rate) of 19.2 kbit/s or more is necessary, use the Multi Communication Unit.

3.1.1 Transmission Format Setting Using Switch

The transmission format setting switches can be used to change the transmission speed (baud rate) and character bit settings for the COM.1 and COM.2 ports. The values set with these switches become effective when the power supply is turned on.



➡ next page

**Note**

The No. 1 and No. 5 transmission format setting switches are reserved for system use. These are set to “on” when the unit is shipped from the factory, and should be left at that setting.

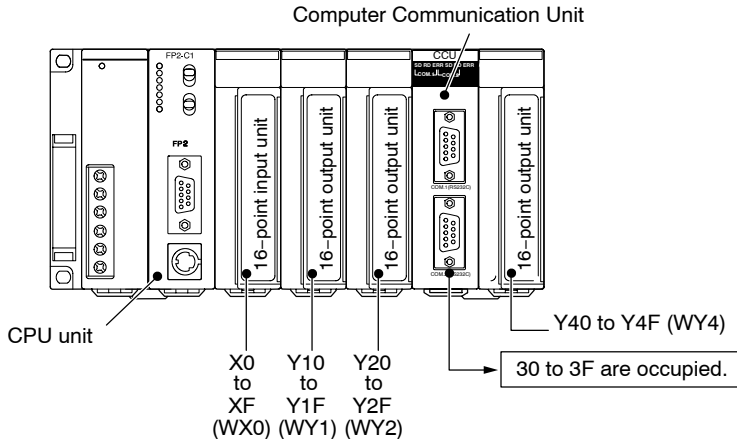
The transmission format setting switches are located on the back of the unit.

3.2 Confirming the I/O Allocation and Root No.

3.2.1 I/O Allocation

A 16 points (16SE) I/O number is automatically allocated to the slot in which the Computer Communication Unit is installed.

This can be changed to 0 point (0SE) if desired, using tool software.



Notes

- If there are any empty slots between the CPU unit and the Computer Communication Unit, check to see if an I/O area has been allocated for the empty slot(s).
- When I/O mount allocations are made, or automatic allocation is carried out, 16 points are automatically allocated to each empty slot.
- If the CPU unit being used is a dual-module type, make sure any occupied I/O areas incorporated in the CPU unit are also checked.

For information on I/O allocations, please refer to the “FP2/FP2SH Hardware Manual”.

3.2 Confirming the I/O Allocation and Root No.

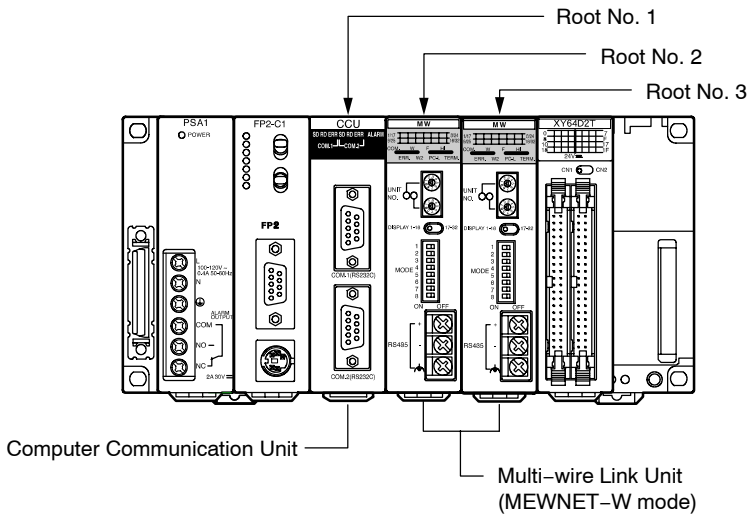
3.2.2 Confirming Root No.

If multiple Computer Communication Units have been installed, they are labeled “Root No. 1”, “Root No. 2”, and “Root No. 3” in sequential order, starting from the unit closest to the CPU unit.

Root numbers are not used directly in the handling of the Computer Communication Unit, but if a Multi-wire Link Unit is being used at the same time, these numbers are sometimes specified on the Multi-wire Link Unit side.

Example:

When two Multi-wire Link Units and one Computer Communication Unit are being installed



Tip

If a Multi-wire Link Unit set to the MEWNET-W mode has also been installed, the root numbers are set so that the Multi-wire Link Unit is also included.

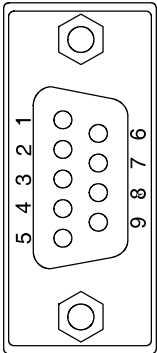
Chapter 4

RS232C Port Wiring

4.1	<i>RS232C Port Signals</i>	4 – 3
4.2	<i>Wiring between RS232C Ports</i>	4 – 5
4.2.1	<i>Connecting to a Personal Computer</i>	4 – 5
4.2.2	<i>Connections with Operation Display Panel</i> ..	4 – 6
4.2.3	<i>Connections with RS232C Devices</i>	4 – 7
4.2.4	<i>Modem Connections</i>	4 – 8

4.1 RS232C Port Signals

Pin layout



9-pin internal

Pin No.	Signal	Mnemonic	Signal direction
1	Frame Ground	FG	—
2	Send Data	SD	Unit → External device
3	Receive Data	RD	Unit ← External device
4	Request to Send	RS	Unit → External device
5	Clear to Send	CS	Unit ← External device
6	(Not used)	—	—
7	Signal Ground	SG	—
8	Receive Carrier Detect	CD	Unit ← External device
9	Equipment Ready	ER	Unit → External device

FG (Frame Ground)

This is connected to the FG terminal on the power supply unit, along with the connector housing, through the backplane.

SD (Send Data)

This signal is used when data is being sent to a partner device. With the Computer Communication Unit, the SD (green) LED among the operating status LEDs flashes if the data has been sent properly.

RD (Receive Data)

This signal is used when data is being received from a partner device. With the Computer Communication Unit, the RD (green) LED among the operating status LEDs flashes if the data has been received properly.

RS (Request to Send)

This signal requests that data be sent from a partner device. With the Computer Communication Unit, the RS signal is constantly on.

CS (Clear to Send)

This signal goes on when the partner device is ready to receive data. With the FP2 Computer Communication Unit, input to this terminal is invalid, so no connections are necessary.

SG (Signal Ground)

This signal provides a common reference potential for circuits connected to the Computer Communication Unit and any external devices.

➡ next page

4.1 RS232C Port Signals

CD (Receive Carrier Detect)

This signal goes on when the reception signal is within the specified range. With the FP2 Computer Communication Unit, input to this terminal is invalid, so no connections are necessary.

ER (Equipment Ready)

This signal notifies the partner device that the Computer Communication Unit is ready for operation. The ER signal of the Computer Communication Unit is constantly on.

4.2 Wiring between RS232C Ports

The Computer Communication Unit and RS232C devices should be connected using shielded cables.

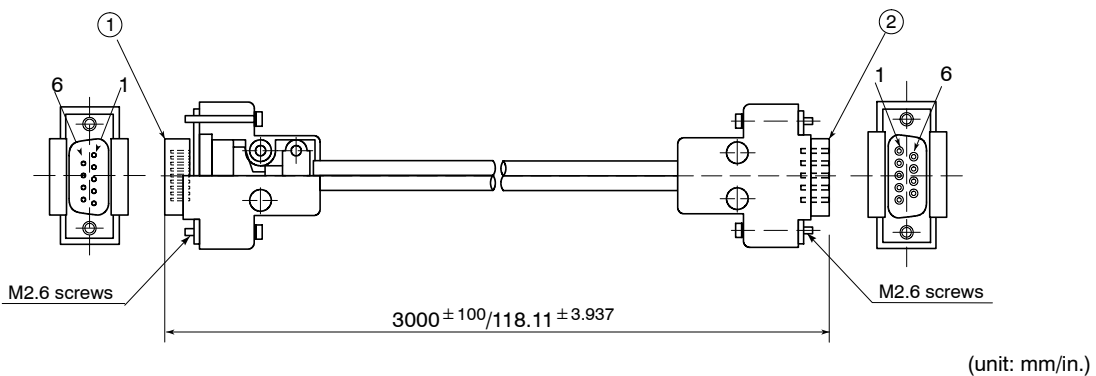
4.2.1 Connecting to a Personal Computer

An RS232C cable (Product No. AFB85853) is available for making connections to a personal computer.

AFB85853

(Crossing cable: 9-pin external — 9-pin internal)

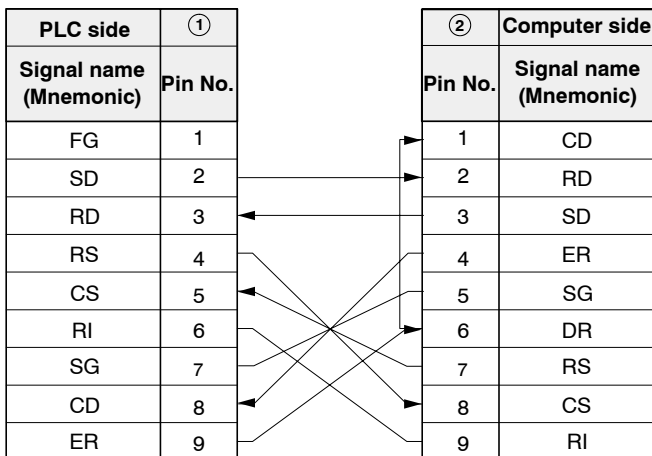
Dimension



Wiring diagram

D-sub 9-pin external

D-sub 9-pin internal



4.2 Wiring between RS232C Ports

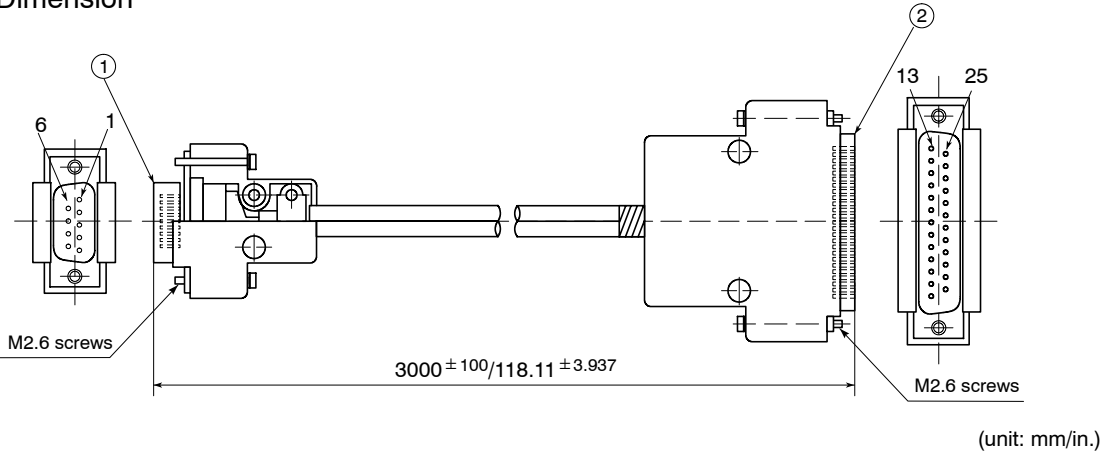
4.2.2 Connections with Operation Display Panel

An RS232C cable (Product No. AFB85813) is available for making connections to an operation display panel that has a D-sub 25-pin connector.

AFB85813

(Crossing cable: 9-pin external — 25-pin external)

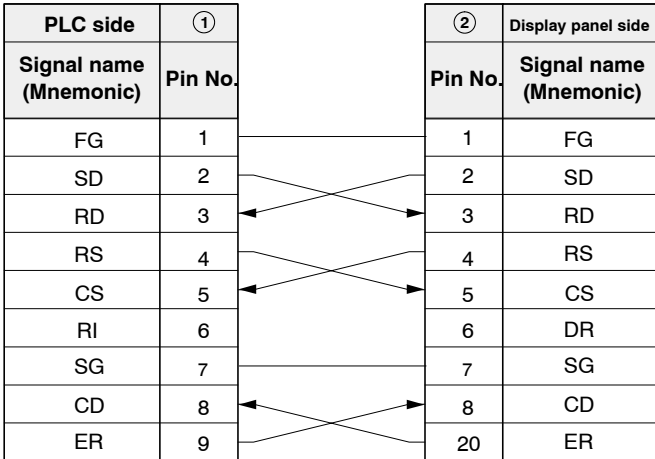
Dimension



Wiring diagram

D-sub 9-pin external

D-sub 25-pin external

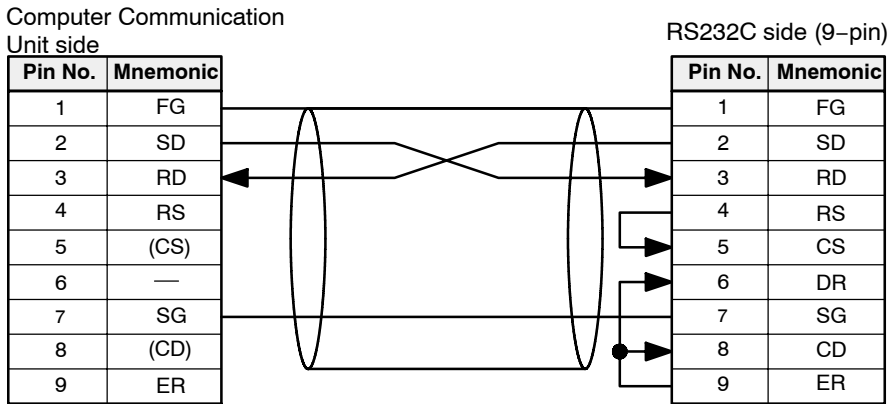


Tip

- The “RS” and “ER” signals of the Computer Communication Unit side are constantly on.
- The input to the “CS” and “CD” terminals of the Computer Communication Unit side are invalid.

4.2.3 Connections with RS232C Devices

Connections with an RS232C device that has a D-sub 9-pin connector should be made as follows.



Tip

- The “CS” and “CD” signals from the partner device are set invalid on the Computer Communication Unit side, so no connections are necessary.
- Depending on the RS232C device, there may be times when the device will not operate properly if the “CS” and “CD” signals do not go on, so the “RS” and “CS” signals and the “ER” and “CD” signals on the RS232C device side should be shorted.

4.2 Wiring between RS232C Ports

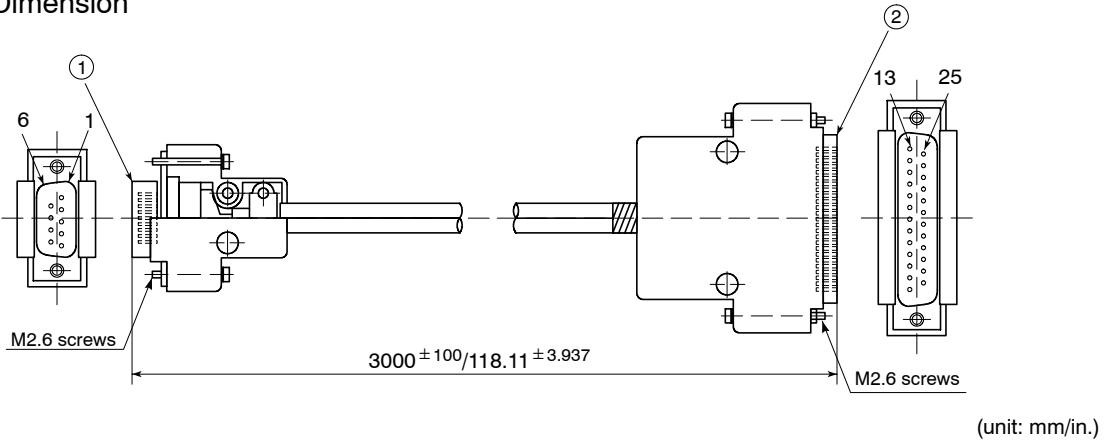
4.2.4 Modem Connections

An RS232C cable (Product No. AFB85843) is available for making connections to a modem.

AFB85843

(Straight cable for modem connection: 9-pin external — 25-pin external)

Dimension



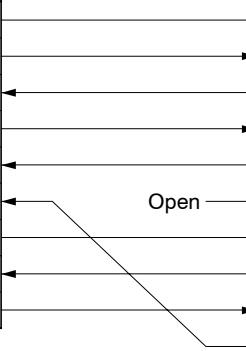
Wiring diagram

D-sub 9-pin external

PLC side	①
Signal name (Mnemonic)	Pin No.
FG	1
SD	2
RD	3
RS	4
CS	5
RI	6
SG	7
CD	8
ER	9

D-sub 25-pin external

②	Modem side
Pin No.	Signal name (Mnemonic)
1	FG
2	SD
3	RD
4	RS
5	CS
6	DR
7	SG
8	CD
20	ER
22	RI



Note

Only the COM.2 port can be used to connect a modem.

Chapter 5

Troubleshooting

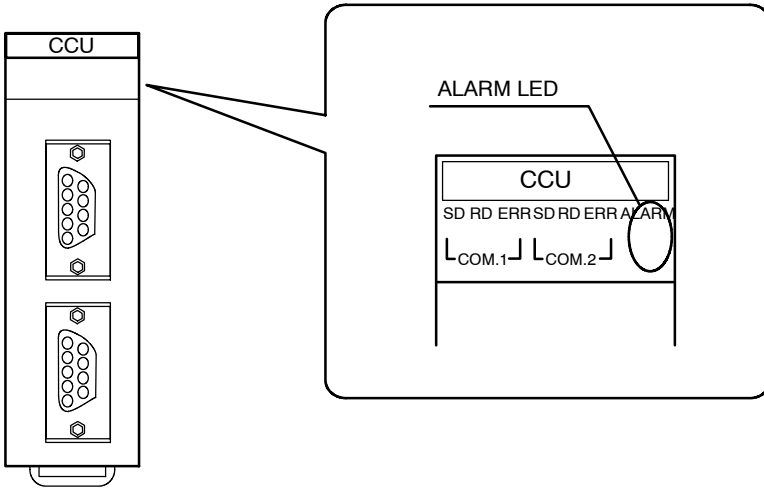
5.1	<i>Operation if an Error Occurs</i>	5 – 3
5.1.1	<i>If the ALARM LED on the Computer Communication Unit Lights</i>	5 – 3
5.1.2	<i>If the ERROR LED on the Computer Communication Unit Lights</i>	5 – 4
5.2	<i>What to Do if an Error Occurs</i>	5 – 5
5.2.1	<i>If the ALARM LED on the Computer Communication Unit Lights</i>	5 – 5
5.2.2	<i>If the ERROR LED on the Computer Communication Unit Lights</i>	5 – 5
5.2.3	<i>Communication is Inhibited</i>	5 – 6
5.2.4	<i>If an Error Response is Returned to the Host Side</i>	5 – 6

5.1 Operation if an Error Occurs

5.1.1 If the ALARM LED on the Computer Communication Unit Lights

What the ALARM LED does

The ALARM LED on the Computer Communication Unit lights if the watchdog timer in the unit is activated, to warn of a problem.



CPU unit operation when the ALARM LED lights

The ERROR LED on the CPU unit lights, and operation stops.

The error code to be checked using programming tools or other means is 41 (intelligent unit error).

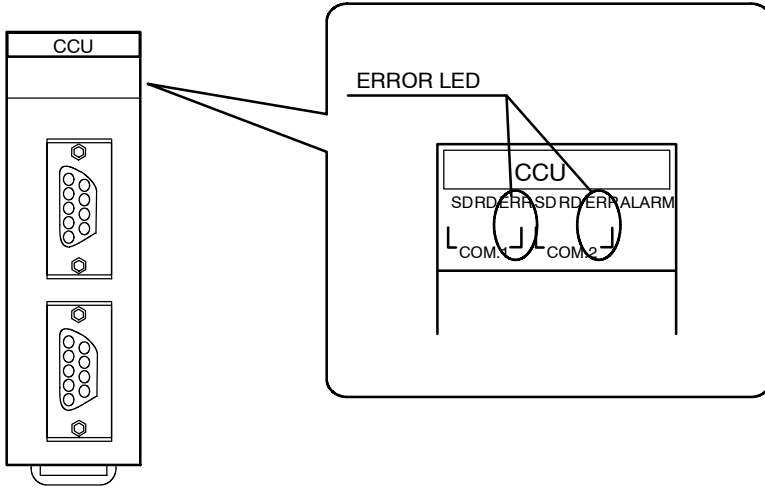
If it is necessary to continue operation, change the setting of the CPU unit system register 22.

5.1 Operation if an Error Occurs

5.1.2 If the ERROR LED on the Computer Communication Unit Lights

What the ERROR LED does

The ERROR LED on the Computer Communication Unit lights there is a problem with communication between the unit and the external device. There are two ERROR LEDs, ERR1 and ERR2, for each channel.



Operation of the unit continues even if the ERROR LED lights.

If an error occurs during reception, the frame currently being received is cleared, and the ERROR LED lights. If the next frame is received normally, however, that frame is processed as a received frame, and the ERROR LED goes out.

CPU unit operation when the ERROR LED lights

Operation of the CPU unit is not affected.



Tip

- In some cases, the contents of the error that occurred may be returned to the host side, such as a computer or display panel, as an error response.
- No response is returned if the transmission speed (baud rate) or character bit is different between the two devices.

5.2 What to Do if an Error Occurs

5.2.1 If the ALARM LED on the Computer Communication Unit Lights

Situation

The watchdog timer is activated to alert the user of a problem with the Computer Communication Unit.

Solution

Turn the power supply off and then on again.

If the LED lights again, there may be a problem with the unit.

If the LED goes out after the power supply is turned off and then on again, the problem may have been caused by noise or another temporary phenomenon. Continue operation and watch for further signs of trouble.

5.2.2 If the ERROR LED on the Computer Communication Unit Lights

Situation

If the communication conditions between the two devices do not match, or the received command is in the wrong format, communication cannot be carried out properly.

Solution 1

Check to see if the transmission speed (baud rate) and character bit have been set correctly. The conditions on the unit side can be set using the DIP switches on the back of the unit.

Solution 2

Check the transmission format for the host side, such as the computer or display panel. The format on the unit side is fixed.

Parity Odd
Stop bit 1-bit

Solution 3

In some cases, the ERROR LED may light if there is a problem with the format of the command sent from the host side. Check the settings on the host side, based on the error response returned to that side.

For information on error codes, please check page 6 – 5.



Tip

If correct data is received after erroneous data has been received, the ERROR LED goes out.

5.2 What to Do if an Error Occurs

5.2.3 Communication is Inhibited

Situation

There is a possibility that the cables have not been connected correctly.

Solution

If using the unit for the first time, there is a possibility that the cables have been connected incorrectly. Check the connector wiring diagram and check for conductivity, using a tester.

For information on wiring and connections, please check “Chapter 4 RS232C Port Wiring”.

5.2.4 If an Error Response is Returned to the Host Side

Situation

There is an error in the format of the command sent from the host side, or the PLC side is unable to process the command.

Solution

Take corrective action based on the error response code.

For information on error codes, please check page 6 – 5.



Tip

If the host side is a display panel, check the following.

- Check to see if communication conditions match between the display panel side and the PLC side, such as the transmission format and transmission speed (baud rate).
- If the device number specified on the display panel side is out of the range of numbers that can be used by the PLC involved in the communication, error code 61 (Data Error) may be returned as an error response in some cases.

If the host side is a computer, try the processing again.

- If correct data is received after erroneous data has been received, the ERROR LED goes out.

Chapter 6

Specifications

6.1	<i>Specifications</i>	6 – 3
6.2	<i>Table of MEWTOCOL Command</i>	6 – 4
6.2.1	<i>MEWTOCOL–COM Commands</i>	6 – 4
6.3	<i>Table of MEWTOCOL–COM Error Code</i>	6 – 5

6.1 Specifications

General Specifications

Item	Specifications
Ambient temperature	0 to 55 °C/32 to 131 °F
Storage temperature	-20 to +70 °C/- 4 to + 158°F
Ambient humidity	30 to 85 % RH (at 25°C non-condensing)
Storage humidity	30 to 85 % RH (at 25°C non-condensing)
Vibration resistance	10 to 55 Hz, 1 cycle/min.: double amplitude 0.75 mm (0.03 in.), 10 min. on 3 axes
Shock resistance	Min. 98 m/s ² , 4 times on 3 axes
Noise resistance	1000 V _{p-p} , 50 ns, 1 μs pulse widths (based on in-house measurements)
Operating condition	Free of corrosive gases and excessive dust

Computer Communication Unit Performance Specifications

Item	Specifications					
Interface	Two RS232C ports					
Transmission distance	Max. 15 m/49.212 ft *1					
Transmission speed (Baud rate)	19,200/9,600/4,800 bits/s, selectable using DIP switch					
Communication method	Half duplex					
Synchronous method	Start-stop synchronous method					
Transmission code	ASCII					
Transmission data format	Stop bit: 1-bit					
	Parity: Valid (odd)					
	Character bits: 7-bit/8-bit, selectable using DIP switch					
Data transmission order	0 bit first in units of characters					
End terminal code	CR (ODH)					
Computer linking	<table border="1"> <tr> <td>Message</td> <td>Header (%) to terminator (CR)</td> <td rowspan="2">Once transmission rights from the host computer are received, communication is started. The communication protocol is MEWTOCOL-COM.</td> </tr> <tr> <td>Maximum message length</td> <td>Max. 118 characters/frame (including “%” and “CR”)</td> </tr> </table>	Message	Header (%) to terminator (CR)	Once transmission rights from the host computer are received, communication is started. The communication protocol is MEWTOCOL-COM.	Maximum message length	Max. 118 characters/frame (including “%” and “CR”)
	Message	Header (%) to terminator (CR)	Once transmission rights from the host computer are received, communication is started. The communication protocol is MEWTOCOL-COM.			
Maximum message length	Max. 118 characters/frame (including “%” and “CR”)					
Current consumption	60 mA or less (at 5 V DC)					
Weight	Approx. 120 g/4.233 oz					

*1: The value is given as 15 m/49.212 ft. in the specifications, but if used in an environment with a high noise level, communication may be unstable. Check the conditions using the actual device.



Note

This unit does not support extension header (<). Use the Multi Communication Unit.

6.2 Table of MEWTOCOL Command

The following is a table of MEWTOCOL commands that can be used with the FP2 Computer Communication Unit.

6.2.1 MEWTOCOL-COM Commands

RCS	Read single point of contact information
WCS	Write single point of contact information
RCP	Read plural points of contact information
WCP	Write plural points of contact information
RCC	Read word unit of contact information
WCC	Write word unit of contact information
SC	Preset word unit in contact area
RD	Read data area
WD	Write data area
SD	Preset of data area
RS	Read timer and counter set value area
WS	Write timer and counter set value area
RK	Read timer and counter elapsed value area
WK	Write timer and counter elapsed value area
MC	Registration and reset of monitor contact
MD	Registration and reset of monitor data
MG	Monitor execution
RR	Read system register
WR	Write system register
RT	Read PLC status
RM	Remote control (RUN/PROGRAM mode switching)
AB	Transmission abort command
LC	Hierarchy control

6.3 Table of MEWTOCOL-COM Error Code

21 Data Error:

- **Situation**
A data error occurred during communication.
There are three types of data errors: parity errors, framing errors, and unit receive buffer errors.
- **Example of error**
This occurs if the communication format between the host computer side and the PLC side is different.
- **Precautions when the FP2 Computer Communication Unit is being used**
If the parity settings are different, the ERR LED lights but no error code is returned.
- **ERR LED on the FP2 Computer Communication Unit**
Lights

22 Overrun Error:

- **Situation**
The CPU unit buffer is full, and no more data can be received.
- **Example of error**
This occurs if a command being sent before a response has been returned in cases such as commands being sent continuously from the host side.
- **ERR LED on the FP2 Computer Communication Unit**
Lights

24 Transmission Format Error:

- **Situation**
There is an error in the setting of a hierarchy control command.
- **Example of error**
This occurs if a hierarchy control command has not been notated correctly.
- **ERR LED on the FP2 Computer Communication Unit**
Lights

27 Frame Over Error:

- **Situation**
The command and response exceed 118 bytes.
- **Example of error**
This occurs when a WD command is sent, if the data being sent at one time exceeds 118 bytes.
- **ERR LED on the FP2 Computer Communication Unit**
Lights

40 BCC Error:

- **Situation**
Transmission error occurred in command data.
- **Example of error**
This occurs if the calculation value of the BCC added to the command being sent is erroneous.
- **ERR LED on the FP2 Computer Communication Unit**
Lights

41 Format Error:

- **Situation**
Command message that does not match the transmission format was sent.
- **Example of error**
This occurs if the “#” and transmission destination are missing from the command being sent.
- **ERR LED on the FP2 Computer Communication Unit**
Lights

42 Not Support Error:

- **Situation**
An unsupported command was sent.
A command was sent to an unsupported destination.
- **Example of error**
This occurs if the command name is erroneous by the command which has been incorrectly notated .
- **ERR LED on the FP2 Computer Communication Unit**
Off

43 Procedure Error:

- **Situation**
The PLC side sent a different command while waiting for a send request message.
- **Example of error**
This occurs when a command consisting of multiple frames is sent, if the delimiter “&” that indicates that the command is a continuation of the previously sent command is missing.
- **ERR LED on the FP2 Computer Communication Unit**
Off

53 Busy Error:

- **Situation**
Commands cannot be received while another command is being processed.
- **Example of error**
This occurs when multiple units are being used, if a command was sent while multiple frames were being processed.
- **ERR LED on the FP2 Computer Communication Unit**
Off

60 Parameter Error:

- **Situation**
Data or a parameter setting in a command, such as the code indicating the device type (X, Y, D) is erroneous.
- **Example of error**
This occurs if the data code is specified erroneously when an RD command is sent.
- **ERR LED on the FP2 Computer Communication Unit**
Off

6.3 Table of MEWTOCOL-COM Error Code

61 Data Error:

- **Situation**
There is an error in the contact number and/or data number specification.
There is an error in the decimal or hexadecimal format specification for the data.
- **Example of error**
This occurs if the data register specification is in hexadecimal format when an RD command is sent.
- **ERR LED on the FP2 Computer Communication Unit**
Off

62 Registration Error:

- **Situation**
Too many registrations have been entered, or a registration has not been entered.
- **Example of error**
This occurs if the number of data registered exceeds 16 words when an MD command is sent.
- **ERR LED on the FP2 Computer Communication Unit**
Off

63 PC Mode Error:

- **Situation**
The PLC is in a mode in which the sent command cannot be processed.
- **Example of error**
This occurs if the CPU unit side is in the RUN mode when a WR command is sent.
- **ERR LED on the FP2 Computer Communication Unit**
Off

65 Protect Error:

- **Situation**
Write operation was performed to the program area or system register in the memory protect state.
- **Example of error**
This occurs if a password has been specified for the CPU when an RR command is sent.
- **ERR LED on the FP2 Computer Communication Unit**
Off

66 Address Error:

- **Situation**
There is an error in an address specification, such as in the program address.
There is an error in the decimal or hexadecimal format specification for the data.
- **Example of error**
This occurs if a program address is specified that is larger than the unit side, when an RP command is sent.
- **ERR LED on the FP2 Computer Communication Unit**
Off

67 Missing Data Error:

- **Situation**
The data specified for reading does not exist.
- **ERR LED on the FP2 Computer Communication Unit**
Off

6.3 Table of MEWTOCOL-COM Error Code

Record of changes

Manual No.	Date	Description of changes
ARCT1F319E/ ACG-M319E	MAR.2001	First edition
ARCT1F319E-1/ ACG-M319E-1	NOV.2006	Second edition
ARCT1F319E-2/ ACG-M319E-2	NOV.2008	Third edition - Change in Corporate name
ARCT1F319E-3	AUG.2011	Fourth edition - Change in Corporate name



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