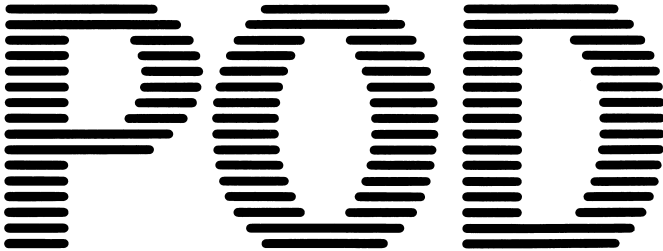
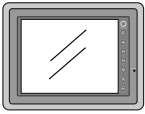


FUJI UGx20 SERIES PROGRAMMABLE OPERATION DISPLAY



USER'S MANUAL <HARDWARE>

TYPE: UG520H-x  
UG420H-x  
UG320H-x  
UG221H-x  
UG220H-x



UG Series

# Preface

Thank you for selecting the Fuji Programmable Operation Display, POD UG520/420/320/221/220 Series (called as the UG20 or POD, hereafter).

For proper set-up, you are requested to read through this booklet to understand more about the product.

For more information about UG20 series, refer to the Reference Manual.

For further details about the PLC, see the manual attached to each PLC.

## [Reference]

In addition to this manual, the following manuals on the UG20 Series are available.

Please ask your nearest dealer for the appropriate manuals and read them as required.

Name	Manual No.	Contents
UG Series Manual <Operation>	FEH375	Describes how to operate screen editor (UG00S-CW) for the UG Series.
UG Series Manual <Function>	FEH376	Describes the functions of the UG Series.
UG Series Manual <CC-Link Communications>	FEH355	Describes the procedures for communication with PLCs using the optional CC-Link interface.
UG Series Manual <T-Link Communications>	FEH356	Describes the procedures for communication with PLCs using the optional T-Link interface.
UG Series Manual <SX-BUS Communications>	FEH357	Describes the procedures for communication with PLCs using the optional SX-Bus interface.
UG Series Manual <OPCN-1 Communications>	FEH358	Describes the procedures for communication with PLCs using the optional OPCN-1 interface.
UG Series Manual <Variable Name Cooperation Function>	FEH363	Describes the variable name cooperation function to be used between the UG editor and D300win.
UG Series Manual <Ethernet Communications>	FEH366	Describes the procedures for communicating via the optional ETHERNET interface.
UG Series Manual <FL-Net Communications>	FEH367	Describes the procedures for communicating via the optional FL-Net interface.
UG Series Manual <PROFIBUS Communications>	FEH368	Describes the procedures for communicating via the optional PROFIBUS interface.
UG Series Manual <Ladder Monitor Specifications>	FEH379	The Functions and instructions of the Ladder Monitor are explained.

## [Notes]

- (1) This manual may not, in whole or in part, be printed or reproduced without the prior written consent of Fuji Electric Co., Ltd.
- (2) Information in this manual is subject to change without prior notice.
- (3) Windows and Excel are registered trademarks of Microsoft Corporation in the United States and other countries.
- (4) All other company names or product names are trademarks or registered trademarks of their respective holders.
- (5) This manual is intended to give accurate information about POD hardware. If you have any questions, please contact your local distributor.

# Notes on Safe Use of POD

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In this manual, you will find various notes categorized under the following levels with the signal words "DANGER," and "CAUTION."




**DANGER**

Indicates an **imminently hazardous situation which, if not avoided, will result in death or serious injury.**



**CAUTION**

Indicates a **potentially hazardous situation which, if not avoided, may result in minor or moderate injury and could cause property damage.**

Note that there is a possibility that the item listed with  **CAUTION** may have serious ramifications.



**DANGER**

- Never use the input function of POD for operations that may threaten human life or to damage the system, such as switches to be used in case of emergency. Please design the system so that it can cope with malfunction of a touch switch.
- Turn off the power supply when you set up the unit, connect cables or perform maintenance and inspection. Failure to do so could cause an electric shock or damage to the unit.
- You must put a cover on the terminals on the unit when you turn the power on and operate the unit. Without the terminal cover in place, an electric shock may occur.
- The liquid crystal in the LCD panel is a hazardous substance. If the LCD panel is damaged, never swallow the leaked liquid crystal. If the liquid crystal spills on your skin or clothing, use soap and wash off thoroughly.

# Notes on Safe Use of POD



## [Notes on System Design]

- Never bundle control cables and input/output cables with high-voltage and large-current carrying cables such as power supply cables. Keep these cables at least 200 mm away from the power supply or high-voltage cables. Otherwise, malfunction may occur due to noise.
- For use in a nuclear energy facility, or other facility of such official importance, please consult your local distributor.

## [Notes on Installation]

- Operate (or store) POD under the conditions indicated in this manual and related manuals. Failure to do so could cause fire, malfunction, physical damage or deterioration.
- Understand the following environmental limits for use and storage of POD. Otherwise, fire or damage to the unit may result.
  - Avoid locations where there is a possibility that water, corrosive gas, flammable gas, solvents, grinding fluids or cutting oil can come into contact with the unit.
  - Avoid high temperature, high humidity, and outside weather conditions, such as wind, rain or direct sunlight.
  - Avoid locations where excessive dust, salt, and metallic particles are present.
  - Avoid installing the unit in a location where vibration or physical shock may be transmitted.
- Equipment must be correctly mounted so that the main terminal of POD will not be touched inadvertently.
- Tighten the POD mounting screws to the specified torque. Excessive tightening may distort the panel surface. Loose tightening may cause POD to come off, malfunction or be short-circuited.
- Tighten terminal screws on the power input terminal block equally to a torque of 0.5 Nom.
- Check the appearance of POD when it is unpacked. Do not use the unit if any damage or deformation is found.
- POD has a glass screen. Do not drop or give physical shock to the unit.

## [Notes on Cable Connection]

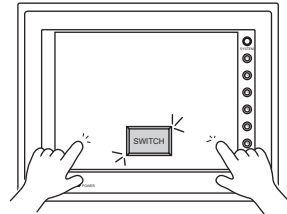
- Connect the cables correctly to the terminals of POD in accordance with the specified voltage and wattage. Over-voltage, over-wattage or incorrect cable connection could cause fire, malfunction or damage to the unit.
- Be sure to establish a ground of POD. The FG terminal must be used exclusively for the unit with the level of grounding resistance less than 100W.
- Prevent any conductive particles from entering into POD. Failure to do so may lead to fire, damage or malfunction.

# Notes on Safe Use of POD

## CAUTION

### [Notes on Maintenance and Operation]

- Fuji Electric Co., Ltd. is not responsible for any damages resulting from repair, overhaul or modification of POD that was performed by an unauthorized person.
- Do not use thinners for cleaning because they may discolor the POD surface. Use alcohol or benzine commercially available.
- Do not use a sharp-pointed tool when pressing a touch switch.
- Only experts are authorized to set up the unit, connect the cables or perform maintenance and inspection.
- If a data receive error occurs when POD and the counterpart (PLC, temperature controller, etc.) are started at the same time, read the manual for the counterpart unit and handle the error correctly.
- Switch resolution of the POD UG20 series is determined by the analog-type resistance film. Do not press two or more positions on the screen at the same time. If two or more positions are pressed at the same time, the switch located between the pressed positions activates. Please take note of this.
- Avoid displaying the same patterns for hours. It may cause afterimages due to the property of LCD display. If you use the fixed patterns for hours, use the auto-OFF function of the backlight.



Pressing two positions at the same time activates the switch in the center.

### [Notes on Disposal]

- At the time of disposal, POD must be treated as industrial waste.

# Revision

\*Manual No. is shown on cover.

Printed on	*Manual No.	Revision contents										
October , 1999	FEH352	First edition										
April , 2001	FH352a	<p>Second edition</p> <p>New Product (UG221) specification added.</p> <p>The following PLC model is added.</p> <table> <tr> <td>Mitsubishi</td> <td>QnH series</td> </tr> <tr> <td></td> <td>FX1S series</td> </tr> <tr> <td>Allen-Bradley</td> <td>Micro Logix 1000</td> </tr> <tr> <td>Siemens</td> <td>S7-300/400 MPI</td> </tr> <tr> <td>Modicon</td> <td>Modbus RTU</td> </tr> </table> <p>Others , contents check</p>	Mitsubishi	QnH series		FX1S series	Allen-Bradley	Micro Logix 1000	Siemens	S7-300/400 MPI	Modicon	Modbus RTU
Mitsubishi	QnH series											
	FX1S series											
Allen-Bradley	Micro Logix 1000											
Siemens	S7-300/400 MPI											
Modicon	Modbus RTU											
November , 2002	FEH352b	<p>Third edition</p> <p>The following PLC model is added.</p> <table> <tr> <td>SAIA</td> <td>PCD</td> </tr> <tr> <td>MOELLER</td> <td>PS4</td> </tr> <tr> <td>Telemecanique</td> <td>TSX Micro</td> </tr> <tr> <td>Automationdirect</td> <td>Direct LOGIC</td> </tr> <tr> <td>Toyo Denki</td> <td>uGPC sx series</td> </tr> </table> <p>Others , contents check</p>	SAIA	PCD	MOELLER	PS4	Telemecanique	TSX Micro	Automationdirect	Direct LOGIC	Toyo Denki	uGPC sx series
SAIA	PCD											
MOELLER	PS4											
Telemecanique	TSX Micro											
Automationdirect	Direct LOGIC											
Toyo Denki	uGPC sx series											
May , 2003	FEH352c	<p>Fourth edition</p> <p>The following PLC model is added.</p> <table> <tr> <td>VIGOR</td> <td>M series</td> </tr> <tr> <td>DELTA</td> <td>DVP series</td> </tr> <tr> <td>BADOR</td> <td>Mint</td> </tr> </table> <p>Appendix : Ladder Transfer Function</p> <p>Others , contents check</p>	VIGOR	M series	DELTA	DVP series	BADOR	Mint				
VIGOR	M series											
DELTA	DVP series											
BADOR	Mint											

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# 1

## Hardware Specifications

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# 1 Special Features

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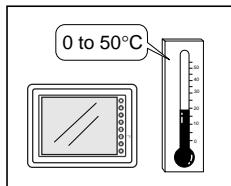
- 1) 128-color Display  
128-color display which makes colorful expression possible is realized. Not only drawings but also bitmap files are clearly displayed. (UG221 and UG220 is 16-color display.)
- 2) Data Sheet Printing Function  
It is possible to make the original data sheet screen by the panel editor (= the editing software). Daily reports or monthly reports that the operator must fill out can be printed in an instant.
- 3) Sampling Function  
This function makes it possible to store the sampling data in an IC card. The stored data can be edited easily by a personal computer. It can be used widely in various fields.
- 4) Macro Function  
With this function, UGx20 series can make programs which previously had to be produced by PLC.
- 5) Multi Window Function  
Up to three windows can be displayed simultaneously on a screen.  
It is easy to move or delete the displayed windows.
- 6) Video Function  
UGx20 series can be connected to a video or a CCD camera, and the image which is taken by a video or a camera can be displayed directly in a screen of UGx20 series.
- 7) UG221, UG220  
A 5.7 inch display with  $320 \times 240$  dot resolution.
- 8) UG320  
A 7.7 inch display with VGA ( $640 \times 480$  dot resolution).
- 9) UG420  
A 10.4 inch standard model display which uses the previous screen data.
- 10) UG520  
A 12.1 inch large display with SVGA ( $800 \times 600$  dot resolution).

# 2 Notes on Usage

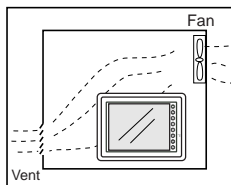


## Environmental Limits

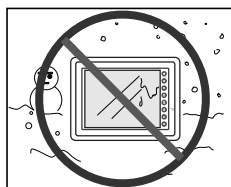
1. Use POD at an ambient temperature of 0 to 50°C, and a relative humidity of 35-85 %RH. (But, a UG420 STN multi-color display can be used at 0 to 40°C.)



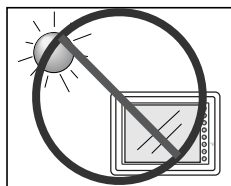
2. Install a forced fan or an air conditioner to maintain the ambient temperature when it is higher than the above mentioned range.



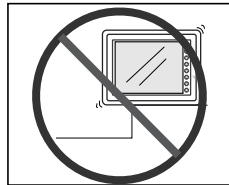
3. Avoid places where moisture may easily condense due to sudden temperature changes.



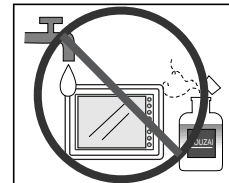
4. Avoid direct sunlight.



5. Never install POD in a place where impacts or vibrations may be transmitted.

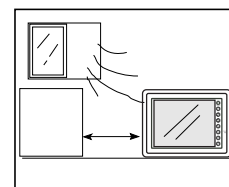


6. Avoid any place in which there is the possibility that water, corrosive gas, flammable gas, solvents or coolants, grinding oil can come in contact with the unit. Never install the unit in a place where dust, salt and metallic particles are present.



## Locations

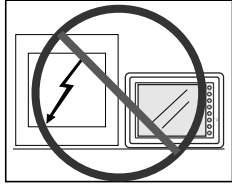
1. Secure sufficient space around POD for ventilation.



2. Never attach POD to the top of any apparatus generating high levels of heat (heater, transformer, large-capacity resistor, etc.).

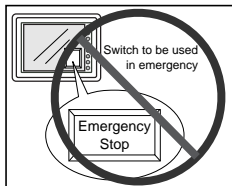


3. Never install POD in the same compartment as high-voltage equipment. The unit should be at least 200 mm away from high-voltage lines or power cables.

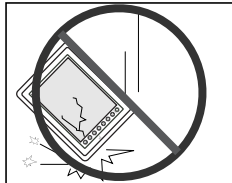


### Usage

1. An emergency stop circuit must be composed of an external relay circuit with a start signal for POD built in. Do not create switches on POD to be used in case of emergency.



2. POD has a glass screen. Never drop or subject the unit to strong impacts.

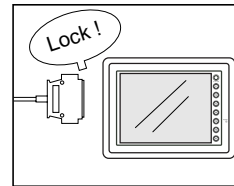


3. Tighten mounting screws with the following torques.

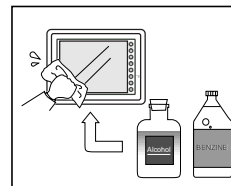
Type	Screw	Screw Size	Torque (N*m)
	UG320/220	M3	0.3 to 0.5
	UG221	M4	0.3 to 0.5
	UG520/420	M4	0.5 to 0.7

Note :Never fasten these screws too tightly, otherwise the cover of POD may be deformed.

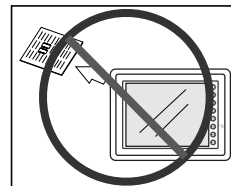
4. Securely fasten and lock every connector for each cable. Double-check this before turning the power on.



5. In a dry environment, POD may generate a large amount of static electricity. Therefore, before touching the unit, touch a grounded metallic section to discharge the static electricity.
6. Application of thinner may discolor POD. Use alcohol or benzene available commercially for cleaning.



7. Never remove any printed circuit board from POD. (This will harm the unit.)



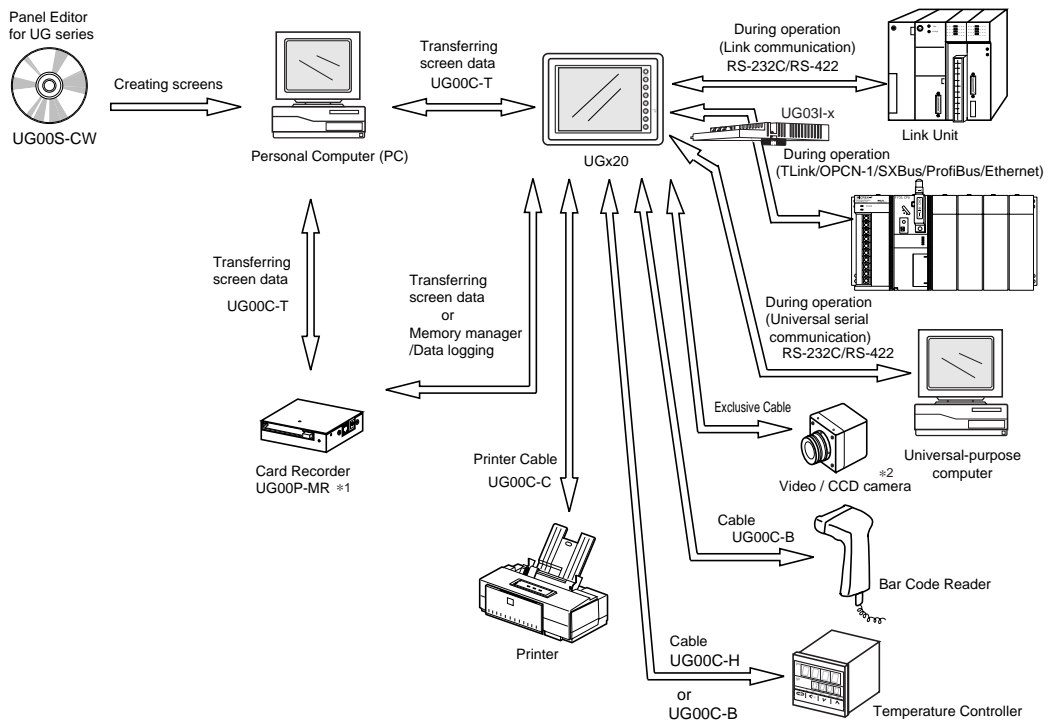
8. Never operate the display by using a tool with a sharp point like a screwdriver. Touch the display by fingers.

# 3 System Composition

System Composition / Model Indication / Peripheral Equipment

## System Composition

The following illustration shows possible system configurations using UG20.

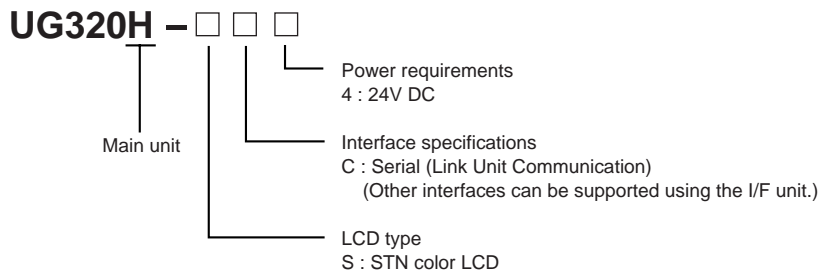
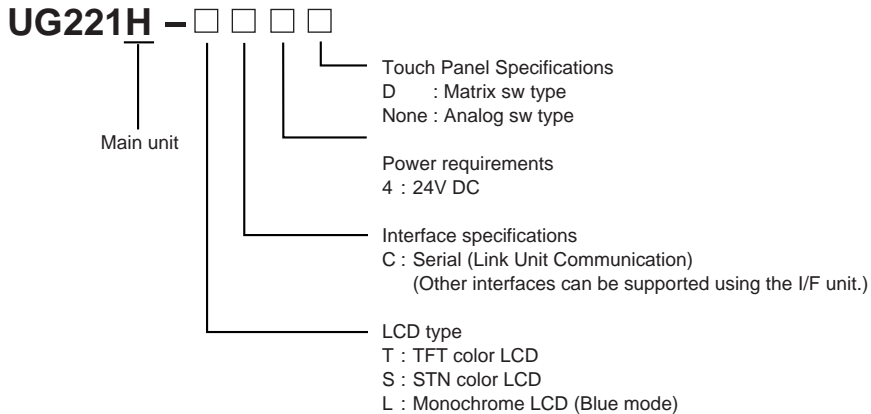
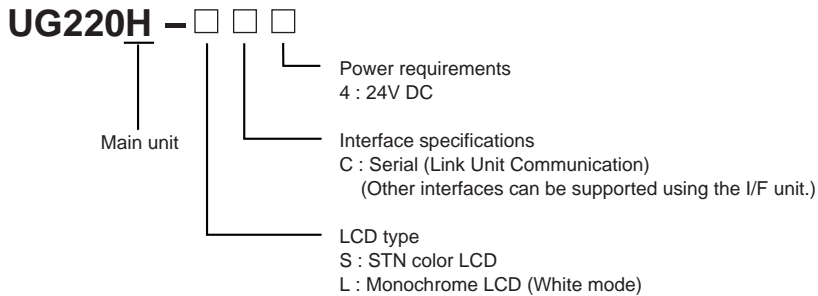


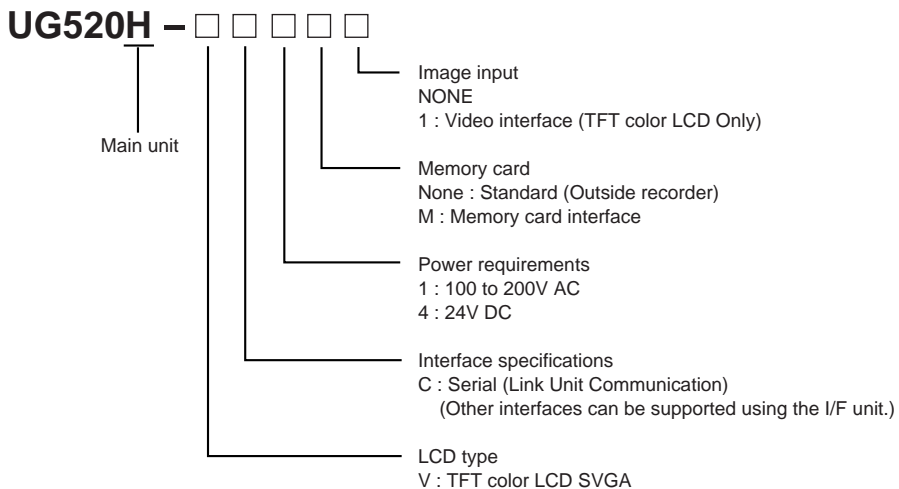
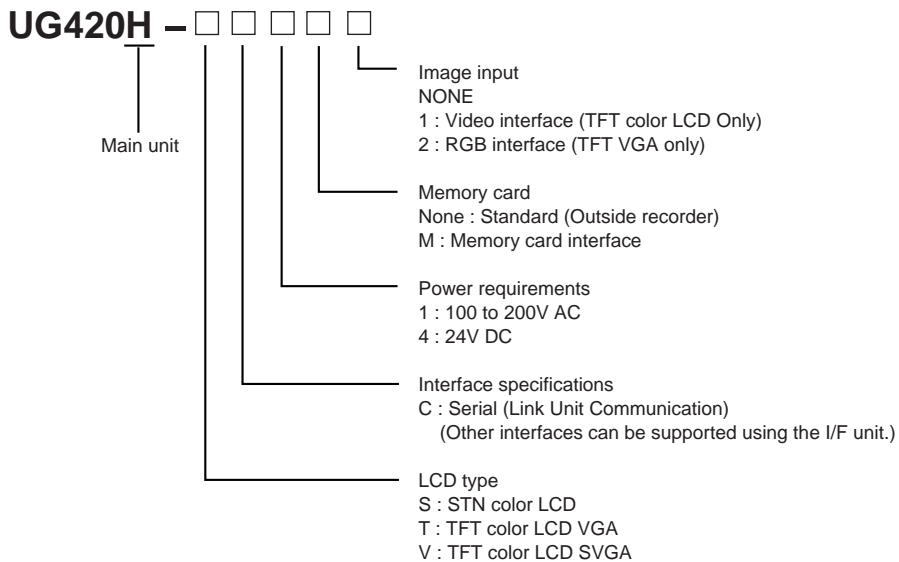
\*1 UG00P-MR is optional.

\*2 The interface for video function (using only in UG520 and UG420) is optional for Maker.

## List of Models

The characters on the right of model names represent optional features and special specifications.





E.g. : UG220H-LC4 (Monochrome LCD / Serial / 24V DC)  
 UG320H-SC4 (STN color LCD / Serial / 24V DC)  
 UG420H-TC1M1 (TFT color LCD VGA / Serial / 100 to 200V AC / Memory card interface / Video interface)  
 UG520H-VC41 (TFT color LCD SVGA / Serial / 24V DC / Standard / Video interface)

### Products conforming to overseas standards

For the products that conform to overseas standards, such as CE marking, please contact Fuji Sales Department.

### List of Options

Item	Type	UG220	UG221	UG320	UG420H-S	UG420H-T	UG420H-V	UG520H-V	
Optional by Manufacturer	Card Interface *1	×	×	×	○	○	○	○	
	Video Interface	×	×	×	×	○	○	×	
	Analog RGB Input Interface	×	×	×	×	○	×	×	
Optional by User	Extension I/O Unit : UG00P-U1 (16 inputs / 16 outputs) *2	×	×	×	○	○	○	○	
	Serial Extension I/O : UG00P-U2 (16 inputs / 16 outputs) *2	○	○	○	○	○	○	○	
	Extension Memory Cassette: (4Mbyte)	UG00P-D4	×	×	○	○	○	○	○
		UG221P-D4	×	○	×	×	×	×	×
	SRAM Cassette : (512Kbyte)	UG00P-SR	×	×	○	○	○	○	○
		UG221P-SR	×	○	×	×	×	×	×
	Communication Interface Unit : UG031-S/J/T/C/E/P *3	×	○	○	○	○	○	○	
	Communication Interface Unit : UG021-S/J/T *3	○	×	×	×	×	×	×	
	Card Recorder *1 : UG00P-MR	○	○	○	○	○	○	○	
	Terminal Converter : UG00P-TC	○	○	○	○	○	○	○	

\*1 Prepare for UGx20 with card interface, or UGx20 and UG00P-MR (card recorder).

\*2 UG00P-U1 : Rear-side installation I/O unit, UG00P-U2 : Panel-side installation I/O unit

\*3 UG031-T/UG021-T : T-LINK, UG031-J/UG021-J : OPCN-1, UG031-S/UG021-S : SX BUS, UG031-C : CC-LINK, UG031-E(2) : Ethernet or FL-net, UG031-P : PROFIBUS

### Memory Card

○A SRAM card or FEPROM card can be used for the memory card. The following table shows the difference between the SRAM card and FEPROM card:

SRAM	FROM
Supports the functions of POD memory manager and data logging, and transmission of screen data.	Supports transmission of screen data.
Data is partially readable and writable at any time.	Data is written and read all together. Data cannot be written or read partially.
Contains a battery. Replace the battery when it runs out.	No battery replacement is required.

\* The FROM card cannot support any functions of memory manager and data logging.

The following memory cards supplied from Fuji Electric Co., Ltd. are recommended.

○SRAM

UG00K-S25K(256K)      UG00K-S02M(2M)

UG00K-S51K(512K)      UG00K-S04M(4M)

UG00K-S01M(1M)

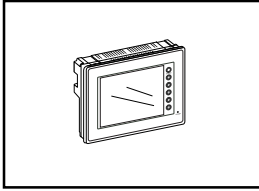
○FROM

UG00K-F25K(256K)      UG00K-F01M(1M)

UG00K-F51K(512K)      UG00K-F02M(2M)

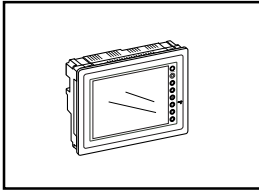


## Model Indication



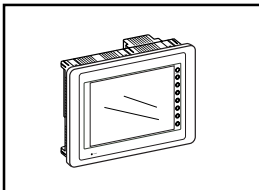
### UG221, UG220

Display area : 115.2 × 86.4 mm  
(A 5.7 inch display.)



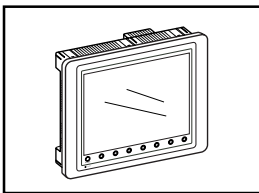
### UG320

Display area : 157.4 × 118.1 mm  
(A 7.7 inch display.)



### UG420

Display area : 211.2 × 158.4 mm  
(A 10.4 inch display.)

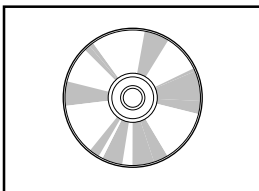


### UG520

Display area : 246.0 × 184.5 mm  
(A 12.1 inch display.)

## Peripheral Equipment

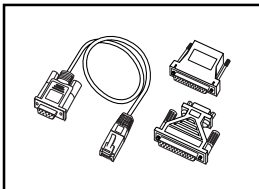
The following options are available for using UGx20 series more effectively.



### UG00S-CWV3

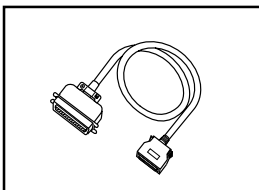
#### (Panel Editor for Windows98/NT4.0/Me/2000/XP)

Application software for editing display data for UG series.



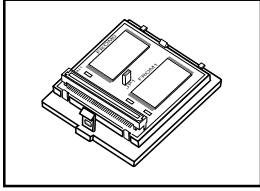
### UG00C-T (Data Transfer Cable) 3m

Connects UGx20 to a personal computer, or a personal computer to UG00P-MR.



### UG00C-C (Printer Cable) 2.5m

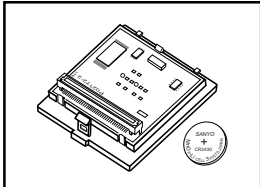
Connects UGx20 to a printer.



### UG00P-D4•UG221P-D4 (FPROM Cassette)

- UG00P-D4 : for UG520, UG420, UG320
- UG221P-D4 : for UG221

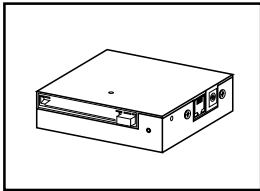
Extension print circuit board to extend the memory for display data back-up. There is 4Mbyte type.



### UG00P-SR•UG221P-SR (SRAM Cassette)

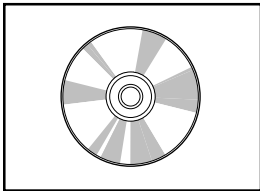
- UG00P-SR : for UG520, UG420, UG320
- UG221P-SR : for UG221

Extension print circuit board to back-up the memory for sampling data, Internal Memory and Memo Pad. There is 512kbyte type. It is also possible to set the calendar for displaying in UGx20 at this cassette.



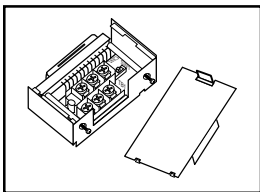
### UG00P-MR (Card Recorder)

Reads display data created by personal computer, or works as an external memory storage system for the memory manager and data logging functions.



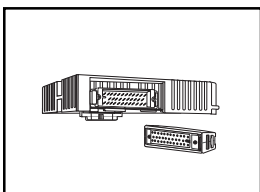
### UG00P-MSE (Memory Card Editor)

Application software for editing data stored in a memory card.  
( For Windows 98 / Me / NT 4.0 / 2000 / XP )



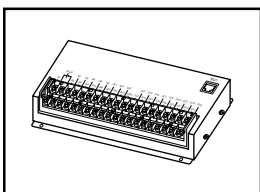
### UG00P-TC (Terminal Converter)

Used for connection between a UGx20 and a PLC at the RS-422/485 terminal block.



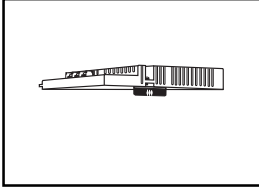
### UG00P-U1 (Extension I/O Unit)

Used as an external I/O unit for PLC. It has 16 inputs and 16 outputs.  
(It can be used for UG520 and UG420.)



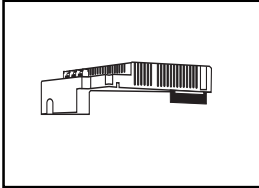
### UG00P-U2 (Serial Extension I/O Unit)

Used as an external I/O unit for PLC. It has 16 inputs and 16 outputs.  
(It can be used for UG520,UG420,UG320,UG221 and UG220.)



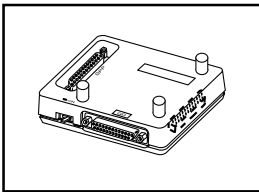
**UG03I-x [x:T → T-Link, x:J → OPCN-1, x:S → SX BUS, x:E(2) → Ethernet•FL-net, x:C → CC-Link, x:P → PROFIBUS] (Communication Interface Unit)**

Used to communicate with each network.  
It makes it possible to connect multiple UGx20 series to a PLC. This system, which enables other devices to connect to the same network, brings about the reduction in costs of the whole system.



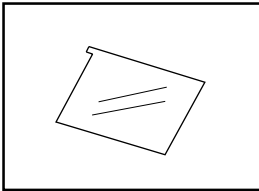
**UG02I-x [x:T → T LINK, x:J → OPCN-1, x:S → SX BUS] (Communication Interface Unit)**

Used for UG220 to communicate with each network.



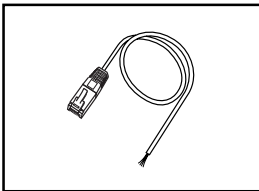
**UG00P-DI (ACPU/QnACPU/FXCPU Dual Port Interface)**

Add-on connector with two ports, specifically designed for the connector on the MITSUBISHI's ACPU/QnACPU/FXCPU programmer. This can improve operability of the ACPU/QnACPU/FXCPU programmer that is directly connected.



**UGx20P-PS [x:2 → UG220,UG221 , 3 → UG320 , 4 → UG420, 5 → UG520] (Protection Sheet)**

Protects the operation panel surface. Five sheets are included in one package.



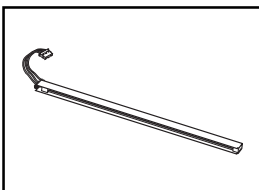
**UG00C-B (bar-code reader (temperature controller) connecting cable) 3 m**

Used to connect a bar-code reader to the POD.  
Also used to connect a temperature controller to the POD via RS-232C.



**UG00C-H (Multi-link 2 (temperature controller) connecting cable) 3 m**

Used to connect between POD master and POD slave for Multi-link 2 connection.  
Also used to connect a temperature controller to the POD via RS-485.POD slave station in the Multi-Link 2 connection.

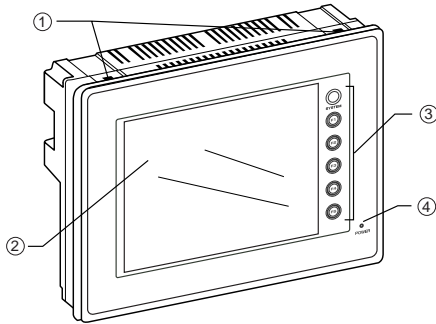


**UGxxP-Bx [UG220P/320P/420P/520P-Bx] (Backlight for Replacement)**

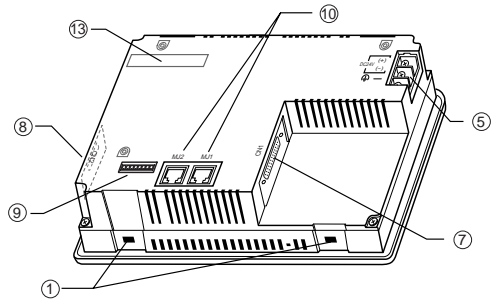
Placement backlight parts for UGx20 series.

# 4 Names of Components

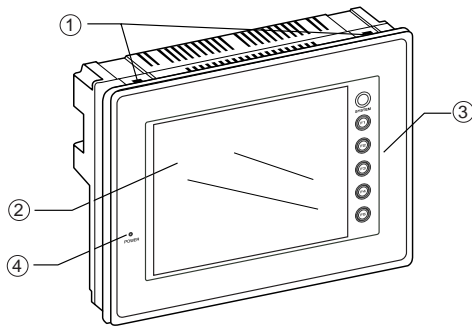
### Front Side of UG220



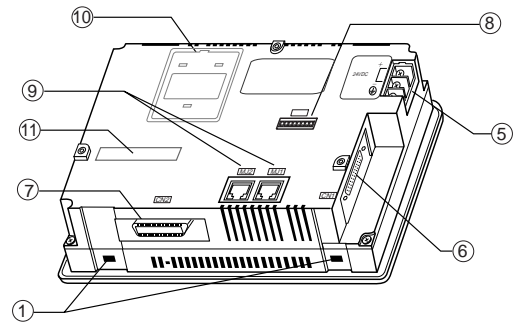
### Rear Side of UG220



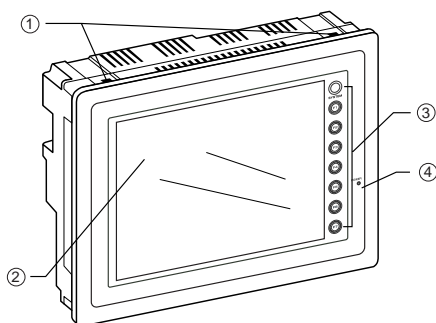
### Front Side of UG221



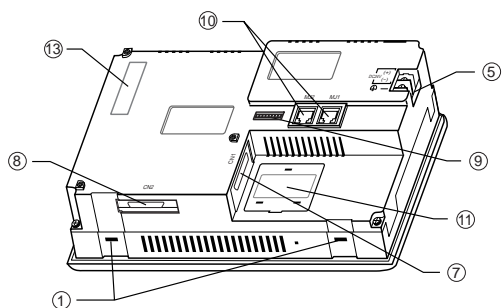
### Rear Side of UG221



### Front Side of UG320

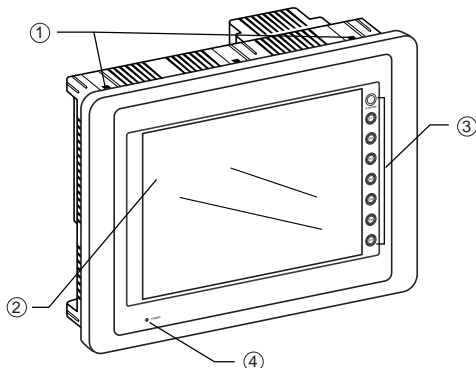
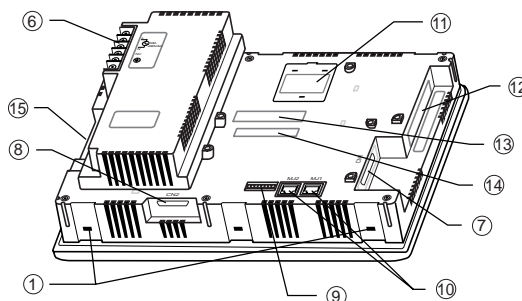
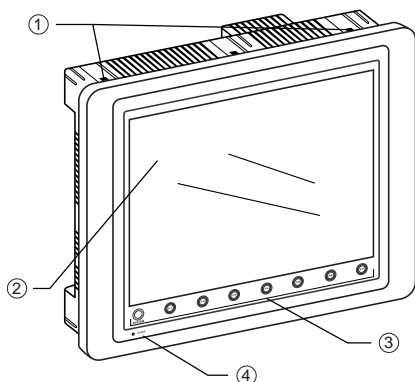
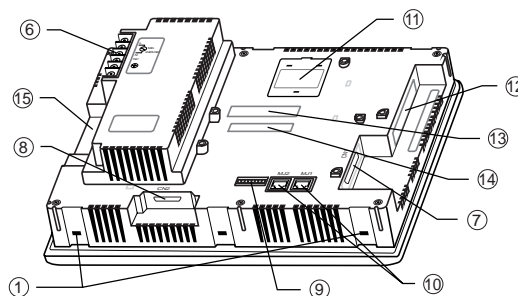


### Rear Side of UG320



- ① Mounting holes for fixtures
- ② Display
- ③ Function keys (Refer to P1-59)
- ④ Power lamp
- ⑤ DC power supply
- ⑥ CN1: for PLC (RS-232C, RS-422)
- ⑦ CN2: for printer

- ⑧ Dip switches
- ⑨ MJ1, 2: for data transfer, for temperature controller, for bar-code reader, for UG00P-MR and for UG00P-U2 (option)
- ⑩ for UG00P-D4 (option)
- ⑪ for UG031-S/J/T/C/E/P (option)

**Front Side of UG420****Rear Side of UG420****Front Side of UG520****Rear Side of UG520**

- ① Mounting holes for fixtures
- ② Display
- ③ Function keys (Refer to P1-59)
- ④ Power lamp
- ⑤ AC power supply / DC power supply
- ⑥ CN1: for PLC (RS-232C, RS-422)
- ⑦ CN2: for printer
- ⑧ Dip switches

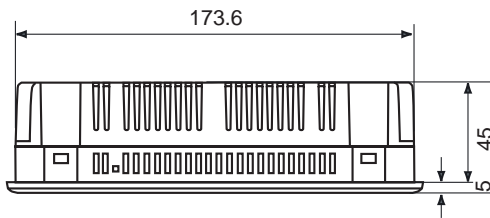
- ⑨ MJ1, 2: for data transfer, for temperature controller, for bar-code reader, for UG00P-MR and for UG00P-U2 (option)
- ⑩ for UG00P-D2/D4 (option)
- ⑪ for video (option)
- ⑫ for UG03I-S/J/T/C/E/P (option)
- ⑬ for UG00P-U1 (option)
- ⑭ Card interface (option)

# 5 Dimensions and Panel Cut-out

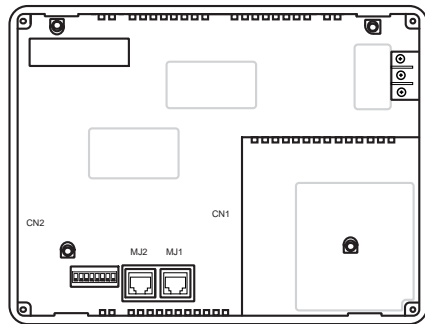
## Dimensions of UG220

Unit : mm

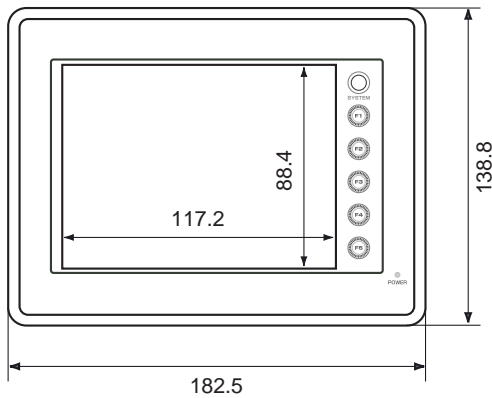
○ Top View



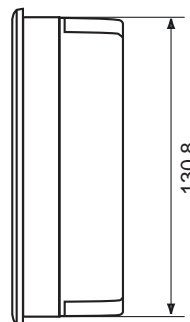
○ Rear View



○ Front View

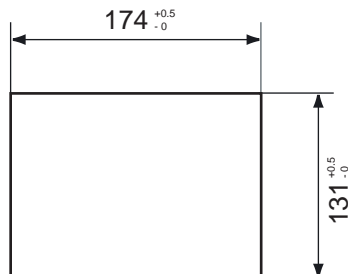


○ Side View



## Panel Cut-out of UG220

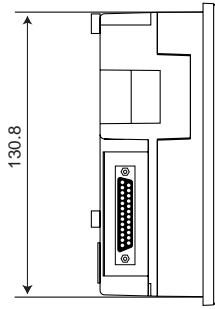
Unit : mm



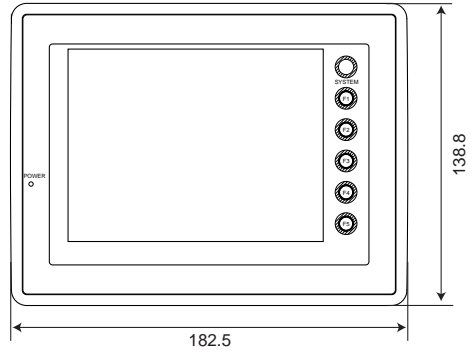
### Dimensions of UG221

Unit : mm

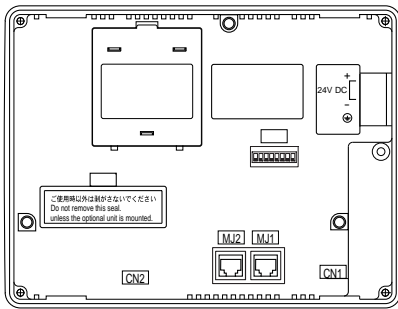
○ Side View



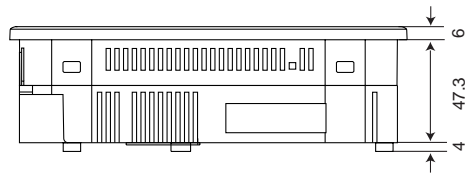
○ Front View



○ Rear View

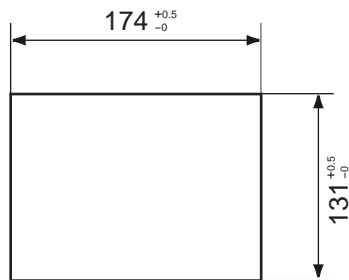


○ Under View



### Panel Cut-out of UG221

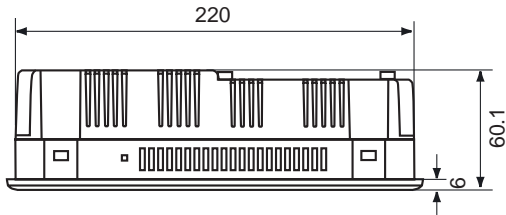
Unit : mm



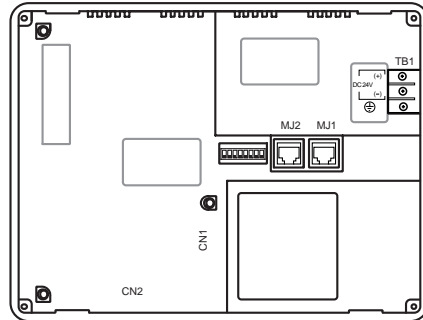
## Dimensions of UG320

Unit : mm

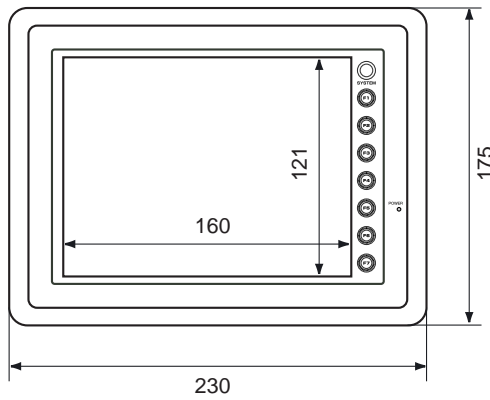
○ Top View



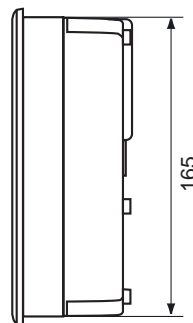
○ Rear View



○ Front View

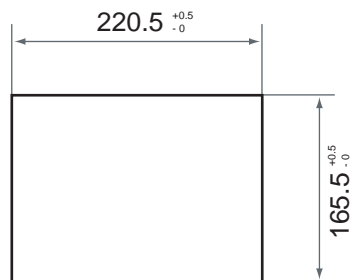


○ Side View



## Panel Cut-out of UG320

Unit : mm

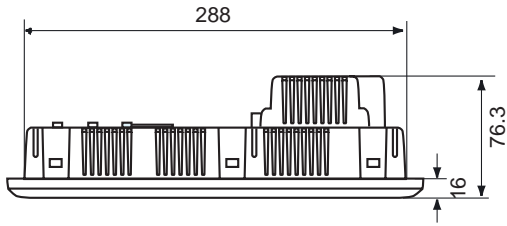




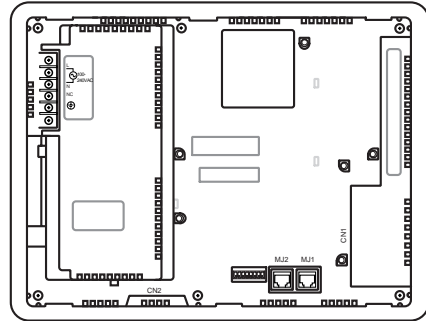
### Dimensions of UG420

Unit : mm

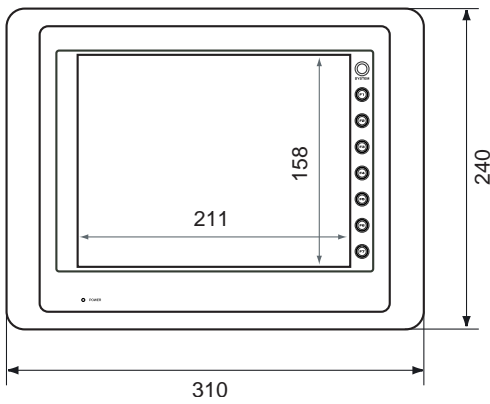
○ Top View



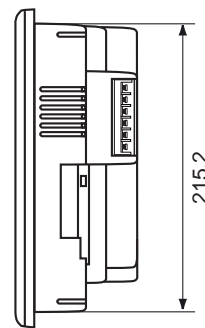
○ Rear View



○ Front View

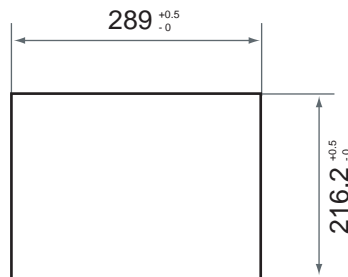


○ Side View



### Panel Cut-out of UG420

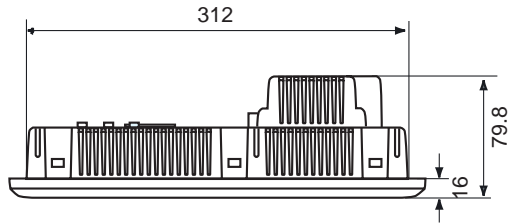
Unit : mm



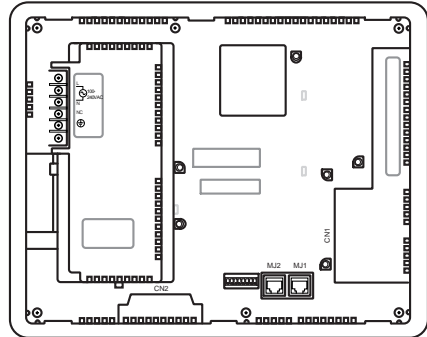
## Dimensions of UG520

Unit : mm

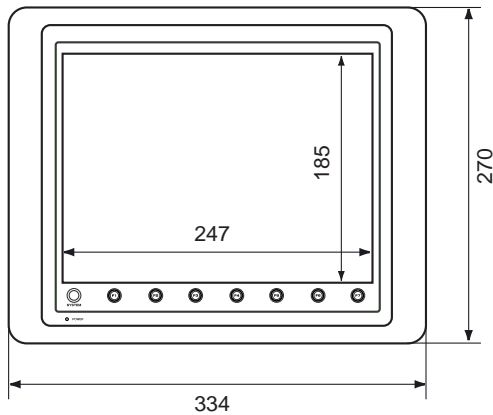
○ Top View



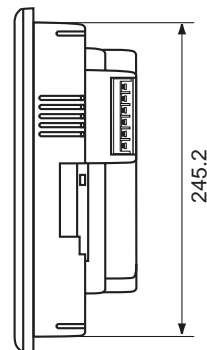
○ Rear View



○ Front View

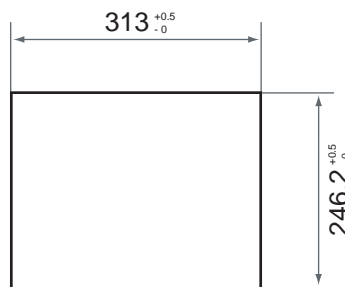


○ Side View



## Panel Cut-out of UG520

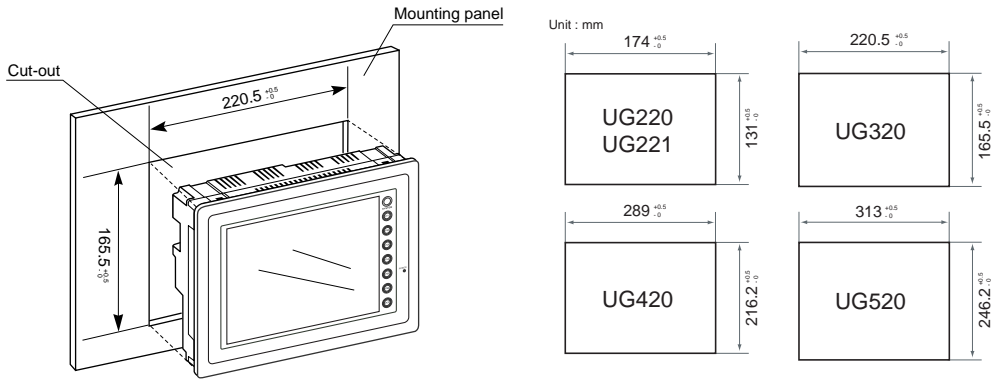
Unit : mm



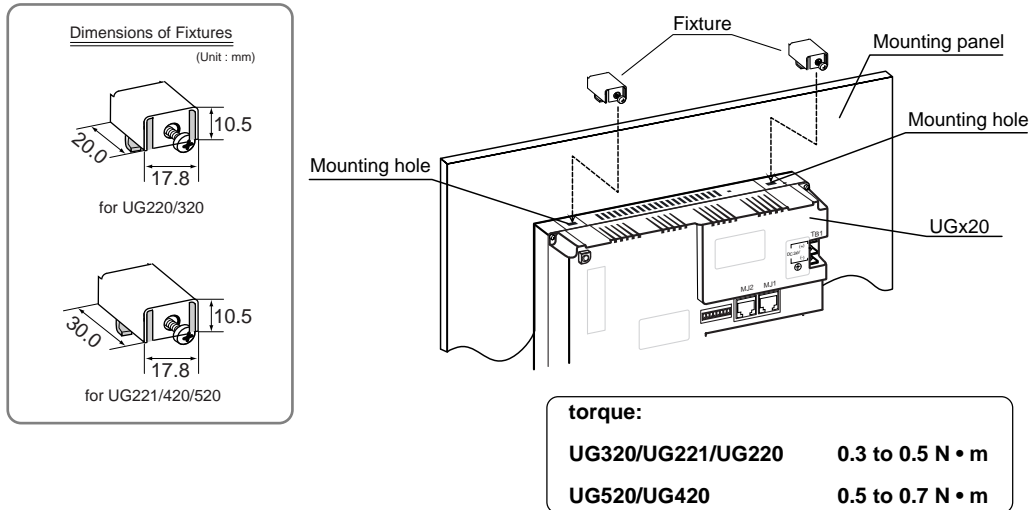
# 6 Mounting Procedure

## Mounting Procedure

- ① Cut out the mounting panel (Max. thick: 3.2 mm) to match the dimensions shown below.



- ② Insert the fixtures attached to UGx20 into the mounting holes on UGx20. Tighten them with the locking screws. (**Number of the fixtures: all series 4 pcs,**)



- ③ The waterproof packing mounted on the UG221 main unit shall come in close contact with the mounting panel so that it is surely caught between the mounting panel and UG221.

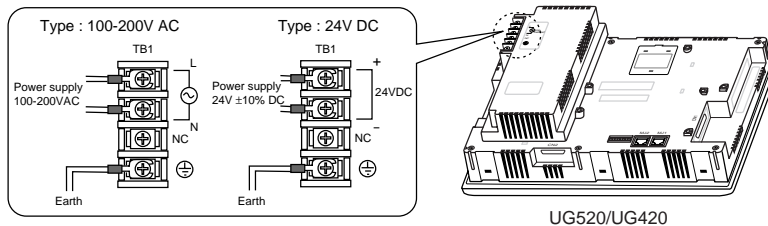
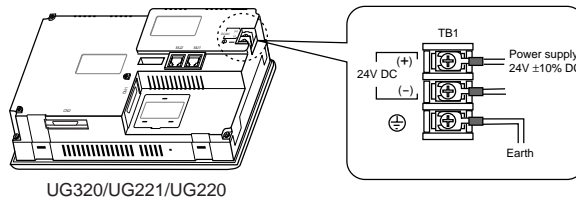
# 7 Wiring

## ⚠ Caution

- Do not remove the dust-proof seal till you finish wiring in the panel. If the seal is removed, conductor chips or other foreign matter may enter the device to cause failure.
- When you finished wiring in the panel, be sure to remove the dust-proof seal.

## Electrical Wiring

○Connects the cable for power supply to TB1 on the rear side of UGx20.

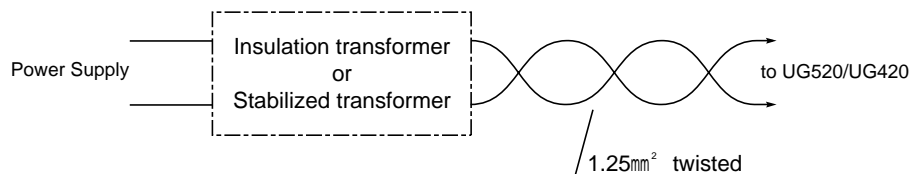


Type	Screw	Screw Size	Torque (N • m)	Clamp Terminal (Unit : mm)
UG320/UG221/UG220		M3.5	0.5	7.0MAX  7.0MAX
UG520/UG420		M3.5	0.5	8.0MAX  8.0MAX

- When TB1 is used for wiring, refer to the following table.
- The power source used must be within the allowable voltage fluctuation.
- Use a power source with low noise between the cables or ground and the cable.
- Use as thick a power cable as possible to minimize any drop in voltage.
- Keep cables of 100V AC and 24V DC sufficiently away from high-voltage, large-current cables.

## Notes on Usage of UG520/UG420 100-200V AC Specifications

- Generally, an isolating transformer improves noise resistance. However, if the display unit is far away from the secondary port of the transformer and noise gets mixed in, an isolating transformer becomes unnecessary.
- If any power voltage fluctuation caused by noise is expected, it is recommended that a voltage stabilizer be used.

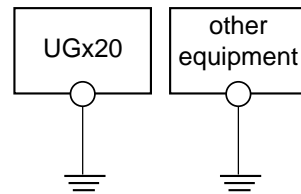


## Grounding



### This equipment must be earthed.

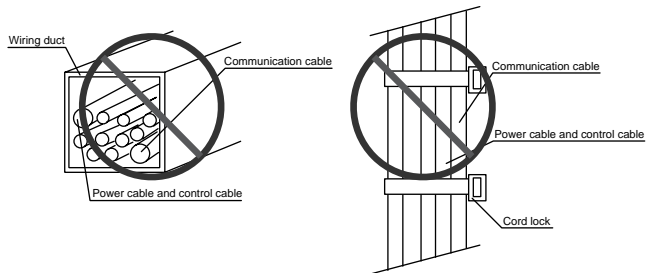
- An independent earth pole shall be used for POD. (The level of grounding resistance should be less than  $100\ \Omega$ .)
- Use a cable which has a nominal cross section of more than  $2\text{mm}^2$  for grounding.
- Grounding point shall be near the POD to shorten the distance of grounding wires.



Grounding resistance : less than  $100\ \Omega$

## Wiring for Communication

- Never place the communication cable with electric circuits.
- Never bundle these cables together with other wires in ducts or electric boxes using cord locks. Although it is tempting to bundle all the cables neatly together, this does not necessarily lead to a noise-resistant configuration.
- It is recommended that the communication cable be independently wired.



# 8 Specifications

## General Specifications

Item		Type	UG220	UG221	UG320
Power Supply	Rated Voltage		24V DC		
	Permissible Range of Voltage		24V $\pm$ 10% DC		
	Permissible Momentary Power Failure		10ms or less		
	Demand		10W or less	20W or less	
	Rushed Electric Current		15A 1ms	15A 1.5ms	
	With-stand voltage		DC external terminals to FG : 500V AC per min.		
Insulation Resistance			500V DC, 10M $\Omega$ or more		
Physical Environment	Ambient Temperature		0°C to +50°C		
	Storage Ambient Temperature		-10°C to +60°C		
	Ambient Humidity		85% RH or less (without dew condensation)		
	Dust		No conductive dust		
	Solvent Resistance		No cutting oil or no organic solvent to cling to the unit		
	Corrosive Gas		No corrosive gas		
Mechanical Working Conditions	Vibration Resistance		Vibration frequency: 10 to 150Hz, Acceleration: 9.8m/s <sup>2</sup> , Single amplitude:0.075mm ,3 directions of X, Y and Z: one hour		
	Shock Resistance		Pulse shape: Sine half wave, Peak acceleration: 147m/s <sup>2</sup> , 3 directions of X, Y and Z: six times		
Electrical Working Conditions	Noise Resistance		Noise voltage: 1500Vp-p, noise width: 1 $\mu$ s		
	Static Electricity Discharge Resistance		Contact: 6kV , Air: 8kV		
Mounting Conditions	Grounding		Grounding resistance: less than 100 $\Omega$		
	Structure		Protection structure: front panel complies with IP65 (when using gasket) rear panel complies with IP20 Form: in a body Mounting procedure: inserted in a mounting panel		
	Cooling System		Cooling naturally		
	Weight		Approx. 0.8kg	Approx. 0.8kg	Approx. 1.1kg
	Dimensions W $\times$ H $\times$ D (mm)		182.5 $\times$ 138.8 $\times$ 50	182.5 $\times$ 138.8 $\times$ 57.3 <sup>*1</sup>	230 $\times$ 175 $\times$ 66.1
	Panel Cut-out (mm)		174 <sup>+0.5</sup> <sub>-0</sub> $\times$ 131 <sup>+0.5</sup> <sub>-0</sub>	174 <sup>+0.5</sup> <sub>-0</sub> $\times$ 131 <sup>+0.5</sup> <sub>-0</sub>	220.5 <sup>+0.5</sup> <sub>-0</sub> $\times$ 165.5 <sup>+0.5</sup> <sub>-0</sub>
Case Color		DARK GREY	BLACK <sup>*2</sup>	DARK GREY	
Material		PC/ABS	PC/PS	PC/ABS	

\*1 including 4mm, the size of boss for communication unit

\*2 equivalent to the Munsell color system N-2.0

Type		UG420		UG520	
		AC Power Supply	DC Power Supply	AC PowerSupply	DC Power Supply
Power Supply	Rated Voltage	100/240V AC	24V DC	100/240V AC	24V DC
	Permissible Range of Voltage	85 to 265V AC (47 to 440Hz)	24V ± 10% DC	85 to 265V AC (47 to 440Hz)	24V ± 10% DC
	Permissible Momentary Power Failure	20ms or less	10ms or less	20ms or less	10ms or less
	Demand	45VA or less	25W or less	50VA or less	25W or less
	Rushed Electric Current	20A : 100V AC 30A : 200V AC	30A 6ms	20A : 100V AC 30A : 200V AC	30A 6ms
	With-stand voltage	AC external terminals to FG: 1500V AC per min. DC external terminals to FG: 500V AC per min.			
Insulation Resistance		500V DC, 10MΩ or more			
Physical Environment	Ambient Temperature	0°C to +50°C (UG420 STN Color : 0°C to +40°C )			
	Storage Ambient Temperature	-10°C to +60°C			
	Ambient Humidity	85% RH or less (without dew condensation)			
	Dust	No conductive dust			
	Solvent Resistance	No cutting oil or no organic solvent to cling to the unit			
	Corrosive Gas	No corrosive gas			
Mechanical Working Conditions	Vibration Resistance	Vibration frequency: 10 to 150Hz, Acceleration: 9.8m/s <sup>2</sup> , Single amplitude: 0.075mm, 3 directions of X, Y and Z: one hour			
	Shock Resistance	Pulse shape: Sine half wave, Peak acceleration: 147m/s <sup>2</sup> , 3 directions of X, Y and Z: six times			
Electrical Working Conditions	Noise Resistance	Noise voltage: 1500Vp-p, noise width: 1μs			
	Static Electricity Discharge Resistance	Contact: 6kV , Air: 8kV			
Mounting Conditions	Grounding	Grounding resistance: less than 100Ω			
	Structure	Protection structure: front panel complies with IP65 (when gasket using) rear panel complies with IP20 Form: in a body Mounting procedure: inserted in a mounting panel			
	Cooling System	Cooling naturally			
	Weight	Approx. 2.5kg		Approx. 3.0kg	
	Dimensions W H D (mm)	310 × 240 × 92.3		334 × 270 × 95.8	
	Panel Cut-out (mm)	289 <sup>+0.5</sup> <sub>-0</sub> × 216.2 <sup>0</sup> <sub>+0.5</sub>		313 <sup>+0.5</sup> <sub>-0</sub> × 246.2 <sup>+0.5</sup> <sub>-0</sub>	
Case Color	DARK GREY				
Material	PC/ABS				

## Display Specifications

Item \ Type	UG220H-L	UG220H-S	UG221H-L	UG221H-S	UG221H-T	UG320H
Display Device	STN Monochrome LCD	STN Color LCD	STN Monochrome LCD	STN Color LCD	TFT Color LCD	STN Color LCD
Resolution W × H (dots)	320 × 240					640 × 480
Dot Pitch W × H (mm)	0.36 × 0.36	0.12 × 0.36	0.36 × 0.36	0.12 × 0.36	0.36 × 0.36	0.082 × 0.246
Effective Display Area W × H (mm)	115.2 × 86.4 (5.7 inches)					157.4 × 118.1 (7.7 inches)
Color	Monochrome 8 gradation + blinking	16 colors + blinking	Monochrome 8 gradation + blinking	16 colors + blinking		128 colors + blinking 16 colors
Back-light	Cold cathode rectifier (which can be exchanged by a user except for UG221)					
Contrast Adjustment	By function switches (only in case of STN type)					
Back-light Average Life*	Approx. 40,000h		Approx. 50,000h			Approx. 40,000h
Power Lamp	The lamp is lit when the power is supplied.					

Item \ Type	UG420H-S	UG420H-T	UG420H-V	UG520H-V
Display Device	STN Color LCD	TFT Color LCD		TFT Color LCD
Resolution W × H (dots)	640 × 480		800 × 600	
Dot Pitch W × H (mm)	0.11 × 0.33	0.33 × 0.33	0.264 × 0.264	0.3075 × 0.3075
Effective Display Area W × H (mm)	211.2 × 158.4 (10.4 inches)			246.0 × 184.5 (12.1 inches)
Color	128 colors + blinking 16 colors			
Back-light	Cold cathode rectifier (which can be exchanged by a user)			
Contrast Adjustment	By function switches (only in case of STN type)			
Back-light Average Life*	Approx. 25,000h	Approx. 50,000h		
Power Lamp	The lamp is lit when the power is supplied.			

\* When the normal temperature is 25, and the surface luminance of the display is 50% of the default.



### Display Function Specifications (All the UGx20 series)

Item		Specifications				
Display Language		Japanese	Eng./W. Europe	Chinese	Chinese (simplified)	Korean
Characters	1/4-size, 1-byte	ANK code	ASCII code	ASCII code	ASCII code	ASCII code
	2-byte (16-dot)	JIS 1st and 2nd	ASCII code	Chinese	Chinese (simplified)	Hangul (without Kanji)
	2-byte (32-dot)	JIS 1st	ASCII code			
Size of Characters		1/4-size : 8 × 8 dots 1-byte : 8 × 16 dots 2-byte : 16 × 16 dots or 32 × 32 dots Enlarge : W, 1 to 8 H, 1 to 8				
Number of Characters		Resolution	320 × 240	640 × 480	800 × 600	
		1/4-size	40 columns × 30 lines	80 columns × 60 lines	100 columns × 75 lines	
		1-byte	40 columns × 15 lines	80 columns × 30 lines	100 columns × 37 lines	
		2-byte	20 columns × 15 lines	40 columns × 30 lines	50 columns × 37 lines	
Property of Characters		Display property : normal, reverse, blinking, bold, shadow Color : 128 colors + blinking 16 colors / 16 colors + blinking / Monochrome 8 gradation + blinking				
Kind of Drawing		Lines : line, continuous lines, box, parallelogram, polygon Circles : circle, arc, sector, ellipse, elliptical arc, elliptical sector Others : tile patterns				
Property of Drawing		Type of lines : 6 types (fine, thick, dot, chain, broken, two-dot chain) Tile patterns : 16 types (incl. user-definable 8 types) Display property : normal, reverse, blinking Display color : 128 colors + blinking 16 colors / 16 colors + blinking / Monochrome 8 gradation + blinking Color specification : foreground, background, boundaries (line)				

**Function Performance Specifications (All the UGx20 series)**

Item		Specifications
Screens		Max. 1024
Screen Memory		FP-ROM (flash memory), Approx. 2,816Kbytes <sup>*1</sup> (different from the language)
Switches		768 per screen (192 per screen for UG221/220 : However, the number of memory settings is limited.) *3
Actions of Switch		Set, reset, momentary, alternate, to light possible to press a function switch and a display switch at the same time (With UG221, 2 switches on the display can be pressed at the same time.)
Lamps		Reverse, blinking, exchange of graphics 768 per screen (192 per screen for UG221/220 : However, the number of memory settings is limited.) *3
Graphs		Pie, bar, panel meter and closed area graph can be displayed without limit. Total capacity per screen: within 128KB Statics and trend graphs: Max. 256 per layer *2 (However, the number of memory settings is limited.) *3
Data Setting	Numerical Data Display	No limits, total capacity per screen: within 128 KB (However, the number of memory settings is limited.) *3
	Character Display	No limits, total capacity per screen: within 128 KB (However, the number of memory settings is limited.) *3
	Message Display	Resolution : 320 × 240, Max. 40 characters 640 × 480, Max. 80 characters 800 × 600, Max. 100 characters No limits, total capacity per screen: within 128 KB (However, the number of memory settings is limited.) *3
Messages		6144 lines
Sampling		Sampling display of buffer data (constant sample, bit synchronize, bit sample, relay sample, alarm function)
Multi-Overlaps		Max. 1024
Data Blocks		Max. 1024
Graphic Libraries		Max. 2560
Patterns		Max. 1024
Macro Blocks		Max. 1024
Page Blocks		Max. 1024
Direct Blocks		Max. 1024
Screen Blocks		Max. 1024
Temp. CTRL / PLC 2 Way		Max. 32 *4
Calendar		provided
Hard-Copy		provided
Buzzer		provided, 2 types (intermittent short and long sounds)
Back-light Auto OFF Function		ON at all time, specified freely
Self-diagnostic Function		Self-test function of switches Check function of communication parameter setting Check function of communication

\*1 Screen memory capacity of the main unit with the following or newer hardware version (Approx. 760k bytes for older versions or UG221/UG220)  
For hardware version, check the value of the 3rd digit from the left in "Ser. No." line on the rear of the main unit:  
UG520H-V → 6; UG520H-S → 5; UG420H-V → 8; UG420H-T → 9; UG420H-S → 7; UG320H → 4

\*2 Layer : 4 per screen (base + 3 overlaps)

\*3 For the memory setting limit, refer to the User's Manual <Function> (FEH376).

\*4 The main unit with the following or newer hardware version is adapted to the temperature controller network:  
UG520H-V → 4; UG520H-S → 3; UG420H-V → 5; UG420H-T → 5; UG420H-S → 4; UG320H → 7

**Touch Panel Specifications (All the UGx20 series)**

Item	Specifications
Switch Resolution	Analog, 1024(W) × 1024(H) Matrix type, UG221: 20(W) × 12(H) pcs
Form	Resistance film form
Life of Touch Panel	Use of one million times or more

**Function Switch Specifications (All the UGx20 series)**

Item	Specifications
Number of Switches	8 (6 for UG221/UG220)
Type of Switch	Pressure sensitive switches
Life of Switch	Use of one million times or more

**Interface Specifications (All the UGx20 series)**

Item	Specifications
Serial Interface for connecting PLC (D-sub 25 pins, female)	RS-232C, RS-422/485 Asynchronous type Data length: 7, 8 bits Parity: even, odd, none Stop bit: 1, 2 bits Baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 115000bps (115200bps is invalid for UG221/UG220.)
Serial Interface 1 and 2 for transferring data /other external (modular jack, 8 pins)	RS-232C, RS-422/485 (2-wire connection) UG00P-MR, Bar code, UG00P-U2, Multi-link 2, Temperature control network, UG-Link
Printer Interface	Complies with centronics, half pitch 36 pins (for PC98x1) NEC : PR201 EPSON : compatibles with ESC/P24-84 or later HP : PCL Level 3 CBM292/293 printer (The screen copy cannot be printed out.)

**Drawing Environment (All the UGx20 series)**

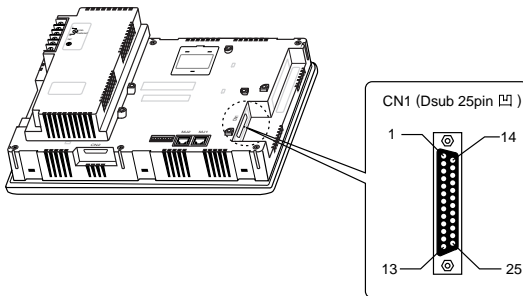
Item	Specifications
Drawing Method	Exclusive drawing software
Drawing Tool	Name of exclusive drawing software : UG00S-CW Personal computer : Pentium2 450 MHz or above recommended OS : Microsoft Windows 98 / Me / NT version 4.0 / 2000 / XP Capacity of hard disk required : free area of approx. 460MB or more (for minimum installation : approx. 105Mbyte) Display : resolution of 640 × 480 or more (800 × 600 is recommended)

# 9 Serial Connector (CN1)

CN1 is used for communicating between a PLC and a POD(RS-232C, RS-422/485).

## Serial Connector (CN1)

The pin arrangement of serial connector is as follows:

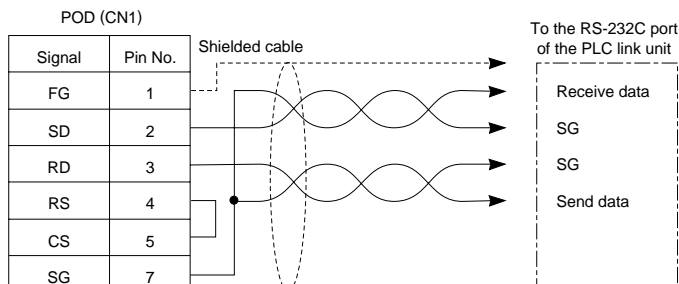


Pin No.	Signal	Contents
1	FG	Frame ground
2	SD	RS-232C send data
3	RD	RS-232C receive data
4	RS	RS-232C RS request to send
5	CS	RS-232C CS clear to send
6		Not used
7	SG	Signal ground
8		Not used
9	+5V	Use prohibited
10	0V	Use prohibited
11		Not used
12	+SD	RS-422 send data (+)
13	-SD	RS-422 send data (-)
14	+RS	RS-422 RS send data (+)
15		Not used
16		Not used
17	-RS	RS-422 RS send data (-)
18	-CS	RS-422 CS receive data (-)
19	+CS	RS-422 CS receive data (+)
20		Not used
21		Not used
22		Not used
23		Not used
24	+RD	RS-422 receive data (+)
25	-RD	RS-422 receive data (-)

## Communication Cable of RS-232C/RS-422

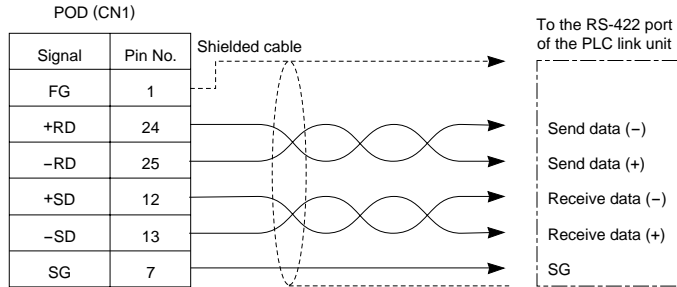
### RS-232C

- In case of RS-232C, SD and SG, and RD and SG form a pair.
- Connect the shielded cable to pin No. 1 or the connector case cover.

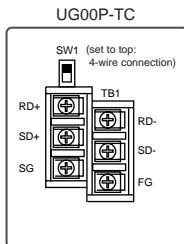
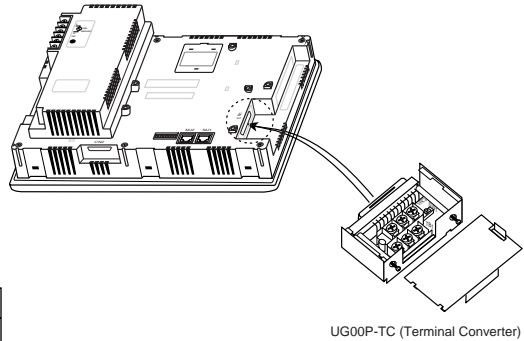


**RS-422**

- In case of RS-422, +SD and -SD, and +RD and -RD form a pair.
- Use SG if possible.
- Connect the shielded cable to pin No. 1 or the connector case cover.
- Use UG00P-TC which is the optional equipment made by Fuji Electric. Co., Ltd. in case of using terminal blocks in RS-422/485 connection.
- Specify terminal resistance by the dip switches on POD. (Refer to the next page.)

**Terminal Blocks of RS-422/485**

- Connect UG00P-TC (Terminal Converter) which is the optional equipment made by Fuji Electric. Co., Ltd. to POD via the serial connector on POD (CN1) in case of using terminal blocks in RS-422/485 connection.
- The RS-422 signal wiring of UG00P-TC is connected to the serial connector (CN1).



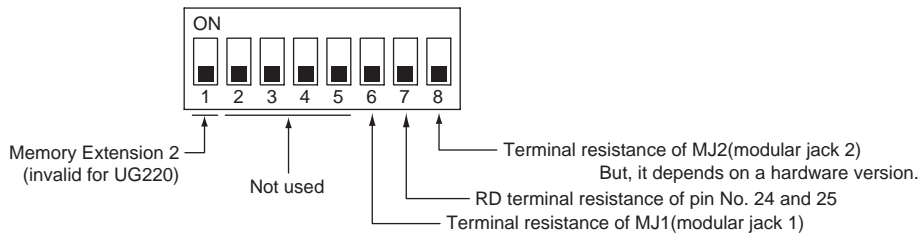
CN1

Signal	Pin No.
FG	1
SG	7
+SD	12
-SD	13
+RD	24
-RD	25

- Specify 4-wire connection or 2-wire connection by the dip switch on UG00P-TC (SW1). (set to top: 4-wire connection)

# 10 Setting of Dip Switches

## Setting of Dip Switches (DIPSW)



○Keep DIPSW 2, 3, 4 and 5 (not used) OFF.

○Setting of Memory Extension 2 (This dip switch is invalid for UG220. Keep DIPSW 1 OFF.)

- Set DIPSW 1 ON in case of selecting "Memory Extension 2."  
(Refer to Chapter 3 "4.Connecting the Memory Extension unit.")

○Setting of Terminal Resistance depends on the hardware version of the unit.

UG520 , UG420 -> O, UG320 -> D, UG221 -> A,

For hardware version , check the value of the 3rd digit from the left in "Ser. No." line on the rear of the main unit.

1. In case that the hardware version is the lower-case letter.

- Set DIPSW 7 ON in case of connecting with CN1 by connection of RS-422/485.
- Set DIPSW 6 (DIPSW8) ON in case of connecting with Modular Jack 1/2 by the connection as below.
  - Multi-link2 communication (master)
  - Temperature controller communication by connection of RS-485
  - Card Recorder : UG00P-MR (option) is used
  - Serial Extension I/O : UG00P-U2 (option) is used
  - Terminal POD connected with UG-Link by connection of RS-485

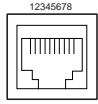
2. In case that the hardware version is the capital letter.

- Set DIPSW 7 ON in case of connecting with CN1 by the connection of RS-422/485.
- Set DIPSW 6 ON in case of connecting with Modular Jack 1 by connection as below.
  - Multi-link2 communication (master)
  - Temperature controller communication by connection of RS-485
  - Card Recorder : UG00P-MR (option) is used
  - Serial Extension I/O : UG00P-U2 (option) is used
  - Terminal POD connected with UG-Link by connection of RS-485
- The terminal resistance of MJ 2 is always ON.

# 11 Modular Jack 1 & 2

## Modular Jack 1 & 2 (MJ1/2)

The right diagram is the pin arrangement and the signal name of modular jack 1 & 2.

MJ1/2	Pin No.	Signal	Contents
	1	+SD/RD	RS-485 + data
	2	-SD/RD	RS-485 - data
	3	+5V	Output power supply Max. 150mA
	4	+5V	
	5	0V	Signal ground
	6	0V	
	7	RD	RS-232C receive data
	8	SD	RS-232C send data

## Setting of Modular Jack 1 & 2 (MJ1/MJ2)

○Specify the use of MJ1/MJ2 by the software (UG00S-CW).

○Select [Modular...] from [System Setting]. The [Modular Jack] dialog is displayed. The setting items of [Modular Jack 1] and [Modular Jack 2] as follows.

Modular Jack 1	Modular Jack 2
[Editor port]	[Not used]
[Memory Card]	[Memory Card]
[Barcode]	[Barcode]
[UG00P-U2]	[UG00P-U2]
[Multi-Link]*1 *2	[Multi-Link]*1 *2
[Temp. CTRL Net]*2	[Temp. CTRL Net]*2
[UG-Link]*2	[UG-Link]*2
[Touch Switch]	[Touch Switch]
[Ladder Tool]	[Ladder Tool]
[Serial Printer]	[Serial Printer]

It is impossible to select both [Multi-Link] and [Temp. CTRL Net] in each setting of modular jack.

\*1 It is possible to select this item when [Multi-Link 2] is selected for [Connection] and [Local Port] is set to [1] in the [Comm. Parameter] dialog.

\*2 [Multi Link 2 (master)] and [Temperature Control Network] and [UG-Link] are available in the following hardware version or later of POD. As for UG220/UG221, any version can be used.

UG520H-V → 4, UG520H-S → 3, UG420H-V → 5, UG420H-T → 5, UG420H-S → 4, UG320H → 7

## Editor Transferring

○Use modular jack 1 (MJ1) in case of editor transferring.

○When [Editor port] is selected for [Modular Jack 1] in the [P2] menu, it is also possible to transfer the data while running, because the auto change of the local mode and the run mode is valid.

When [Editor port] is selected, on-line editing and the simulation mode are also available.

○When the item other than [Editor port] is selected for [Modular Jack 1] in the [P2] menu, be sure to transfer the data by the software in the local mode. On-line editing and the simulation mode are not available.

○When the data is transferred by software, use the cable for data transferring which is the optional equipment made by Fuji Electric Co., Ltd. (UG00C-T: 3m) to connect POD to a personal computer.

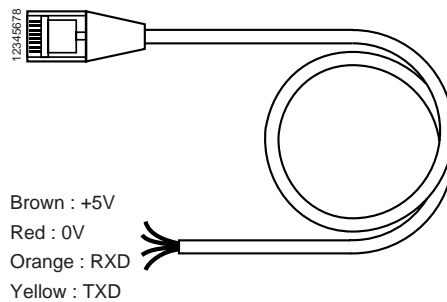
# 12 Bar Code Reader Interface

○ It is possible to receive the signal from a bar code reader by connecting a bar code reader to POD via the modular jack (MJ1/MJ2) of POD series.

○ To connect a bar code reader to POD via MJ1/MJ2, use the cable which is the optional equipment made by Fuji Electric. Co., Ltd. (UG00C-B).

Length : 3m

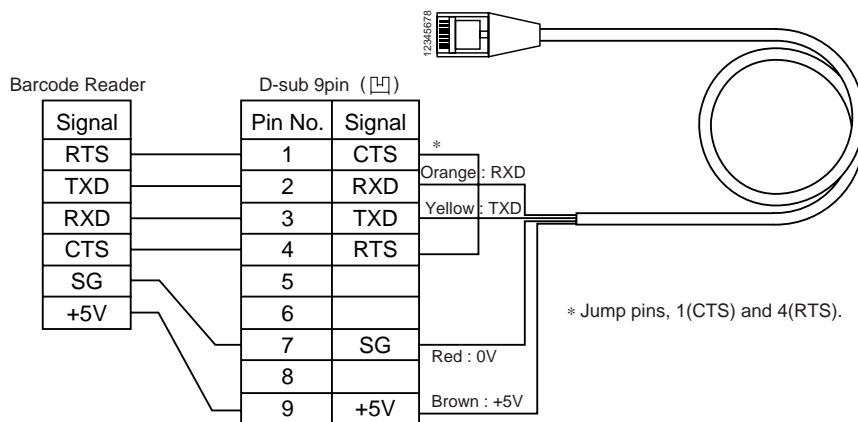
Accessory : Modular Plug



○ Notes on Connection

- In case of using the bar code reader which uses the CTS and RTS control, the bar code reader may not work normally without jumping RTS and CTS.
- The output power supply (+5V) is max. 150mA. (Refer to the preview page.)

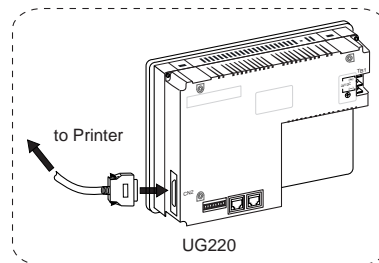
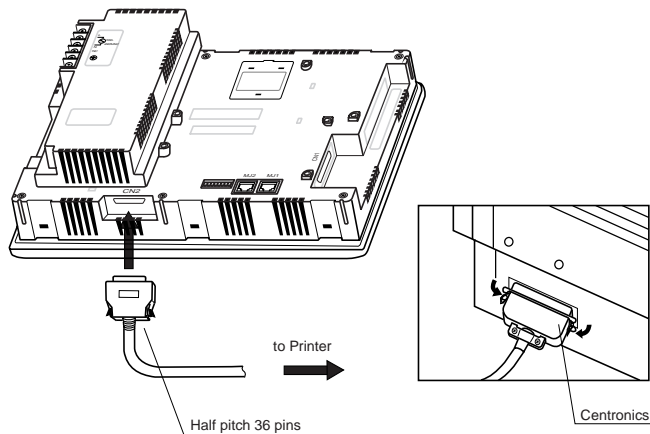
○ When the bar code reader connected to UG400 is used, connect it to UGx20 by the following cable.





# 13 Printer Interface (CN2)

- When a printer is connected to POD via the connector (CN2), it is possible to hard-copy the screen display of POD, the data sheet, or the sampling data.
- To connect a printer to POD, use the parallel interface cable of 36 pins which is optional equipment made by Fuji Electric. Co., Ltd. (UG00C-C).  
When using CBM292/293 printer, our printer cable be (UG00C-A) is available.



- Compatible Printer Control Code System and Printer Models
 

NEC	PC-PR201 series
EPSON	Compatibles with ESC/P24-84 or later
HP(HEWLETT PACKARD)	PCL Level 3
CBM292/293	Line thermal panel printer made by CBM Corporation. (The screen copy cannot be printed out.)

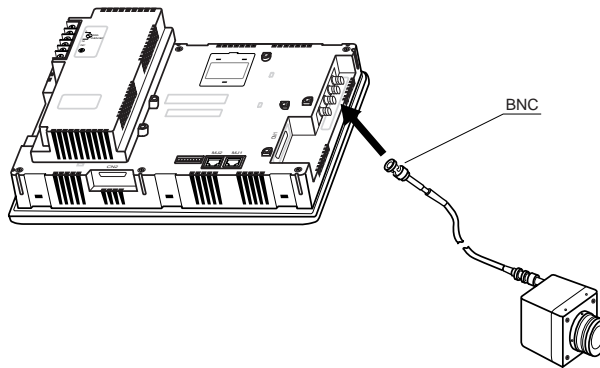
## Note of Usage of SRAM Memory Card (UG00K-Sx) or SRAM Cassette (UG00P-SR•UG221P-SR);

In case of connecting a printer to UGx20 series with a "UG00K-xx(Memory Card:SRAM)" or "UG00P-SR•UG221P-SR (SRAM cassette)" at all times, be sure to turn off a printer at the same time when turning off UGx20. If a printer is not turned off when UGx20 is turned off, the voltage will circulate from the power supply line of a printer to make the power consumption of SRAM cassette's backup battery increase, and finally, the backup battery will consume drastically within a few months.

# 14 Video Interface

(Option: UG520/UG420 only)

- When a video or a CCD camera is connected to the optional UGx20 which has a video interface, the image which is taken by a video or a camera is displayed directly in a screen of UGx20 series (only in case of UG520H-V and UG420H-T/V).
- Video Interface of UGx20: BNC



## ○ Video Display Specifications

- Display Color : 262,144 colors
- Input Channel : 4 Channels
- Signal Form : NTSC type, PAL type
- Video Input : 1.0Vp-p 75 ohm unbalance
- Display Size : 640 × 480, 640 × 240, 320 × 240, 160 × 120 dots (possible to change the size)
- Color Adjustment : contrast (256 steps), brightness (256 steps), color gain (256 steps)

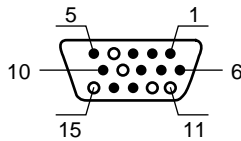
# 15 Analog RGB Input

(Option: UG420H-T only)

When connector CN3 of UG420H-TC (analog RGB input adapted product) is connected to a personal computer, the screen image of the personal computer can be displayed on the UG420H-TC.

## Connector pin layout

[high density D-sub 15-pin connector (female 凹)]



	Input signal
1	Video signal (red wire)
2	Video signal (green wire)
3	Video signal (blue wire)
4	NC
5	Ground
6	Ground
7	Ground
8	Ground
9	NC
10	Ground
11	NC
12	NC
13	Horizontal synchronizing signal
14	Vertical synchronizing signal
15	NC

## Input signal specification

Displayed number of dots	640 × 480 dots	640 × 400 dots	720 × 350 dots
Color	max. 262,144 colors	max. 262,144 colors	max. 262,144 colors
Horizontal synchronizing frequency	31.5KHz	24.9KHz	31.5KHz
Vertical synchronizing frequency	60Hz <sub>p-p</sub>	56Hz <sub>p-p</sub>	70Hz <sub>p-p</sub>
Input amplitude	0.7V	0.8V	0.7V
Sample main signals	Windows screen	PC9801 DOS screen, BIOS screens	DOS/ BIOS screen

- No signal other than the above can be displayed.
- To display Windows screen, after displaying the [Control panel] dialog with the [Control panel] command in the [Setting] menu under [Start Menu], double-click the [Screen] icon in this dialog, and set refresh rate to 60 Hz in the [Screen property] window.

If a cable too long is used to connect between connector CN3 of UG420H-TC and the personal computer, the screen image may be blurred due to noise. To prevent noise, it is recommended to mount a ferrite core.

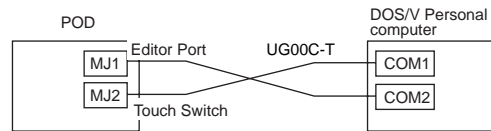
## Touch-switch emulation function

With this function, you can manipulate the Windows screen displayed on the POD with touch switches, i.e. without using the mouse.

- Applicable version of screen development editor  
This function is adapted to 2.4.0.0 or newer versions of the screen development editor.
- Applicable version of POD system program  
This function is adapted to 1.200 or newer versions of POD system program (SYSTEM PROG.VER.)
- Touch panel driver to be installed  
PN-WIN98/95 Ver. 2.00J (Japanese version) from GUNZE.
- Operating environment of the access vision driver  
Computer: DOS/V personal computer  
OS: Windows98/95
- Restrictions
  1. DOS application software that runs on MS-DOS prompt cannot be operated with touch panel.
  2. This function is compatible with PS/2 mouse but may not with the unique pointing device of manufacturer's own development that is installed mainly in note type personal computer.
- About setting
  1. Select [Touch Switch] from [Modular Jack 1] or [Modular Jack 2] in the [Modular] dialog box of [System Setting]. (When you want to display the symbols for DOS/V personal computer on the POD, send the coordinate output of the touch panel to the DOS/V personal computer via the MJ port that is set in this step.)
  2. The touch panel driver supplied from GUNZE needs to be installed in the DOS/V personal computer in advance. For how to install the driver, refer to the manual supplied with the GUNZE touch panel driver.
- Example of setting  
The procedure for adding the "touch-switch emulation" function under the environment where the analog RGB input function is used is described below.  
In this example, it is supposed that the following setting is already made:
  - On the [RGB Adjust] screen, [Setting 1] is set to "BIOS screen" while [Setting 2], to "Windows screen". (For details regarding the adjustment, see "Screen Adjustment" explained above.)
  - Connect between COM2 of the personal computer and MJ1 of the POD by means of UG00C-T (for screen data transfer).
  1. Change over to POD input screen (Windows screen is displayed).
  2. Activate the screen development editor and open the file that is currently transferred to the POD.
  3. Select [Touch Switch] from [Modular Jack 2] in the [Modular] dialog box of [System Setting].

4. Save the file, and send it to the POD.
5. Mode is changed to RUN. In this mode, change screen over to the [RGB Input] screen. (Windows screen is displayed.)

6. In order to execute "touch-panel emulation", connect between COM1 (communication port) of the personal computer and MJ2 (touch switch) of the POD by means of UG00C-T.



7. Insert the "Touch Panel Driver PN-WIN98/95" floppy disk supplied from GUNZE in the floppy disk drive and, from the files stored in the floppy disk, double-click "/Serial/setup.exe". Then follow the directions displayed on the screen to install the touch panel driver. Then [Welcome!] → [Select destination to install] → [Install] → [Hardware setting] (See item 2 of the notes described later.) → [Installation end] → [Install] Clicking the [OK] button here automatically restart the personal computer. At the same time, the POD comes in RUN mode. Then change screen over to the [RGB Input] screen to start Windows.
8. When Windows is started, the calibration software is automatically activated. Set items for calibration (see item 3 of the notes described later). This completes the installation of the touch panel driver.
9. When it is necessary to reset the "Touch Panel Driver PN-WIN98/95", select menus as follows: [Start] → [Programs] → [Gunze] → [PN-WIN98\_95 Serial] → [Touch panel driver]. Changes in the setting will take effect when the personal computer is started the next time.

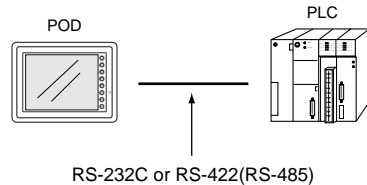
#### \* Notes

1. It is impossible to change over to the [Main Menu] screen from the Windows screen displayed on the POD.
2. The [Hardware setting] dialog box is prepared for installing the touch panel driver. For [COM Port] in this dialog box, select the COM port of the personal computer that is to be connected to the MJ port (for touch switch) of the POD. For [Address] and [IRQ], set the address and IRQ of the selected COM port. When you do not know which COM port of the personal computer to connect to the MJ port (for touch switch) of the POD, or when you do not know the address or IRQ of the COM port, refer to the instruction manual for the personal computer. [Baud rate: 9600], [Parity: none], [Data bits: 8] and [Stop bits: 1] are fixed.
3. With the calibration software, correct the touch position and the mouse cursor indication position. Touch as accurately as possible the red crosses that are displayed on the screen in the order of first point (lower left on the screen), second point (upper right on the screen), third point (lower right on the screen), and fourth point (upper left on the screen). Touch operation won't be available if the calibration setting is not correctly completed. In such case, re-execute the setting.
4. Not that once the touch panel driver is installed, the serial port assigned for it won't be able to be used for other application till unless is uninstalled.
5. When your personal computer has only one COM (communication) port it is recommended to use other personal computer for transferring POD screen.

# 16 Connection

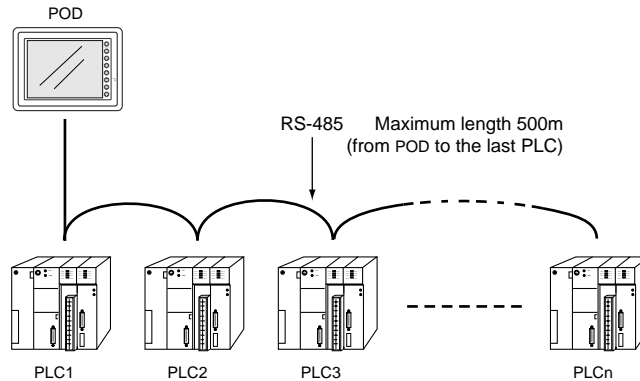
## 1 : 1 Link Communication

- One POD and one PLC are connected.



## 1 : n Link Communication (Multi-drop)

- One POD and multiple PLCs are connected. (n = 1 to 32)



- Available PLC for multi-link communication

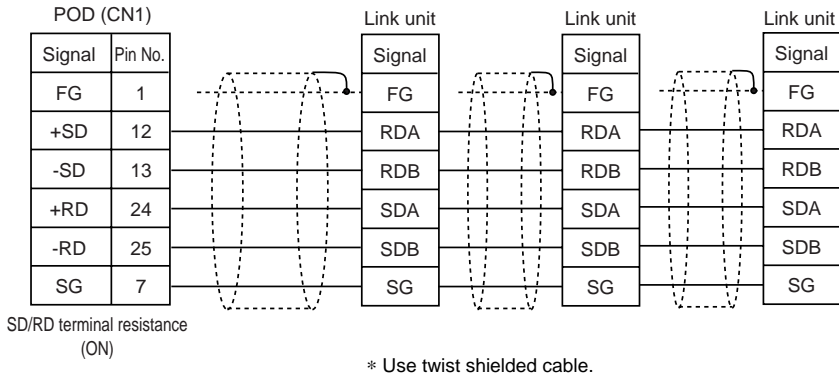
Manufacturer	Models
FUJI	MICREX-F series, FLEX-PC series, FLEX-PC COM
MITSUBISHI	AnA/N/U series, QnA series, QnH(Q)series, A Link+Net10,FX series (A prt)
OMRON	SYSMAC C, CV, CQM1, CS1 DNA
SHARP	JW series, JW100/70H COM Port, JW20/30 COM Port
HITACHI	HIDIC-H
MATSUSHITA	MEWNET
YOKOGAWA	FA500, FA-M3, FA-M3R
YASKAWA	Memobus, CP9200SH/MP900
TOYOPUC	TOYOPUC
Koyo	SU/SG, SR-T
Allen-Bradley	PLC-5, SLC500, Micro Logix 1000
GE Fanuc	90 series
TOSHIBA	T series
SIEMENS	S7-200 PPI
SHINKO	SELMART
SAMSUNG	SPC series, N_plus, SECNET
KEYENCE	KZ series, KV series
LG	MASTER-K500 / K1000, MASTER-K xxxS CNET
FATEK	FACON FB series
IDEC	MICRO3
MODICON	Modbus RTU
TAIAN	TP02
	Universal Serial

○ Multi-drop Communication (RS-485)

Refer to the PLC manual of each manufacturer for connection.

<E.g.>

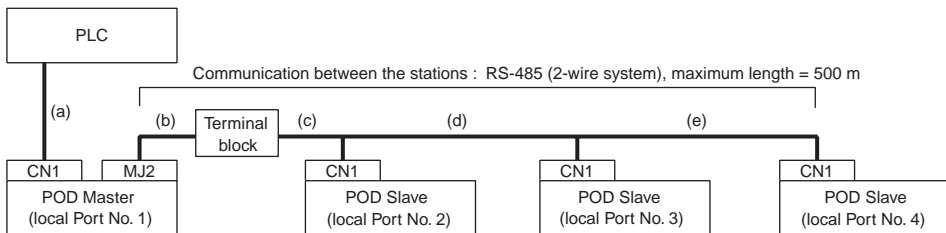
The following example describes how one POD is connected to three PLCs made by MITSUBISHI.  
See MITSUBISHI's manual for further details.



### n : 1 Link Communication (Multi-link 2)

○ Up to 4 units can be connected to one PLC.

\* Between a PLC and the POD master station is the same as those for 1:1 connection.



○ Available PLCs for multi-link2.

As of October 2002, the PLCs supported are as follows. All the PLCs which are usable for 1:1 communication will be supported.

For the I/F driver, the Multi-Link 2 is supported by the version of 1.100 or later (screen development software: version of 2.1.4.0 or later) and as for a POD master station, make sure the hardware version of the unit is as follows.

As for UG221/UG220, any version can be used.

UG520H-V → 4, UG520H-S → 3, UG420H-V → 5, UG420H-T → 5, UG420H-S → 4, UG320H → 7

\* The Multi-Link 2 cannot be used with a communication interface unit such as UG03I-T, J, E, C, S, P, UG02I-T, J, S.

\* The Multi-Link 2 cannot be used with Temperature control network.

<Type>	<Calendar>	<Type>	<Calendar>
FUJI : MICREX-F series	Depends on the model	A.B : Micro Logix 1000	Not provided
FUJI : MICREX-SX series	Provided	GE Fanuc : 90 series	Not provided
FUJI : MICREX-SX CPU	Provided	GE Fanuc : 90 series(SNP-X)	Not provided
FUJI : FLEX-PC series	Depends on the model	TOSHIBA : T series	Provided
FUJI : FLEX-PC CPU	Depends on the model	SIEMENS : S5	Not provided
FUJI : FLEX-PC COM(T)	Provided	SIEMENS : S7	Not provided
FUJI : FLEX-PC(T)	Depends on the model	SIEMENS : S5 UG400	Not provided
FUJI : FLEX-PC CPU(T)	Depends on the model	SIEMENS : TI500/505	Provided
MITSUBISHI : AnA/N/U series	Provided	SIEMENS : TI500/505(UG400)	Provided
MITSUBISHI : QnA series	Provided	SIEMENS : S5 PG port	Not provided
MITSUBISHI : ACPU Port	Provided	SIEMENS : S7-300MPI(HMI ADP)	Not provided
MITSUBISHI : FX series	Depends on the model	SIEMENS : S7-300MPI(PC ADP)	Not provided
MITSUBISHI : QnACPU Port	Provided	SAMSUNG : SPC series	Not provided
MITSUBISHI : QnHCPU Port (A)	Provided	SAMSUNG : N_plus	Provided
MITSUBISHI : QnHCPU Port (Q)	Provided	SAMSUNG : SECNET	Depends on the model
MITSUBISHI : FX series Link(A prt)	Provided	KEYENCE : KZ series	Not provided
MITSUBISHI : FX2N series	Depends on the model	KEYENCE : KZ-A500 CPU Port	Provided
MITSUBISHI : FX1S series	Provided	KEYENCE : KZ/KV series CPU	Not provided
OMRON : SYSMAC C	Depends on the model	KEYENCE : KZ24/300 series CPU	Not provided
OMRON : SYSMAC CV	Provided	KEYENCE : KV10/24 series CPU	Not provided
OMRON : SYSMAC CS1	Provided	KEYENCE : KV700 series CPU	Provided
SHARP : JW series	Provided	LG : MASTER-K10/60/200	Not provided
SHARP : JW100/70H COM Port	Provided	LG : MASTER-K500/1000	Not provided
SHARP : JW20 COM Port	Provided	LG : LGMKX00S	Not provided
HITACHI : HIDIC-H	Provided	LG : MASTER-KxxxS CNET	Not provided
HITACHI : HIDIC-S10/2 alpha	Not provided	LG : GLOFACNET	Not provided
HITACHI : HIDIC-S10/ABS	Not provided	FANUC : Power Mate	Not provided
MATSUSHITA : MEWNET	Depends on the model	FATEK AUTOMATION: FACON FB series	Provided
YOKOGAWA : FA500	Provided	IDEC : MICRO3	Provided
YOKOGAWA : FA-M3	Provided	MODICON : Modbus RTU	Depends on the model
YOKOGAWA : FA-M3R	Provided	YAMATAKE : MX series	Provided
YASKAWA : Memobus	Depends on the model	TAIAN : TP02	Provided
YASKAWA : CP9200SH/MP900	Not provided	SAIA : PCD	Provided
TOYOPUC	Provided	MOELLER : PS4	Not provided
KOYO : SU/SG	Depends on the model	Telemecanique : TSX Micro	Not provided
KOYO : SR-T	Provided	Automationdirect : Direct LOGIC	Depends on the model
KOYO : SR-T(K prt)	Not provided	Automationdirect : Direct LOGIC(K-Sequence)	Depends on the model
KOYO : SU/SG(K-Sequence)	Depends on the model	TOYO : uGPC sx series	Provided
A.B : PLC-5	Not provided	TOYO : uGPC sx CPU	Provided
A.B : SLC500	Provided		

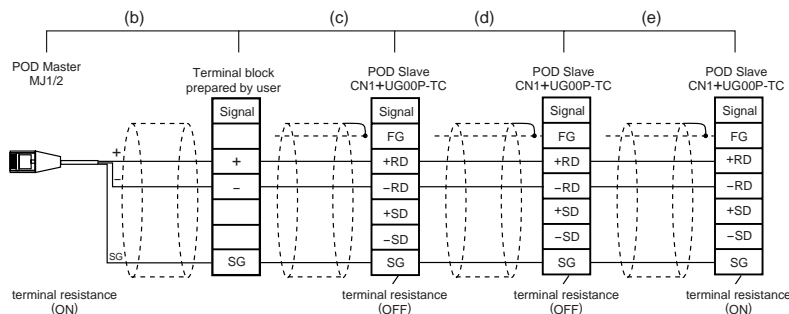
Up to 4 units can be connected to one PLC.

Use the terminal converter (UG00P-TC), the optional equipment made by Fuji Electric Co., Ltd.

For details, please see the "User's Manual <Multi-link 2 > (FEH364)".

\* Wire the shielded FG only at the one of both sides so that they are not connected.

- Set the dip switch (SW1) of UG00P-TC as 2-wire connection when the UG00P-TC terminal converter is used.

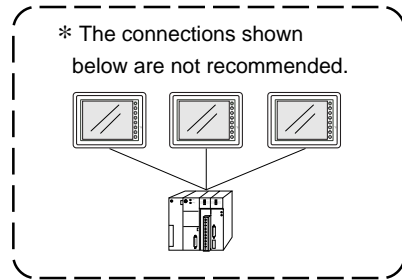
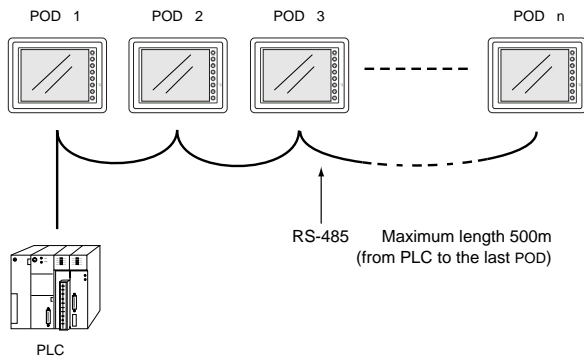


- Short-circuit between +RD and +SD, -RD and -SD when the UG00P-TC terminal converter is not used.



## n : 1 Link Communication (Multi-link)

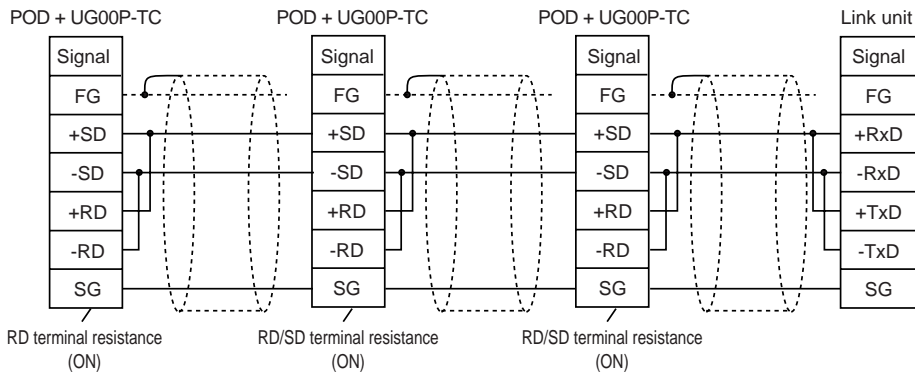
- Multiple POD and a PLC are connected. (n=1 to 32)



- Available PLCs for multi-link

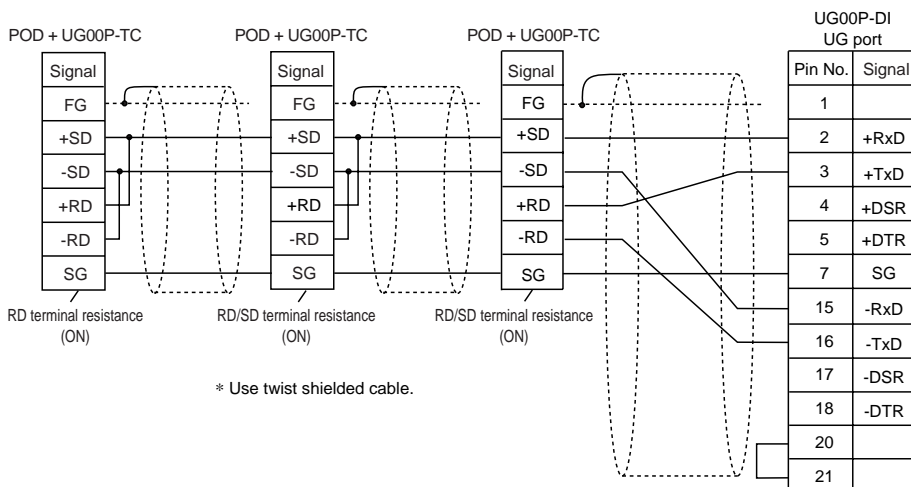
Manufacturer	Models
FUJI	MICREX-F series
MITSUBISHI	AnA/N/U series, A link+Net10, FX series Link(A prt)
MITSUBISHI	QnA CPU port (with UG00P-DI)
OMRON	SYSMAC C series, CV series
SHARP	JW series, JW100/70H COM Port, JW20/30 COM Port
HITACHI	HIDIC-H
MATSUSHITA	MEWNET
YOKOGAWA	FA500, FA-M3, FA-M3R
YASKAWA	Memobus, CP9200SH/MP900
TOYOPUC	TOYOPUC
TOSHIBA	T series
SIEMENS	S7-200 PPI
SHINKO	SELMART
SAMSUNG	SPC series, SECNET
LG	MASTER-K500 / K1000

- When multiple POD are connected to a link unit of PLC, use the terminal converter (UG00P-TC), the optional equipment made by Fuji Electric. Co., Ltd. for RS-485 connection.
  - Set the dip switch (SW1) of UG00P-TC as 2-wire connection when the UG00P-TC terminal converter is used.



\* Use twist shielded cable.

- Short-circuit between +RD and +SD, and -RD and -SD when the UG00P-TC terminal converter is not used.
- When multiple POD are connected directly to MITSUBISHI's QnA CPU port, the optional equipment, UG00P-DI is required. Also, the use of the optional cable, MB-CPUQT which is to connect UG00P-TC on POD side to UG00P-DI on QnA CPU port side, is recommended.
  - Set the dip switch (SW1) of UG00P-TC as 2-wire connection when the UG00P-TC terminal converter is used.



\* Use twist shielded cable.

- Short-circuit between +RD and +SD, and -RD and -SD when the UG00P-TC terminal converter is not used.
- \* An n-to-1 system can be also configured using optional interface units (UG031 (02I)-S, -T, -J, -E(2), -C, or -P). For the details, refer to the User's Manual of each optional interface unit.

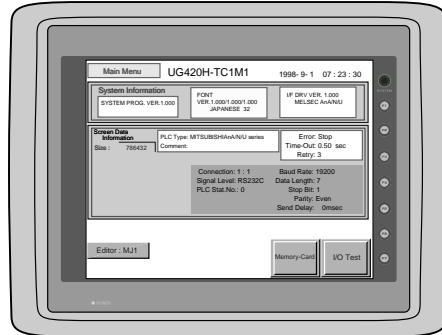
# 17 Operation of POD Main Menu

When the power of POD is turned on for the first time, the screen on the below left is displayed. After transferring the screen data to POD, the following "Main Menu" is displayed.

When power is turned on for the first time:

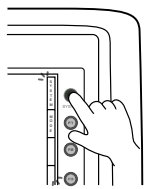


"Main Menu" after trasferring data

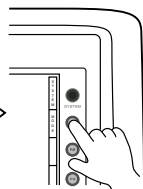


If the screen data has been already transferred to POD, press the [SYSTEM] switch, then press the [F1] switch. The [Main Menu] is displayed.

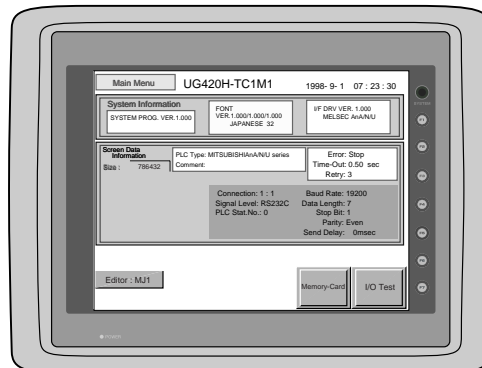
the [SYSTEM] switch



the [F1] switch



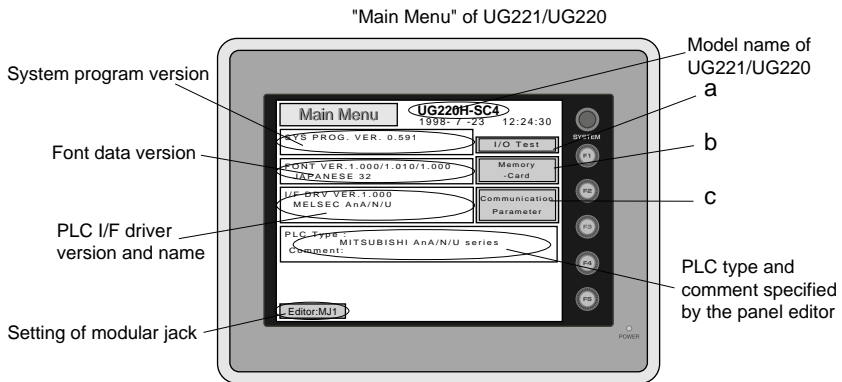
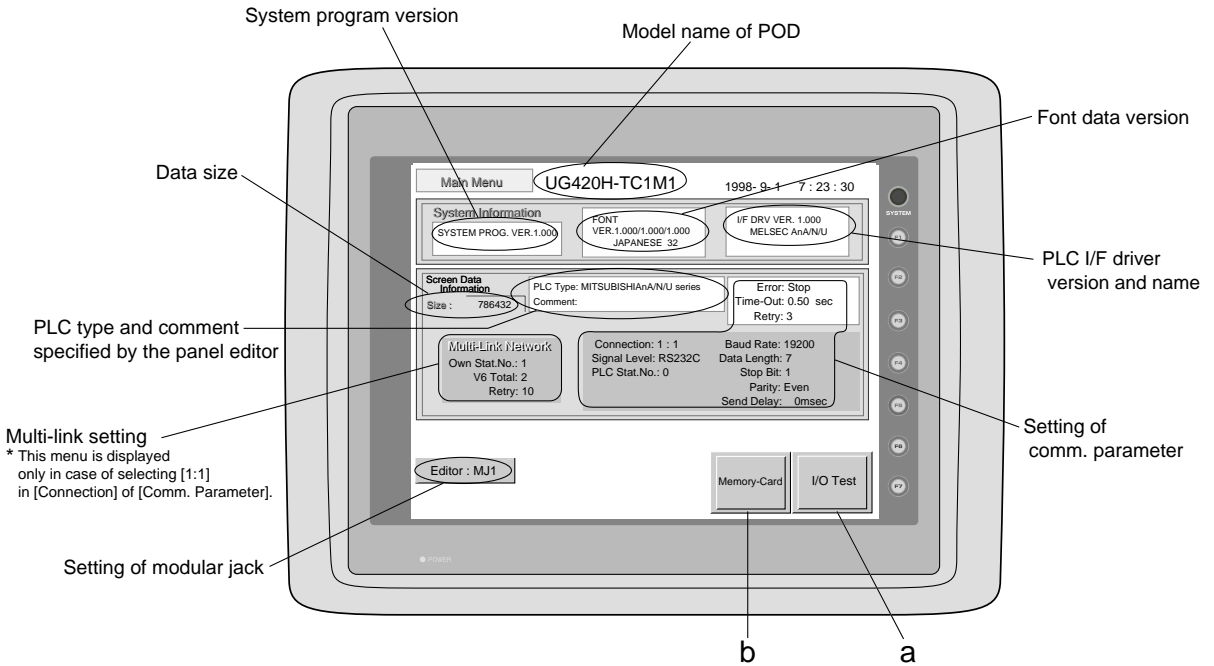
The "Main Menu" is displayed.



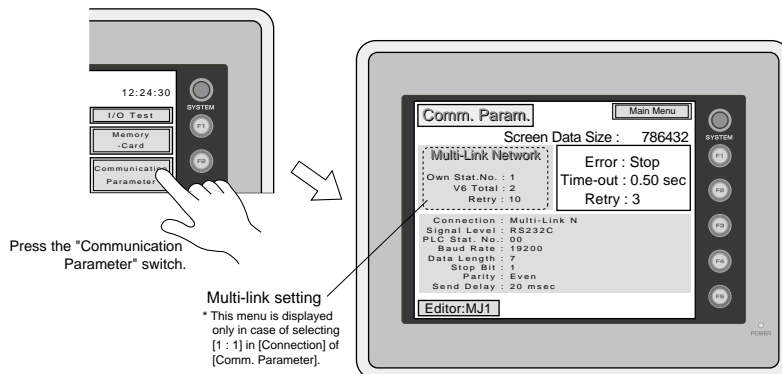
\*The switches that are displayed on the [Main Menu] screen changes with the option provided from the manufacturer, the communication I/F unit installed, or the screen setting (temperature controller, etc.)

## Main Menu

The "Main Menu" is the system menu for transferring the data between a personal computer and POD. When the screen data is transferred from a personal computer to POD, the "Main Menu" must be displayed. (If [Editor port] is selected for [Modular Jack 1] in the [P2] menu of the editing software or the on-line editing is executed, it is not necessary to display the "Main Menu".)

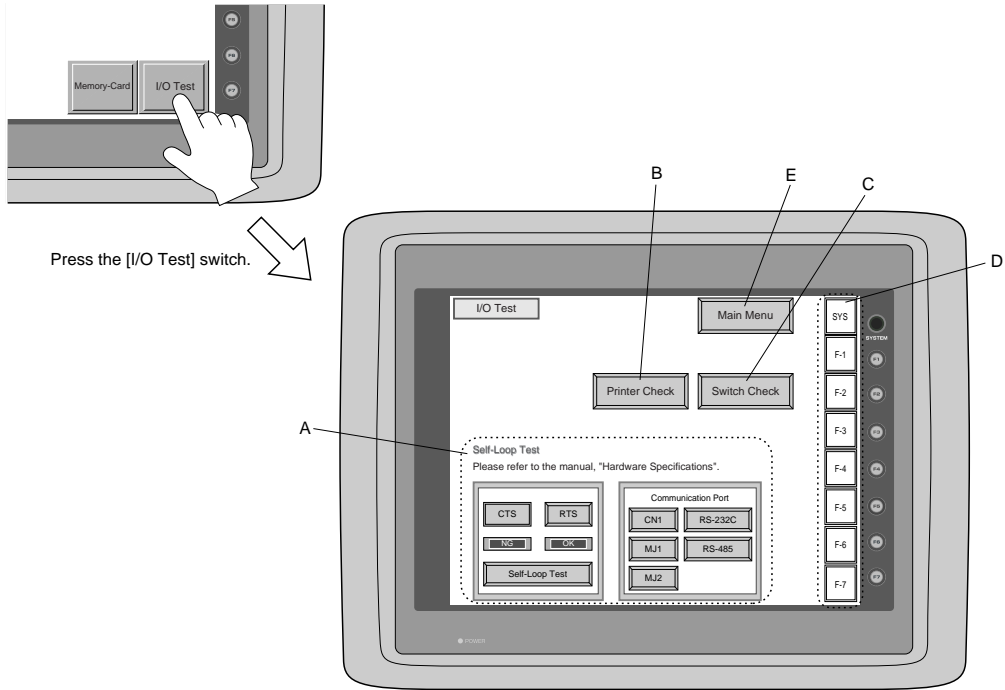


\* In case of UG221 and UG220, when the "Communication Parameter" switch on the "Main Menu" is pressed, the following "Comm. Param." is displayed.

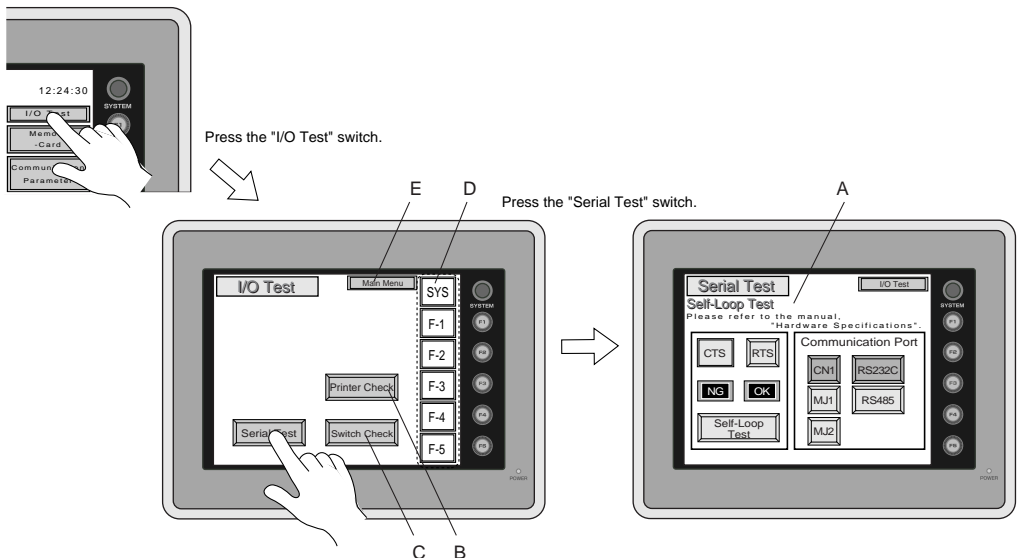


### I/O Test

When the switch “a” on the “Main Menu” is pressed, the following “I/O Test” is displayed. This is the test menu to check only POD hardware.



\* In case of UG221 and UG220, when the switch “A” on the “Main Menu” is pressed, the following “I/O Test” is displayed. Then, the “Serial Test” switch on the “I/O Test” is pressed. The following “Serial Test” is displayed. The self-loop test can be executed on this screen.

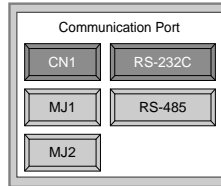


## A. Self-loop Test

This is the test menu to check the signals necessary for UG20 to communicate with PLC or a personal computer by using only POD.

### ○Signal Test of RS-232C in CN1

Select [CN1] and [RS-232C] in [Communication Port] by pressing each switch.



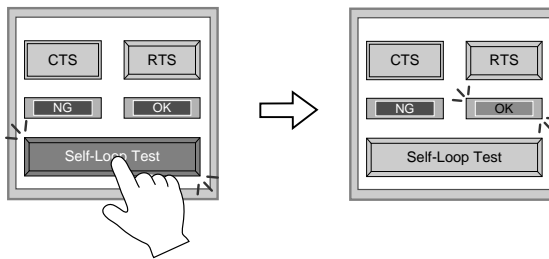
### ●Loop-back Test

Check the signals, [SD] and [RD].

① Jump pins, 2 and 3 of CN1.

② The test is OK, if the [OK] lamp turns on when the [Self-Loop Test] switch is pressed.

**\* If the [NG] lamp turns on when the same switch as above is pressed, ask the advice of your distributor.**

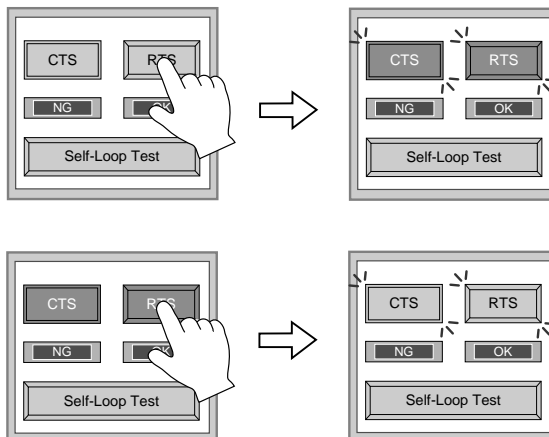


### ●Test of CTS/RTS

Check the signals, [CTS] and [RTS].

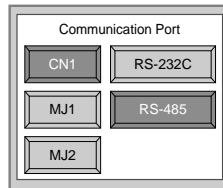
① Jump pins, 4(RTS) and 5(CTS) of CN1.

② The test is OK if the [CTS] lamp and the [RTS] lamp turn on at the same time that the [RTS] switch is pressed. Similarly, the test is OK if the [CTS] turns off at the same time that the [RTS] is turned off.



## ○Signal Test of RS-485 in CN1

Select [CN1] and [RS-485] in [Communication Port] by pressing each switch.

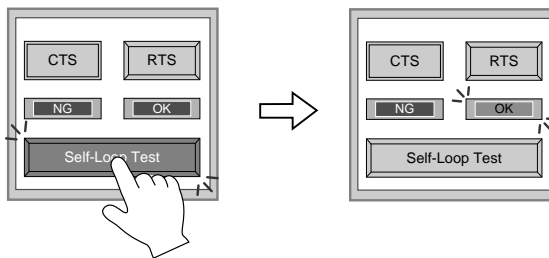


## ●Loop-back Test

Check the signals, [SD] and [RD].

① Jump each pin, 12 and 24, 13 and 25 of CN1.

② The test is OK, if the [OK] lamp turns on when the [Self-Loop Test] switch is pressed.



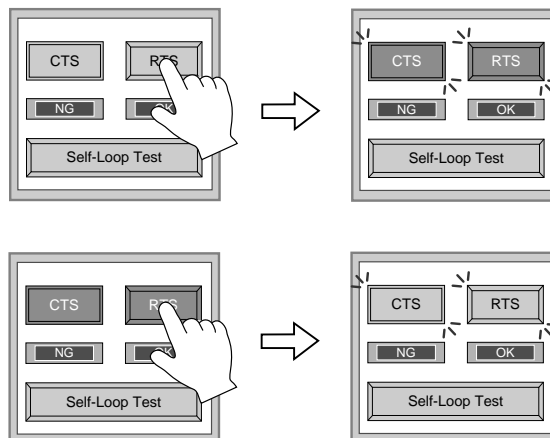
**\*If the [NG] lamp turns on when the same switch as above is pressed, ask the advice of your distributor.**

## ●Test of CTS/RTS

Check the signals, [CTS] and [RTS].

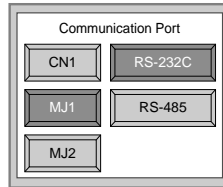
① Jump each pin, 14(+RTS) and 19(+CTS), 17(-RTS) and 18(-CTS) of CN1.

② The test is OK if the [CTS] lamp and the [RTS] lamp turn on at the same time that the [RTS] switch is pressed. Similarly, the test is OK if the [CTS] turns off at the same time that the [RTS] is turned off.



## ○Signal Test of RS-232C in MJ1 and MJ2

Select [MJ1] (or [MJ2]) and [RS-232C] in [Communication Port] by pressing each switch.

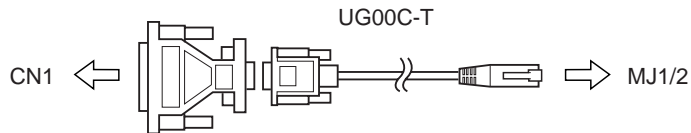


## ●Loop-back Test

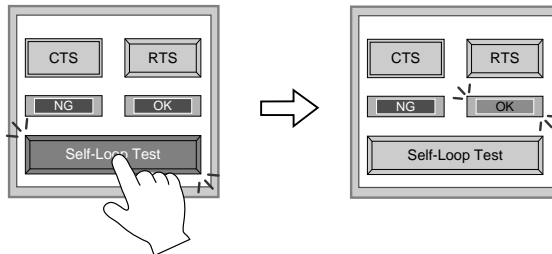
Check the signals, [SD] and [RD].

Execute the test by connecting the data transfer cable (UG00C-T) to CN1.

1. Set the adaptor, ADP25-9, which is attached to UG00C-T, to UG00C-T. And connect the modular jack side of UG00C-T to MJ1 (or MJ2), ADP25-9 side of UG00C-T to CN1.



2. The test is OK, if the [OK] lamp turns on when the [Self-Loop Test] switch is pressed.



**\* If the [NG] lamp turns on when the same switch as above is pressed, ask the advice of your distributor.**

## ○Signal Test of RS-485 in MJ1 and MJ2

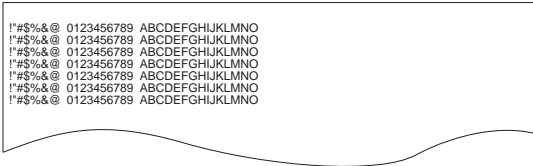
When you execute the signal test of RS-485 in MJ1 and MJ2, ask the advice of your distributor.



## B. Printer Check

Check the signal of printer.

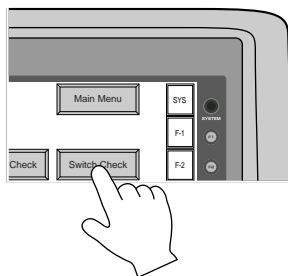
The test is OK if the test printout is executed satisfactorily when connecting POD to a printer and pressing this [Printer Check] switch.



## C. Switch Check

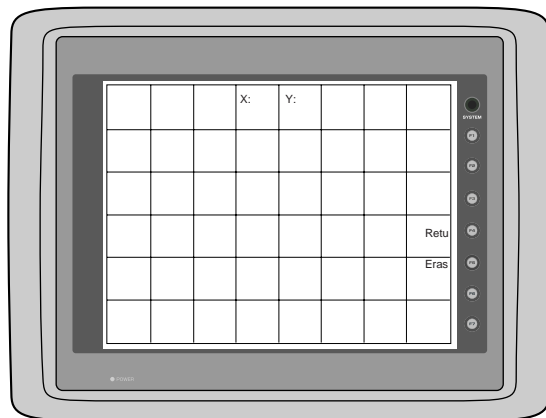
Check the reaction of the touch switches on the POD panel.

When the [Switch Check] switch is pressed, the following screen is displayed.



Press the [Switch Check] switch.

The switch check screen is displayed.

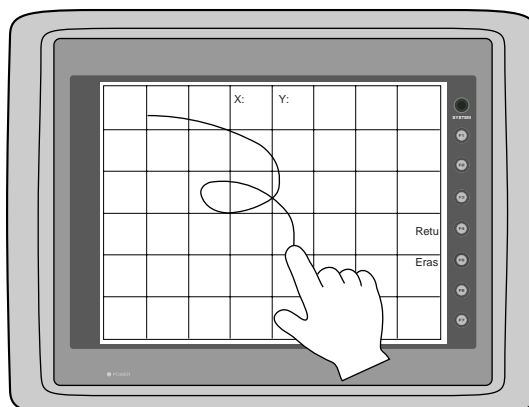


Confirm that the color of the pressed area changes into white.

The white color means that the switch reacts to the touch normally.

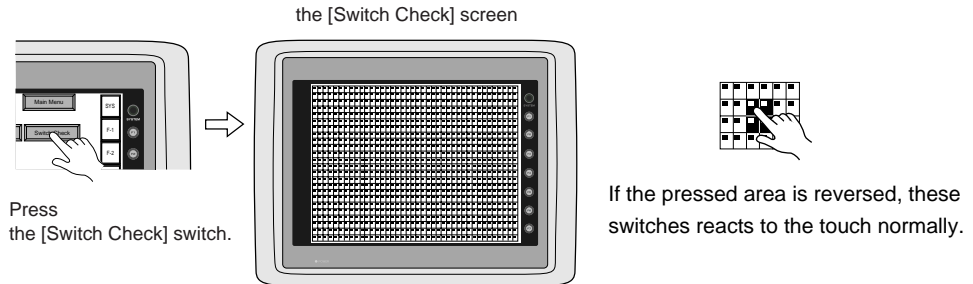
Pressing the [F4] switch leads to the previous [I/O Test] screen.

Pressing the [F5] switch deletes all the white dots.



\* In case of matrix type

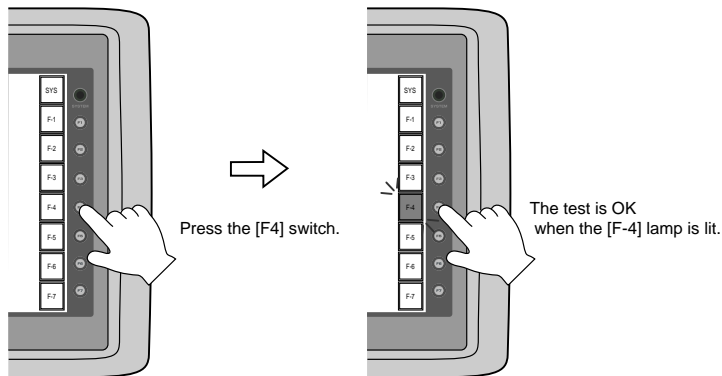
When pressing the [Switch Check] switch, the following screen which is divided by a minimum size of switch is displayed. Confirm that the color of the pressed switch changes into white. Pressing the corner right below leads to the previous [I/O Test] screen.



### D. Test of SYSTEM & Function Switches

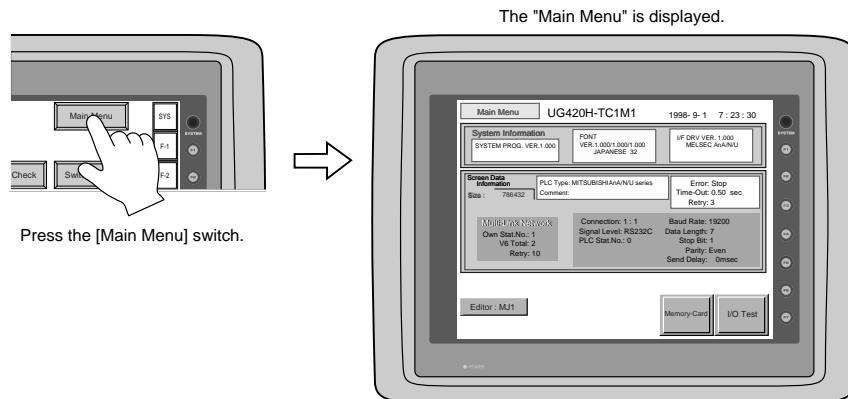
Check the eight switches (six switches for UG221 and UG220) placed vertically on the right side of the POD panel.

The test is OK if the lamps on the screen turn on when each switch is pressed.



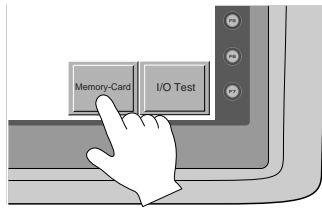
### E. Main Menu

Pressing this [Main Menu] switch leads to the previous [Main Menu].



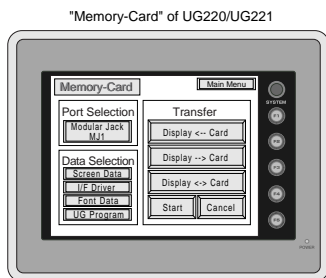
## Memory-Card

When the [Memory-Card] switch on the "Main Menu" is pressed, the following "Memory-Card" is displayed. This screen is to transfer the screen data between POD and a memory-card.

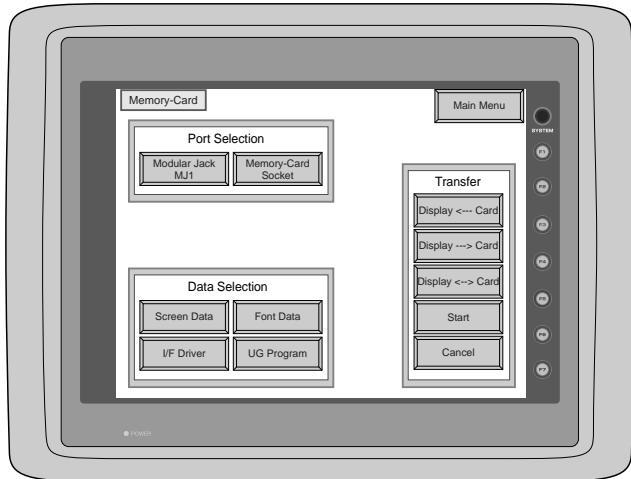


Press the [Memory-Card] switch.

The "Memory-Card" screen is displayed.



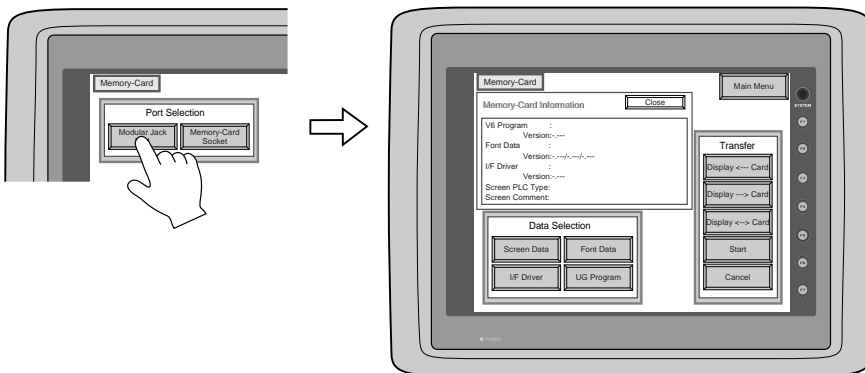
"Memory-Card" of UG220/UG221



### ○ Procedure of Data Transferring

#### 1) Port Selection

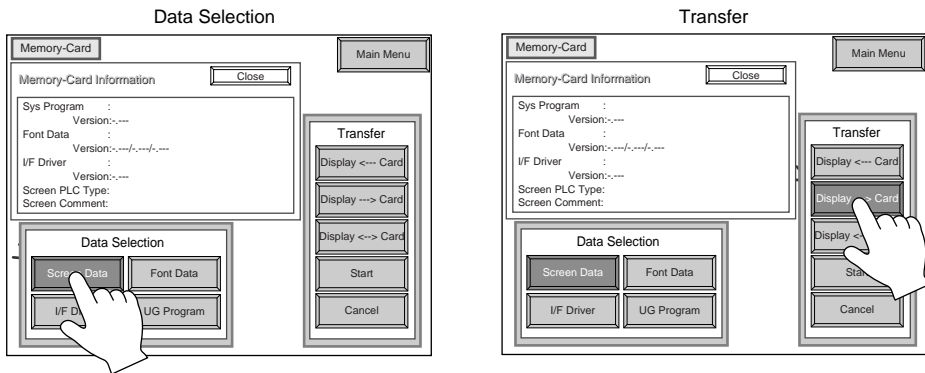
Select the [Modular Jack MJ1] switch (or [Modular Jack MJ2]) in case of using a modular jack. Select the [Memory-Card Socket] switch in case of using a memory-card interface. When each switch is pressed, the "Memory-Card Information" window is displayed. In case of UG221 and UG220, pressing the "Close" switch leads to the original screen after checking the memory card information.



**In case of selecting [Memory Card] from [Modular Jack 2] in the [Others] dialog of UG00S-CW, it is possible to select the [Modular Jack 2] switch in the [Port Selection] menu of the [Memory-Card] screen on POD.**

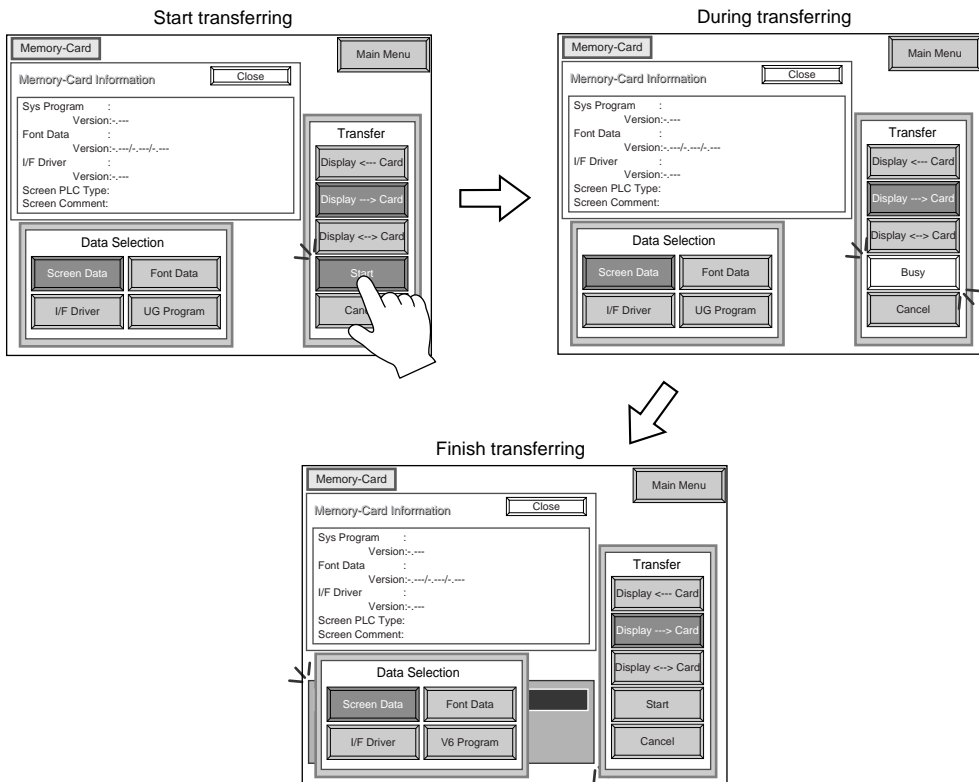
## 2) Data Selection, Transfer

Pressing each switch leads to selection of the target for data transferring.  
(Possible to select multiple items.)



## 3) Start

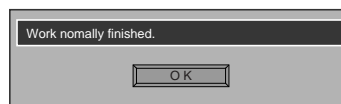
When the [Start] switch is pressed, the data transferring starts. During data transfer, the character, "Start", on the switch changes into the character, "Busy", and the switch starts blinking.  
After transferring data, the following message is displayed. Press the [OK] switch.



**\* When transfer the data from POD to memorycard via the card interface(= [Memory-Card Socket]) of POD, use SRAM type memory card. FLASH ROM type memory card is not used.**

○ Message Display in Data Transferring

If an error occurs during transferring data, the message display window shown on the right is displayed. The kinds and the contents of the messages are as shown below.



Message	Contents
Work normally finished.	The specified operation has been concluded normally.
UG00P-MR not connecting	UG00P-MR is not connecting when selecting a modular jack.
UG00P-MR Communication Error	A communication error occurred between POD and UG00P-MR when selecting a modular jack.
Memory-Card not setting	A memory card is not inserted. (Or in case of trying to write data into a memory card when inserting FLASH ROM type memory card)
Memory-Card Capacity over	Cannot write the data into a memory card because the data size in POD is larger than the capacity of a memory card.
Write Protect : ON	Cannot write data into a memory card because the write protect switch in a memory card is ON.
Writing Error occurred.	The error occurred while writing data into a memory card.
Selected data does not exist.	The data in the reading target does not exist.
POD type is different.	The specified type of the data in POD is different from the type of the memory card data.
Selected data can not be read.	The data in a memory card cannot be read.
Reading Error occurred.	The error occurred during writing data into a FLASH ROM of POD.
Data discrepant	There is some discrepancy in data, when comparing data between a memory card and POD.
Screen data on POD will be broken.	This message appears to inform the user that the data in POD will be broken by transferring the font data (the size which is larger than the present data) from a memory card to POD. (The [OK] switch continues the transferring. The [Cancel] switch stops transferring.)
Undefined Error occurred.	The error occurred due to some cause other than the above mentioned.

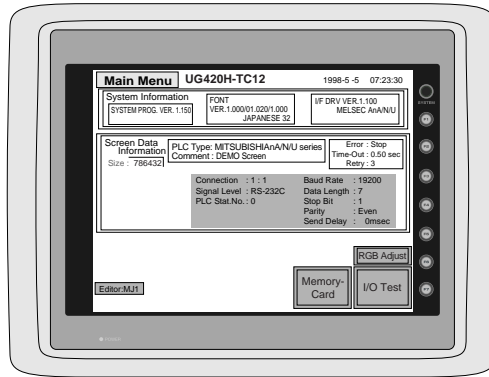
## Screen Adjustment [Option: UG420H-T(RGB input adapted product) only]

Depending on what type of personal computer is used, RGB output frequency for Windows screen, BIOS screen or DOS screen changes. Therefore, adjustment is necessary.

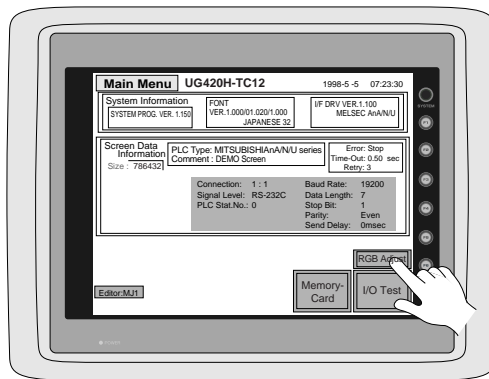
When there is only one type of output frequency, select either "Setting 1" or "Setting 2".

How to adjust

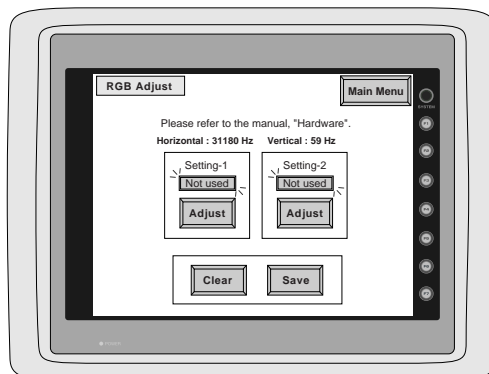
1. Display the local MAIN MENU screen.



2. With the [RGB Adjust] switch, display the [RGB Adjust] screen.

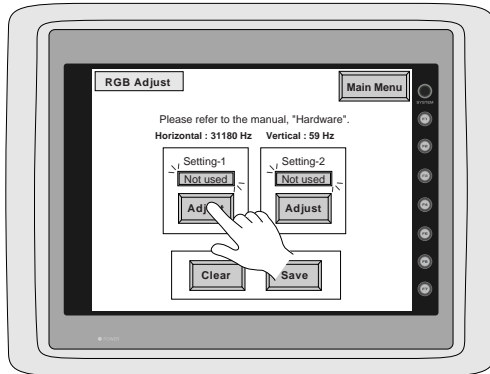


[RGB adjustment] screen



3. First, BIOS screen is adjusted.

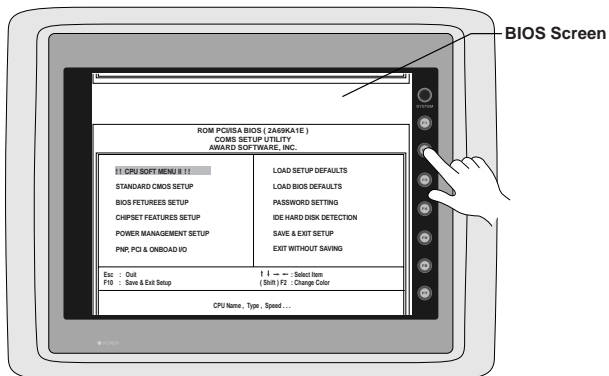
Press the [Adjust] switch in the [Setting 1] box to activate RGB display mode.



With the BIOS screen displayed, adjust with switches [F • 1] to [F • 6].

[SYSTEM]	End of adjustment
[F • 1]	Vertical: Screen is moved downward.
[F • 2]	Vertical: Screen is moved upward.
[F • 3]	Horizontal: Screen is move rightward.
[F • 4]	Horizontal: Screen is moved leftward.
[F • 5]	Increments dots by +1.
[F • 6]	Decrements dots by -1.

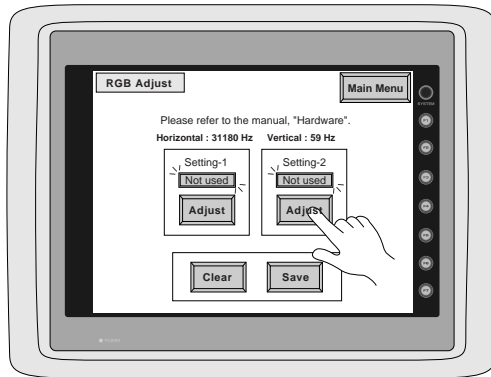
\* Adjustment of dots is made so that blurring is minimized.



When adjustment is completed, press the [SYSTEM] switch to return to the [RGB Adjust] screen.



4. Then the Windows screen is adjusted.  
Press the [Adjust] switch in the [Setting 2] box to activate RGB display mode.



With the Windows screen displayed, adjust with switches [F • 1] to [F • 6].

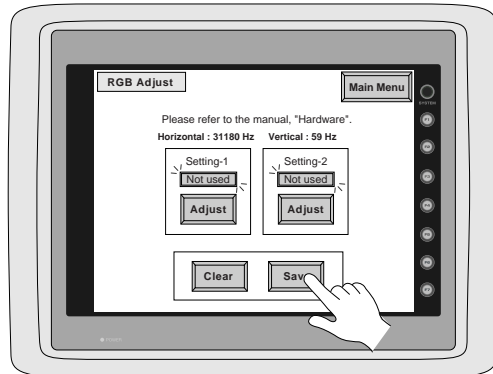


When adjustment is completed, press the [SYSTEM] switch to return to the [RGB Adjust] screen.





5. Press the [Save] switch to save the setting data. (The setting data is written in the flash ROM.)



6. By doing this, screen adjustment is completed.

### Notes on RGB input

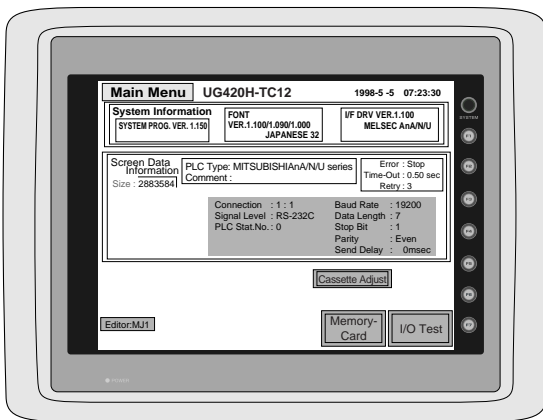
- When there is no RGB input (when the cable is not connected), the mode cannot be changed over to RGB display mode.
- When bit 12 of read area (n+1) is set to "1", the mode is changed over to RGB display mode the moment RGB input is restored (the moment the cable is connected).

## Setting for SRAM cassette

When the optional SRAM cassette (UG00P-SR, UG221P-SR) is installed in the POD main unit, it is possible to adjust the internal calendar of the SRAM cassette or to format the SRAM cassette.

- Adjusting the internal calendar of SRAM cassette (Main Menu)

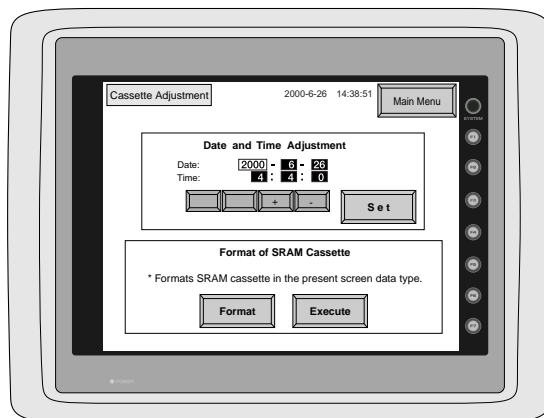
1) Activate the [Main Menu] screen.



Press the [Cassette Adjust] switch.

This switch is displayed when the SRAM cassette is installed for FONT VER. 1.100/1.090/1.000 or newer.

2) The [Cassette Adjust] screen is displayed.



3) Select the data to be changed with [←] or [→] switch, and change the data with [+] or [-] switch.

4) After adjusting date and time, press the [SET] switch.

5) To return to the [Main Menu] screen, press the [Main Menu] switch.

○ Formatting the SRAM cassette

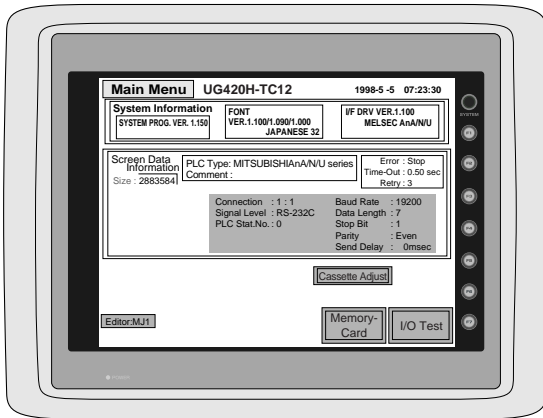
When you changed the setting of SRAM cassette area, be sure to format the SRAM cassette.

SRAM cassette can be formatted from the [Main Menu] screen.

If the format of the SRAM cassette does not coincide with the setting of screen data, the SRAM cassette cannot be used (error No. 163 occurs.)

● How to format the SRAM cassette

1) Activate the [Main Menu] screen.

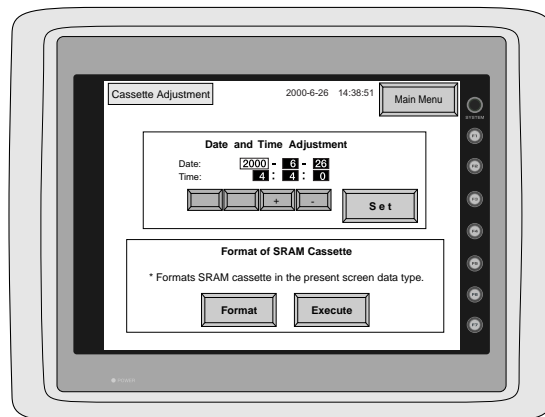


Press the [Cassette Adjust] switch. This switch is available for FONT VER. 1.100/1.090/1.000 or newer.

2) With the [Cassette Adjust] switch, display the [Cassette Adjust] screen.

3) Press the [Format] switch and then the [Execute] switch.

Then the cassette is formatted the same as the currently displayed screen data, and you return to the [Main Menu] screen.



# 18 Function Switches

## Type

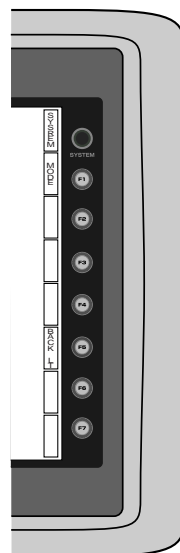
[SYSTEM], [F1], [F2], [F3], [F4], [F5], [F6], [F7]  
(UG221, UG220 : [SYSTEM], [F1] ~ [F5])

## the [SYSTEM] switch

By pressing this switch, the functions of the switches [F1] ~ [F7] are defined.

The type of the [SYSTEM] switch is alternate. When this switch is pressed once, the switch menu is displayed by the side of the function switches [F1] ~ [F5], and each function switch corresponds to an item on the displayed switch menu.

When the [SYSTEM] switch is pressed again, the switch menu which is displayed on the screen will disappear, and the functions of switches [F1] ~ [F7] are defined for the purpose of the user. The data of these function switches is allocated to the memory area of PLC.



## Function of [F1] ~ [F5] when the switch menu is displayed

- [F1] : Mode  
This switch changes the operation mode.  
Main Menu Mode → RUN Mode  
Run Mode → Main Menu Mode (possible to specify the changing time)
- [F2] : Contrast Adjustment (dark) ----- invalid in case of the TFT color type  
This switch adjusts the contrast of LCD. When the [F2] switch is pressed once, the LCD color becomes dark. If this switch is held down for 1 second, the LCD color changes rapidly into darkness.
- [F3] : Contrast Adjustment (intermediate) ----- invalid in case of the TFT color type  
This switch also adjusts the contrast of LCD. When the [F3] switch is pressed once, the LCD color becomes intermediate.
- [F4] : Contrast Adjustment (light) ----- invalid in case of the TFT color type  
This switch adjusts the contrast of LCD. When the [F4] switch is pressed once, the LCD color becomes light. If this switch is held down for 1 second, the LCD color changes rapidly into lightness.
- [F5] : Backlight  
This switch turns the backlight of POD on or off.  
If you want to use this function, you have to set [Backlight] of the [Others] dialog in [System Setting].  
The following list shows the backlight function specified in the editing software.

Backlight	Function Switch (F5)
ON	Ignored.
Auto 1 Auto 2	The following actions are added to the regular functions of these items : Even if the time does not reach the setting time, the backlight will turn off if the [F5] switch is pressed (provided that bit 11(Backlight) of Read Area n+1 is OFF level). (Refer to the Users Manual<Function>(FEH376).)
Manual Manual2	If you select [Manual], the backlight will turn on or off only when this switch is pressed. Also, you can specify the item, [Backlight Power ON Time Control]. When you turn the power supply of POD on ... [ON] : the backlight is lit. [OFF] : the backlight is off.



# Connection to Link Units

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1. FUJI PLC • 1
2. FUJI PLC • 2
3. FUJI PLC • 3
4. FUJI PLC • 4
5. FUJI PLC • 5
6. FUJI PLC • 6
7. MITSUBISHI PLC • 1
8. MITSUBISHI PLC • 2
9. MITSUBISHI PLC • 3
10. MITSUBISHI PLC • 4
11. MITSUBISHI PLC • 5
12. MITSUBISHI PLC • 6
13. OMRON PLC • 1
14. OMRON PLC • 2
15. Sharp PLC • 1
16. Sharp PLC • 2
17. HITACHI PLC • 1
18. HITACHI PLC • 2
19. Matsushita PLC
20. YOKOGAWA PLC • 1
21. YOKOGAWA PLC • 2
22. YASKAWA PLC • 1
23. YASKAWA PLC • 2
24. TOYOPUC PLC
25. Koyo PLC
26. Allen-Bradley PLC • 1
27. Allen-Bradley PLC • 2
28. GE Fanuc PLC • 1
29. GE Fanuc PLC • 2
30. TOSHIBA PLC
31. TOSHIBA MACHINE PLC
32. SIEMENS PLC • 1
33. SIEMENS PLC • 2
34. SIEMENS PLC • 3
35. SIEMENS PLC • 4
36. SIEMENS PLC • 5
37. SIEMENS PLC • 6
38. Shinko PLC
39. SAMSUNG PLC
40. KEYENCE PLC • 1
41. KEYENCE PLC • 2
42. KEYENCE PLC • 3
43. LG PLC
44. FANUC PLC
45. FATEK PLC
46. IDEC PLC
47. MODICON PLC
48. YAMATAKE PLC
49. TAIAN PLC
50. SAIA PLC
51. MOELLER PLC
52. Telemecanique PLC
53. Automationdirect PLC
54. VIGOR PLC
55. DELTA PLC
56. BALDOR PLC
57. TOYO DENKI PLC

# 1 FUJI PLC • 1

(MICREX-F series)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
MICREX-F Series	F55	NV1L-RS2	RS-232C [Wiring Diagram 1]
	F70, F70S	NC1L-RS2	RS-232C [Wiring Diagram 1]
		NC1L-RS4	RS-485 [Wiring Diagram 2]
F80H, F120H, F120S F140S, F15xS	FFU120B FFK120A	RS-232C [Wiring Diagram 1] RS-485 [Wiring Diagram 2]	

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	0	0
Parity	Even	Even
Transmission Control Mode	RS-232C	1 (Asynchronous non-protocol by command)(fixed)
	RS-422	3 (Asynchronous non-protocol by command)(fixed)
Transmission Code	Data Length	7 (ASCII)
	Stop Bit	1
Terminal Resistor at Receiver	Provided for RS-485	_____

## Switch Setting

MODE Switch: RS-232C: 1    RS-485: 3

RS-485 Port Setting SW: "0" for both x10, x1

RS-485 Terminal Resistor: ON

Character Switches

No	Setting	Contents
8	ON	Switch setting
7	ON	Parity provided
6	ON	Even
5	ON	7 bit
4	ON	1 bit
3	ON	Same as POD (normally 19200bps)
2	ON	
1	OFF	

## Available Memory

Memory	TYPE	Remarks
M (auxiliary relay)	0	WM as word device
K (keep relay)	1	WK as word device
B (input/output relay)	2	WB as word device
L (link relay)	9	WL as word device
F (special relay)	10	WF as word device (Read only)
TS (timer/set value)	11	* 1
TR (timer/current value)	12	* 1
W9 (timer/current value 0.1)	13	* 1
CS (counter/set value)	14	* 1
CR (counter/current value)	15	* 1
BD (data memory)	16	* 1
WS (step control relay)	17	* 2
Wn (file memory)	18	* 3

- \*1 ● For the items for which double-word numeric type can be set (e.g. numeric data display, graph, etc.), specify “double word” from the editor.  
For the items for which double-word cannot be specified (e.g. read/write area, buffering area, etc.), only lower 16 bits become the object of processing, and upper 16 bits are ignored.
- \*2 ● Step relay
  - S area is the memory for controlling steps, in which numbers for the location of steps are stored. For sequence instructions and word operation instructions from PLC program, S area for 100 words is prepared, supposing the data structure of directly readable/writable unsigned 2-digit BCD (8-bit).  
Step number corresponds to individual value of 2-digit BCD. It does not correspond to bit, unlike in B, M, K or other areas. In using step numbers, you can imagine as if 100 pieces of SC coil (00 to 99) exist in one word.
  - For above explained reasons, with the POD, S area cannot be specified for switch memory or lamp memory. To access the S area, use word operation switch. (Specify the step number to be turned ON by the operational expression for word operation switch (transfer).)  
[Example]  
To set such that S00.20 turns ON when the switch on the screen is pressed,  
↓  
 Operation of switch: Set to word operation.  
 Operation expression: Set to “transfer”.  
 Source: Set constant “20 (h)”.  
 Destination: Set “WS00”.
- Do not specify SC area for data display or as the control area of various modes, as doing so may result in abnormal operation. However, when 2-digit or smaller numeric values are displayed in data display mode, operation is performed normally.

- \*3● When you access the file memory from the POD, be sure to define FILE instruction on the PLC side. File type must be SI (16-bit length). Communication with file memories that are defined by BD, DI, etc. cannot correctly be performed.

To specify a memory from the editor, input [File No.] + [ : ] (colon) + [address] in this order.

[Example] To specify W30.2

<E.g.> W30 : 00002

**Set the memory to the extent of the memory range of each PLC model.**

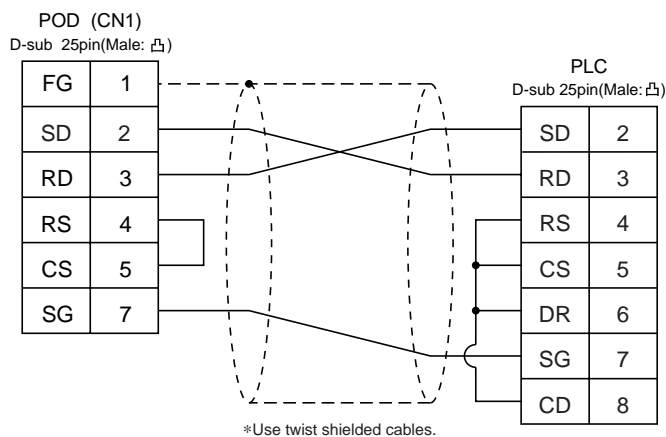
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

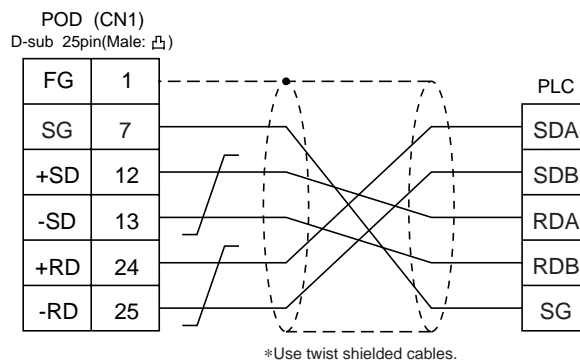
### RS-232C

#### Wiring Diagram 1



### RS-485

#### Wiring Diagram 2





# 2 FUJI PLC • 2

(MICREX-SX series)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
MICREX-SX Series	SPH Series (NP1PS- x )	NP1L-RS1	RS-232C [Wiring Diagram 1] RS-485 [Wiring Diagram 2]
		NP1L-RS2	RS-232C [Wiring Diagram 1]
		NP1L-RS4	RS-485 [Wiring Diagram 2]

\* Only one unit of POD can be connected to one link unit, except for "Multi-link 2" connection.

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	38400bps (fixed)	
Transmission Control Mode	RS-232C	Mode 1
	RS-422	Mode 2
Parity	Even (fixed)	
Data Length	8 (fixed)	
Stop Bit	1 (fixed)	

\* No function block (FB) settings are required on the PLC.

## Available Memory

Standard Memory	TYPE	Remarks
I (input memory)	-	
O (output memory)	-	
M (standard memory)	2	
RM (retain memory)	4	
SM (system memory)	8	

To specify a memory, basically a variable name is set. For the variable name linkage function, refer to the User's Manual <Variable Name Cooperation Function> (FEH363).

**Set the memory to the extent of the memory range of each PLC model.**

**Use TYPE number to assign indirect memory for macro programs.**

**To set an indirect memory using a macro, specify the CPU No. using the extended code.**

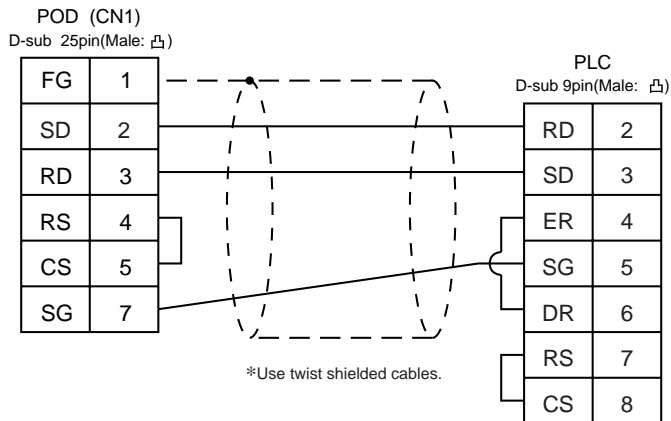
**Indirect memory setting by macro is not available for input (I) or output (Q) memory.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

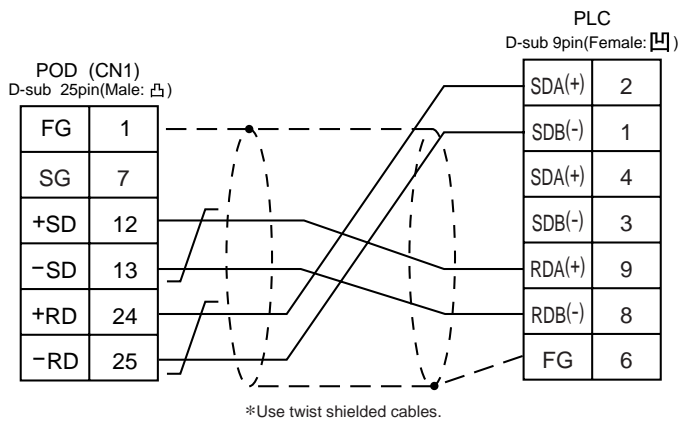
### RS-232C

#### Wiring Diagram 1



### RS-485

#### Wiring Diagram 2



- \* When signals are easily influenced by noise, attach a ferrite core (TDK ZCAT2032-0930 is recommended) to both the ends of the cable.

# 3 FUJI PLC • 3

(MICREX-SX CPU Port)

## Available PLC

Select PLC Type	PLC	Connected Cable
MICREX-SX CPU	MICREX-SX Loader Port	UG00C-Sx

\* When the CPU is updated, or the specifications are changed, there is some possibility that POD cannot be connected to the PLC.

## Communication Setting

Connect to the CPU port. The communication parameter setting of POD is done automatically.

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		38400bps	38400bps
Transmission Control Mode		RS-422	RS-422
Parity		Even	Even
Transmission Code	Data Length	8	8
	Stop Bit	1	1

## Available Memory

Standard Memory	TYPE	Remarks
I (input memory)	-	
O (output memory)	-	
M (standard memory)	2	
RM (retain memory)	4	
SM (system memory)	8	

To specify a memory, basically a variable name is set. For the variable name linkage function, refer to the User's Manual <Variable Name Cooperation Function> (FEH363).

**Set the memory to the extent of the memory range of each PLC model.**

**Use TYPE number to assign indirect memory for macro programs.**

**To set an indirect memory using a macro, specify the CPU No. using the extended code.**

**Indirect memory setting by macro is not available for input (I) or output (Q) memory.**

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### **Notes on the direct connection with the CPU port of SX series CPU**

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- Fully consider the influence of noise on the communication cable routed between the POD and MICREX-SX. (The level of noise resistance when a ferrite core is attached to the cable: 1,000 V)
- Fully consider the influence of noise on the cable when routing it on the board and in the unit. Route the cable apart from the power lines.
- The longer the communication cable, the more it is influenced by noise. Carefully route the cable. We have 2-m, 3-m, and 5-m communication cables (UG00C-S) dedicated for connection to PLCs.

### **Wiring**

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Use an UG00C-S cable dedicated for communication to the PLC.

# 4 FUJI PLC • 4

(FLEX-PC series)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
*1 FLEX-PC Series	NS Series, NS-T	NS-RS1	RS-232C [Wiring Diagram 1] RS-485 [Wiring Diagram 2]
	NJ Series, NJ-T	NJ-RS2	RS-232C [Wiring Diagram 1]
		NJ-RS4	RS-485 [Wiring Diagram 2]
	NB Series	NB-RS1	RS-232C [Wiring Diagram 1] RS-485 [Wiring Diagram 2]

\*1 When FLEX-PC TOYOTA version is used, select "FLEX-PC(T)" in [PLC Type].

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	0	0
Parity	Even	Even
Transmission Control Mode	RS-232C	1 (Asynchronous non-protocol by command)(fixed)
	RS-422	3 (Asynchronous non-protocol by command)(fixed)
Transmission Code	Data Length	7 (ASCII)
	Stop Bit	1
Terminal Resistor at Receiver	Provided for RS-485	_____

## Switch Setting

MODE Switch: RS-232C: 1    RS-485: 3

RS-485 Port Setting SW: "0" for both × 10, × 1

RS-485 Terminal Resistor: ON

Character Switches

No	Setting	Contents
8	ON	Switch setting
7	ON	Parity provided
6	ON	Even
5	ON	7 bit
4	ON	1 bit
3	ON	Same as POD (normally 19200bps)
2	ON	
1	OFF	

## Available Memory

Standard Memory	TOYOTA Ver.	TYPE	Remarks
D (data register)	D	0	
W (link register)	R	1	
M (internal relay)	M	2	WM as word device
L (latch relay)	K	3	WL(WK) as word device
X (input relay)	X	4	WX as word device
Y (output relay)	Y	5	WY as word device
R (file register)	W	6	
TN (timer/current value)	TN	7	*
CN (counter/current value)	CN	8	*
T (timer/contact)	T	9	
C (counter/contact)	C	10	
WS (step relay)	-	11	

\* The current values of the timer and counter are indicated with TN/CN for purposes of convenience in the table above. (The actual value is T/C.)

**Set the memory to the extent of the memory range of each PLC model.**

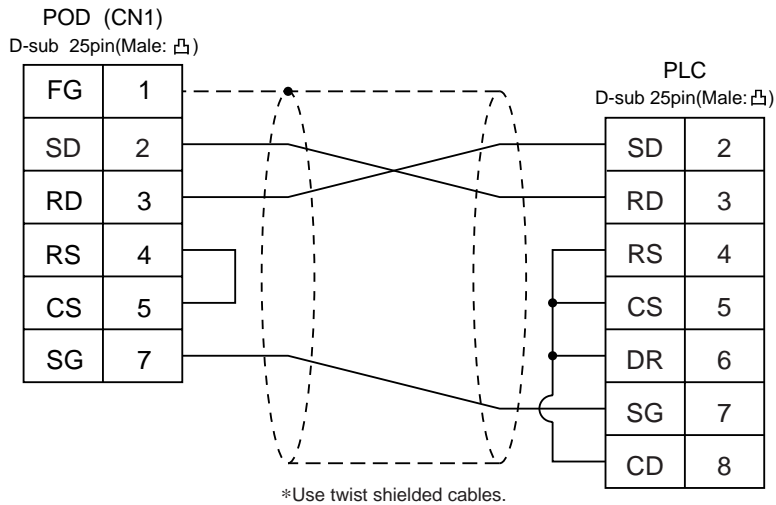
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

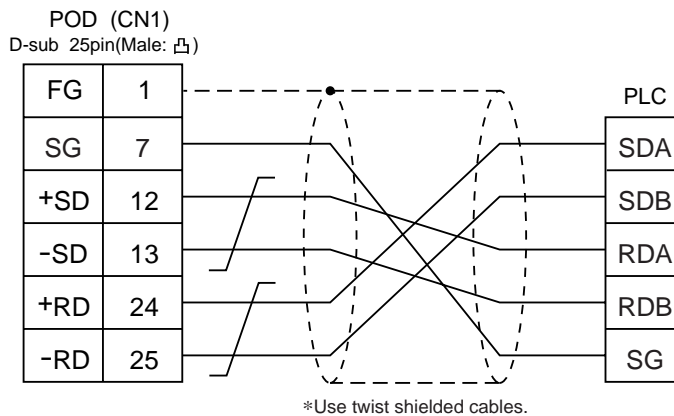
### RS-232C

#### Wiring Diagram 1



### RS-485

#### Wiring Diagram 2



# 5 FUJI PLC • 5

(FLEX-PC CPU port)

## Available PLC

Select PLC Type	PLC	Wiring Diagram
FLEX-PC CPU <sup>*1</sup>	FLEX-PC Loader Port	RS-422 [UG200C-N]
	NJ-B16 RS-232C Port	RS-232C [Wiring Diagram 1]

- \*1 When FLEX-PC CPU TOYOTA version is used, select "FLEX-PC CPU(T)" in [PLC Type]. When the CPU is updated, or the specifications are changed, there is some possibility that POD cannot be connected to the PLC.

## Communication Setting

Connect to the CPU port. The communication parameter setting of POD is done automatically.

Item	Setting of PLC (All fixed)	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Transmission Control Mode	Loader Port	RS-422
	NJ-B16RS-232C Port	RS-232C
Parity	Aneven	Aneven
Transmission Code	Data Length	8
	Stop Bit	1

When you use the RS-232C port of NJ-CPU-B16, be sure to set above items using the [Comm. Parameter ] dialog on the PLC side.

## Available Memory

Standard Memory	TOYOTA Ver.	TYPE	Remarks
D (data register)	D	0	
W (link register)	R	1	
M (internal relay)	M	2	WM as word device
L (latch relay)	K	3	WL(WK) as word device
X (input relay)	X	4	WX as word device
Y (output relay)	Y	5	WY as word device
R (file register)	W	6	
TN (timer/current value)	TN	7	*
CN (counter/current value)	CN	8	*
T (timer/contact)	T	9	
C (counter/contact)	C	10	
WS (step relay)	-	11	

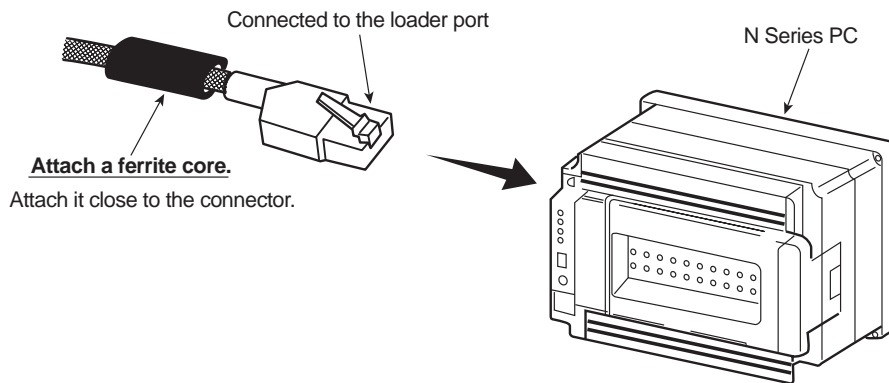
- \* The current values of the timer and counter are indicated with TN/CN for purposes of convenience in the table above. (The actual value is T/C.)

**Set the memory to the extent of the memory range of each PLC model.**  
**Use TYPE number to assign indirect memory for macro programs.**



## Wiring

- Fully consider the influence of noise on the communication cable routed between the POD and FLEX-PC. (The level of noise resistance when a ferrite core is attached to the cable: 1,000 V)
- Fully consider the influence of noise on the cable when routing it on the board and in the unit. Route the cable apart from the power lines.
- The longer the communication cable, the more it is influenced by noise. Carefully route the cable. When you create the cable, attach a ferrite core to reduce the influence of noise.



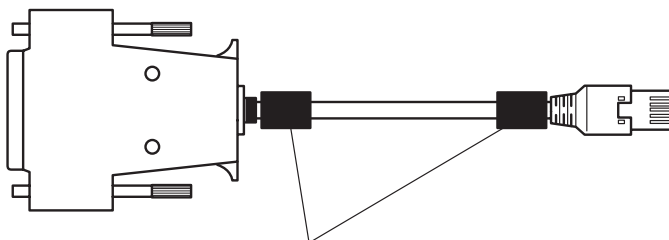
For a long distance communication, it is recommended to use link units in consideration of the noise influence.

## Dedicated Cable

Dedicated cables for direct connection with the N Series loader port is available. The table on the right shows the types of dedicated cables available.

Type	Details
UG200C-N02	For direct connection with loader port : 2 m
UG200C-N03	For direct connection with loader port : 3 m
UG200C-N05	For direct connection with loader port : 5 m

Ferrite cores are already attached to all the dedicated cables.



Two ferrite core are respectively attached to the POD end and PLC end.

Maker : TDK

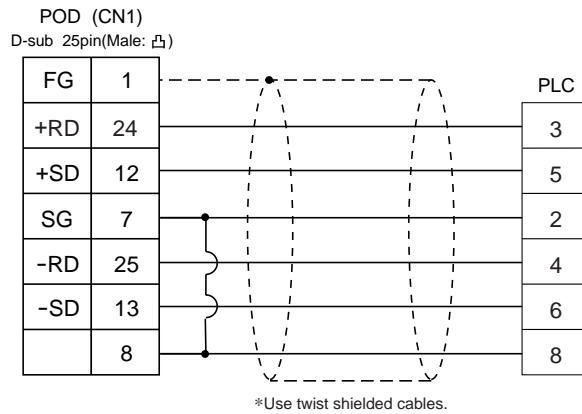
Type : ZCAT0930

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

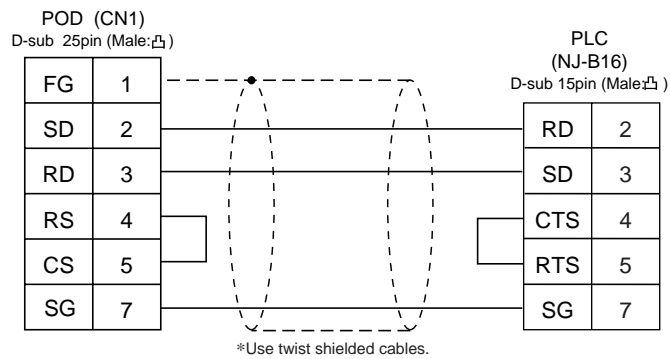
### RS-422

#### Wiring Diagram 1 ( connection of the UG200C-N )



### RS-232C

#### Wiring Diagram 2



# 6

## FUJI PLC • 6

(TOYOTA version NJ Computer Link)

### Available PLC

Select PLC Type	PLC	Wiring Diagram
FLEX-PC COM	Computer link of FLEX-PC NJ-JM	RS-422 [Wiring Diagram 1]

Connect to the terminal block of the NJ-JM computer link.

For further information, refer to the PLC manual.

### Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps	19200bps
Port		0 *1	0 *1
Parity		Even	Even
Transmission Code	Data Length	7	7
	Stop Bit	1	1

\*1 The station No. other than zero (0) is invalid for communication.

### PLC Setting

It is necessary to set the computer link parameters in the file register on the PLC.

For the communication parameters above, set "0026h" into W0000 in the file register to define the OPDF command.

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
R (link register)	1	
M (internal relay)	2	WM as word device
K (latch relay)	3	WK as word device
X (input relay)	4	WX as word device
Y (output relay)	5	WY as word device
W (file register)	6	
TN (timer/current value)	7	Read only *
CN (counter/current value)	8	Read only *
T (timer/contact)	9	
C (counter/contact)	10	
Z (special register)	12	
V (special relay)	13	WV as word device

\* The current values of the timer and counter are indicated with TN/CN for purposes of convenience in the table above. (The actual value is T/C.)

**Set the memory to the extent of the memory range of each PLC model.**

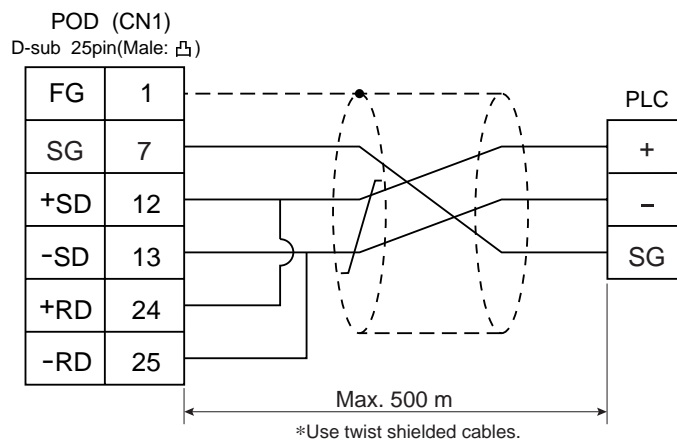
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-422

#### Wiring Diagram 1



\* Recommended cable : O-VCTF-SS, 2C × 0.75 mm<sup>2</sup>, made by Chyugoku Densen

# 7 MITSUBISHI PLC • 1

(A/Q series link unit)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
A series link	A2A, A3A	AJ71C24-S6 AJ71C24-S8 AJ71UC24	RS-232C [Wiring Diagram 2]
	A2U, A3U, A4U	AJ71UC24	
	A1, A2, A3 A1N, A2N, A3N A3H, A3M, A73	AJ71C24 AJ71C24-S3 AJ71C24-S6 AJ71C24-S8 AJ71UC24	RS-422 [Wiring Diagram 3]
	A0J2, A0J2H	A0J2C214-S1	
	A2US	A1SJ71UC24-R2	RS-232C [Wiring Diagram 1]
		A1SJ71UC24-R4	RS-422 [Wiring Diagram 3]
		A1SJ71UC24-PRF	RS-232C [Wiring Diagram 1]
	A1S, A1SJ, A2S	A1SJ71C24-R2	RS-232C [Wiring Diagram 1]
		A1SJ71C24-R4	RS-422 [Wiring Diagram 3]
		A1SJ71C24-PRF	RS-232C [Wiring Diagram 1]
A2CCPUC24	CPU built-in port	RS-232C [Wiring Diagram 1]	
QnH(A mode)	A1SJ71UC24-R2 A1SJ71UC24-R4	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]	
QnA series link	Q2A, Q3A, Q4A Q2ASx	AJ71QC24N	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 3]
		AJ71QC24	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 3]
		A1SJ71QC24	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]
		AJ71QC24-R4(CH1)	RS-422 [Wiring Diagram 4]
		AJ71QC24-R4(CH2)	RS-422 [Wiring Diagram 3]
QnH(Q) series link	QnH(Q mode)	QJ71C24	RS-232C [Wiring Diagram 1]
	Q00, Q01, Q00J		RS-422 [Wiring Diagram 3]
	Q00, Q01	Tool Port <sup>**1</sup>	RS-232C [UG00C-Q] (refer to P2-27)

\*1 When connecting POD to the tool port of Q00 or Q01 CPU, refer to page 2-27.  
About the ladder transfer function, refer to Appendix.

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

### ◆A series link unit

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps	19200bps
Port		0 for both STATION x10 and x1	0
Parity		Even	Even
Transmission Control Mode	RS-232C	MODE1	Trans. Mode 1
	RS-422	MODE5	Trans. Mode 1
Transmission Code	Data Length	7 (ASCII)	7
	Stop Bit	1	1
Sumcheck		Provided (fixed)	_____
Write while running		Available (fixed)	_____
Terminal Resistor at Sender		Provided (fixed)	_____
Terminal Resistor at Receiver		Provided (fixed)	_____

\*1 Mode 1: without CR/LF, Mode 4: with CR/LF

If [Trans. Mode 4] is selected from [Trans. Mode] in [Comm. Parameter] of the panel editor, specify [MODE4] in case of RS-232C, or select [MODE8] in case of RS-422.

### ◆Q series link unit

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps	19200bps
Port		0 for both STATION X 10 and X1	0
Parity		Even	Even
Transmission Control Mode	RS-232C	When QnA series link is connected: MODE5 (Binary Mode) (fixed). When QnH(Q) series link is connected: MC Protocol Type 5 (fixed).	_____
	RS-422		
Transmission Code	Data Length	8 (fixed)	_____
	Stop Bit	1	1
Sumcheck		Provided (fixed)	_____
Write while running		Available (fixed)	_____

### ◆Q00/Q01 CPU

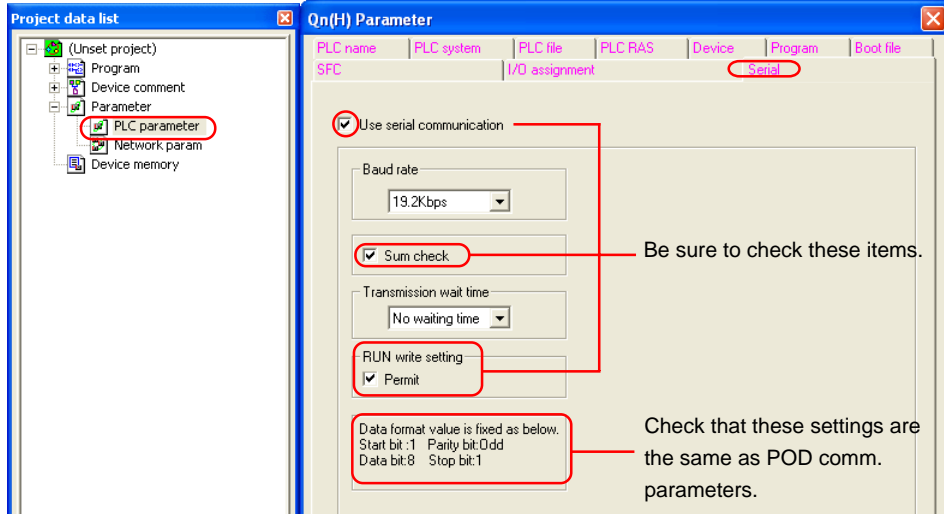
When connecting the POD to the tool port of Q00 or Q01 CPU, it is necessary to specify [serial communication] setting on PLC parameter. Note on the following setting.

#### UG00S-CW

Select [QnH(Q) series link] in [PLC type].

#### GX Developer (Application software for programming MITSUBISHI PLCs)

1. Double click [PLC parameter].
2. Click the [Serial] tab menu of the [Qn(H) Parameter] dialog.
3. Check [Use serial communication] to specify communication parameters such as Baud rate, Sum check, etc.

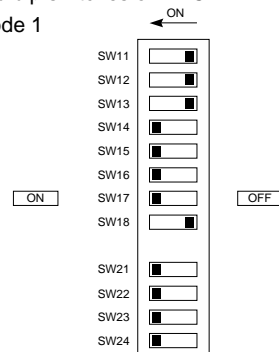
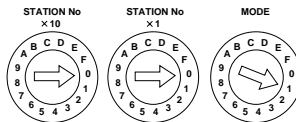


### Switch Setting

The following is an example to show the settings for both rotary dip switches and dip switches on PLC.

<E.g.1> Signal Level: RS-232C, Baud Rate: 19200bps, Trans. Mode: Trans. Mode 1

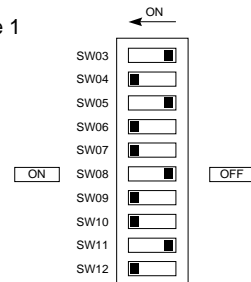
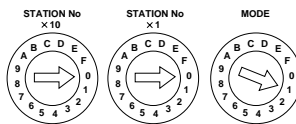
#### AJ71UC24



<E.g. 2> Signal Level: RS-232C, Baud Rate: 19200bps, Trans. Mode: Trans. Mode 1

#### A1SJ71C24-R2

#### A1SJ71UC24-R2

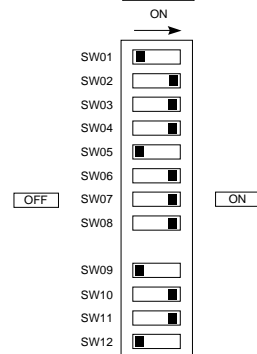
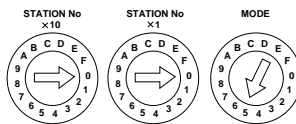


<E.g. 3> Baud Rate: 19200bps

#### AJ71QC24

#### A1SJ71QC24

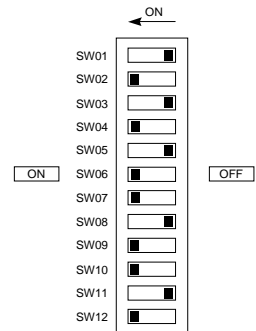
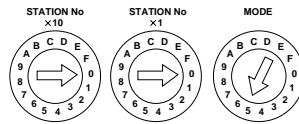
#### AJ71QC24N



<E.g. 4> Signal Level: RS-422, Baud Rate: 19200bps, Trans. Mode: Trans. Mode 1

**A1SJ71UC24-R4**

**A1SJ71C24-R4**



## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
W (link register)	1	
R (file register)	2	
TN (timer/current value)	3	
CN (counter/current value)	4	
SPU (special unit)	5	Unit No. *1
M (internal relay)	6	
L (latch relay)	7	
B (link relay)	8	
X (input relay)	9	
Y (output relay)	10	
TS (timer/contact)	11	
TC (timer/coil)	12	
CS (counter/contact)	13	
CC (counter/coil)	14	
H (link buffer)	15	
SD (special register)	16	QnA, QnH(Q) series only
SM (special relay)	17	QnA, QnH(Q) series only
SB (special link relay)	18	QnA, QnH(Q) series only
SW (special link register)	19	QnA, QnH(Q) series only
ZR (file register [continuous access])	20	QnA, QnH(Q) series only

- \*1 The unit No. is required in addition to the memory type and the address.  
Convert a byte address into a word address to enter the data if the memory device of link unit is byte address.

**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

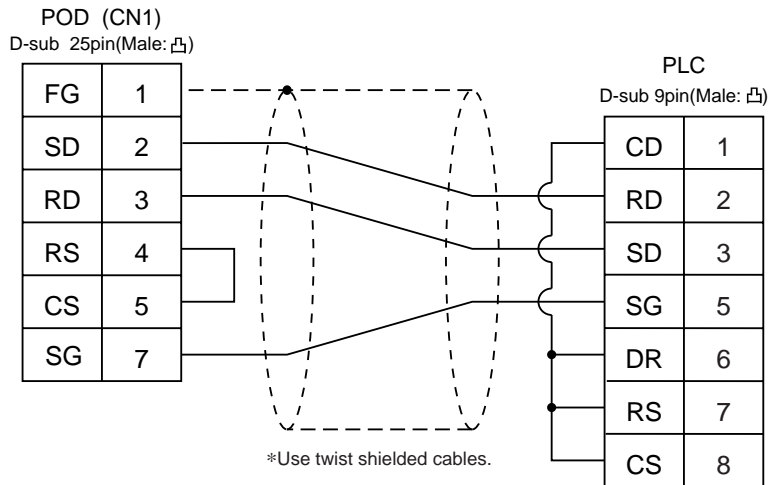


## Wiring

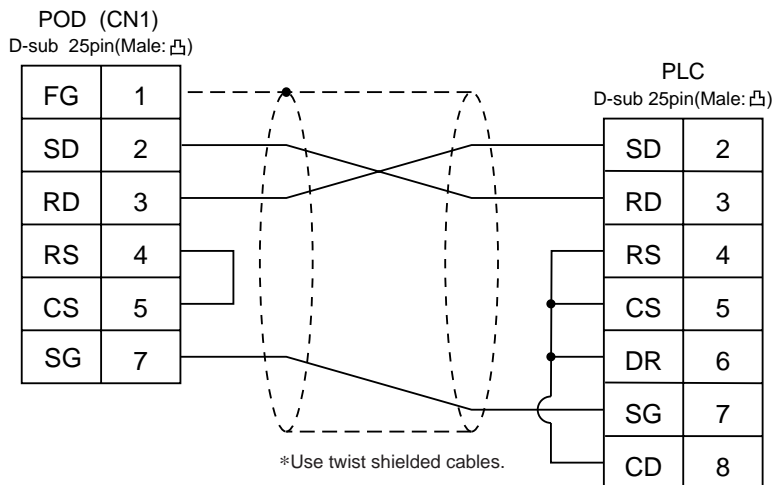
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1

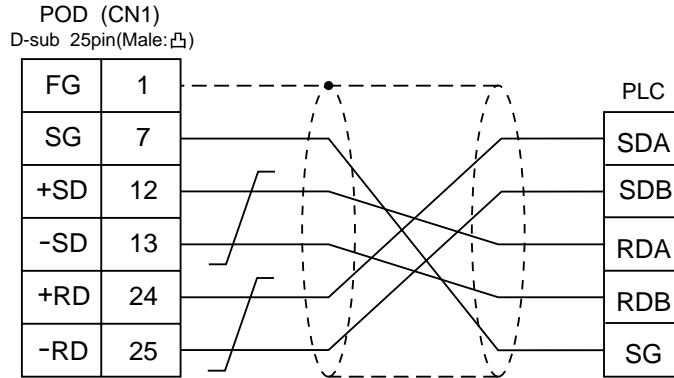


#### Wiring Diagram 2



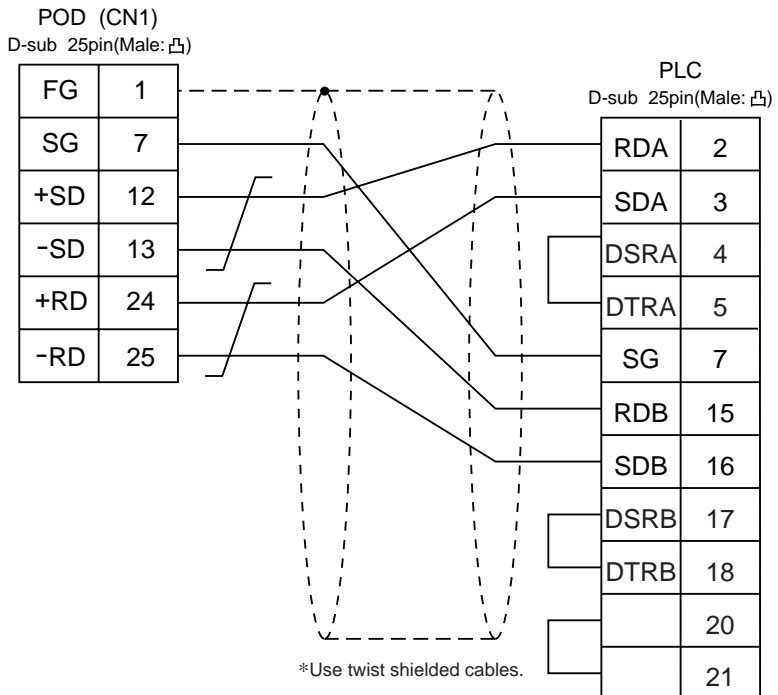
**RS-422**

**Wiring Diagram 3**



\*Use twist shielded cables.

**Wiring Diagram 4**



\*Use twist shielded cables.

# 8

## MITSUBISHI PLC • 2

(A/QnA series CPU)

### Connection

Connect to the A/Q series CPU port.

The communication parameter setting of POD is done automatically.

### Available PLC

Select PLC Type	PLC	Wiring Diagram
A series CPU	A2A, A3A A2U, A3U, A4U A2US(H) A1N, A2N, A3N A3V, A73 A3H, A3M A0J2H A1S, A1SJ(H), A2S(H) A2CCPUC24 A1FX	RS-422 [UG200C-M] made by Fuji Electric or [Wiring Diagram 1]
QnA series CPU	Q2A, Q3A, Q4A Q2AS(H)	

**When the CPU is updated, or the specifications are changed, there is some possibility that POD cannot be connected to the PLC.**

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
W (link register)	1	
R (file register)	2	
TN (timer/current value)	3	*2
CN (counter/current value)	4	
SPU (special unit)	5	Unit No. *1
M (internal relay)	6	
L (latch relay)	7	
B (link relay)	8	
X (input relay)	9	
Y (output relay)	10	
TS (timer/contact)	11	
TC (timer/coil)	12	
CS (counter/contact)	13	
CC (counter/coil)	14	
SD (special register)	16	only in QnA
SM (special relay)	17	only in QnA
SB (special link relay)	18	only in QnA
SW (special link register)	19	only in QnA
ZR (file register [continuous access])	20	only in QnA

- \*1 The unit No. is required in addition to the memory type and the address.  
Convert a byte address into a word address to enter the data if the memory device of link unit is byte address.
- \*2 File register(R) cannot be used in case of ROM operation of A series CPU.

**Set the memory to the extent of the memory range of each PLC model.**

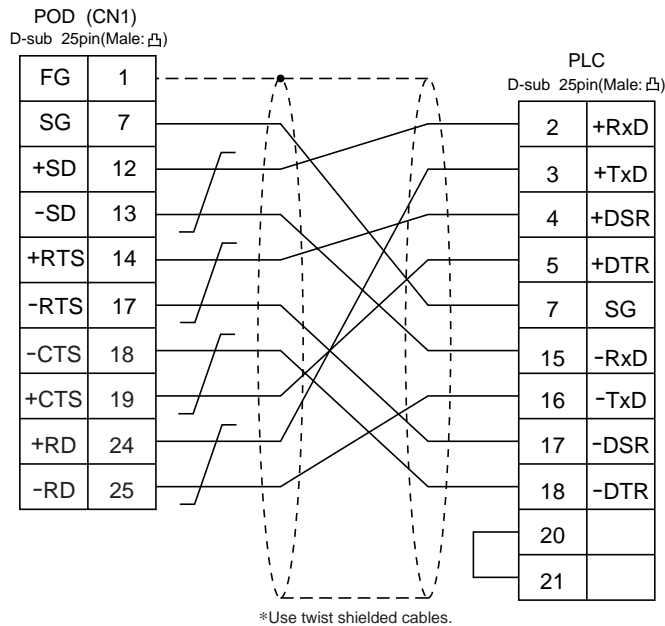
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.  
(connection of the UG200C-M)

### RS-422

#### Wiring Diagram 1



#### Note

**According to our noise tests, the attachment of a ferrite core improves noise voltage by 650~900V and aids in preventing communication errors.**

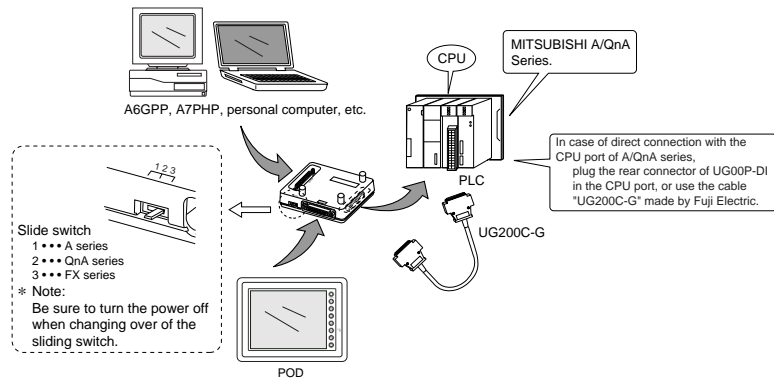
- In case of direct connection with the CPU port of A/QnA series, be sure to attach the ferrite core to the cable between POD and the CPU port of A/QnA series for noise.



- A Ferrite core is sold as an optional accessory.  
A noise filter(ferrite core) is sold as an optional accessory. When you buy it, specify "ZCAT032-0930" as the model name.
- In consideration of such noise problems, it is recommended that the standard type link unit be used in such a case when the cable length of more than 15m is required.

## Notes on using UG00P-DI (Dual Port Interface)

- As the UG00P-DI is powered by a CPU, check that the electric capacity of the CPU is at 5V (power consumption: max. 350mA).
- The distance between the CPU and the UG00P-DI should be as short as possible (max. 1 to 1.5m).
- For wiring, take appropriate measures to eliminate noise.
- Specify the value more than 150 (=1.5 sec) in [Time-out Time] of [Comm. Parameter] in case of connecting POD to a UG00P-DI.



# 9 MITSUBISHI PLC • 3

(QnH series CPU)

## Connection

Connect to the QnH series CPU.

The communication parameter setting of POD is done automatically.

## Available PLC

Select PLC Type	PLC	Wiring Diagram
QnH(A) series CPU	Q06H-A	RS-232C [UG00C-Q] or [Wiring Diagram 1]
*1 QnH(Q) series CPU	Q02, Q02H, Q06H, Q12H, Q25H	

\*1 About the ladder transfer function, refer to Appendix.

**When the CPU is updated, or the specifications are changed, there is some possibility that POD cannot be connected to the PLC.**

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
W (link register)	1	
R (file register)	2	
TN (timer/current value)	3	
CN (counter/current value)	4	
SPU (special unit)	5	Unit No. * 1
M (internal relay)	6	
L (latch relay)	7	
B (link relay)	8	
X (input relay)	9	
Y (output relay)	10	
TS (timer/contact)	11	
TC (timer/coil)	12	
CS (counter/contact)	13	
CC (counter/coil)	14	
SD (special register)	16	only in Q mode
SM (special relay)	17	only in Q mode
SB (special link relay)	18	only in Q mode
SW (special link register)	19	only in Q mode
ZR (file register [continuous access])	20	only in Q mode

- \*1 The unit number is required in addition to the memory type and the address.  
Convert a byte address into a word address to enter the data if the memory device of link unit is byte address.

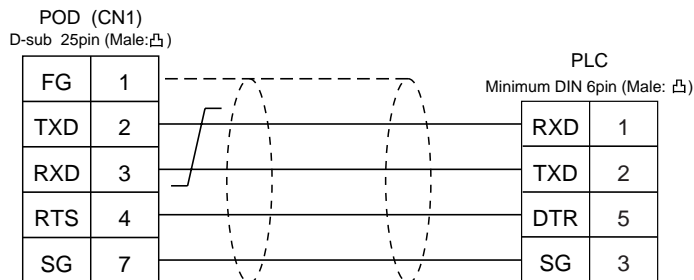
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1 (connection of the UG00C-Q)



\*Use twist shielded cables.



# 10 MITSUBISHI PLC • 4

(FX / FX2N / FX1S series CPU)

## Connection

Connect to the FX series CPU port.

The communication parameter setting of POD is done automatically.

## Available PLC

Select PLC Type	CPU	Wiring Diagram
FX series CPU	FX1/2	RS-232C [UG00C-X] made by Fuji Electric RS-422 [UG200C-M] made by Fuji Electric or [Wiring Diagram 1]
	FX0N (tool port)	RS-422 [UG00C-E] made by Fuji Electric or [Wiring Diagram 2] or [UG200C-M] made by Fuji Electric + [FX-20P-CADP] made by MITSUBISHI
FX2N series CPU	FX1N/2N (tool port) FX2NC (tool port)	
FX1S series CPU	FX1S (tool port)	

About the ladder transfer function, refer to Appendix.

- \* When the CPU is updated, or the specifications are changed, there is some possibility that POD cannot be connected to the PLC.

## Available Memory

- FX1/2, FX0N, FX1S series CPU

Memory	TYPE	Remarks
D (data register)	0	
TN (timer/current value)	1	
CN (counter/current value)	2	
32CN (counter 32bits)	3	*1
M (internal relay)	4	
S (state)	5	
X (input relay)	6	Read only
Y (output relay)	7	
TS (timer/contact)	8	
CS (counter/contact)	9	
DX (Data register)	10	*2

\*1 In case of the items which can display double word data (e.g. data display, graph, sampling), the data is managed as double word data.

Both bit data and word data are managed as lower-half 16 bits data.

Input : 16 upper-half bits are ignored.

Output : "0" is written in the 16 upper-half bits.

\*2 When use D1000 to 2999, select DX.

- FX2N, FX1N series

Memory	TYPE	Remarks
D (data register)	0	
TN (timer/current value)	1	
CN (counter/current value)	2	
32CN (counter 32bits)	3	* 1
M (internal relay)	4	
S (state)	5	
X (input relay)	6	Read only
Y (output relay)	7	
TS (timer/contact)	8	
CS (counter/contact)	9	

\*1 In case of the items which can display double word data (e.g. data display, graph, sampling), the data is managed as double word data.

Both bit data and word data are managed as lower-half 16 bits data.

Input : 16 upper-half bits are ignored.

Output : "0" is written in the 16 upper-half bits.

**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

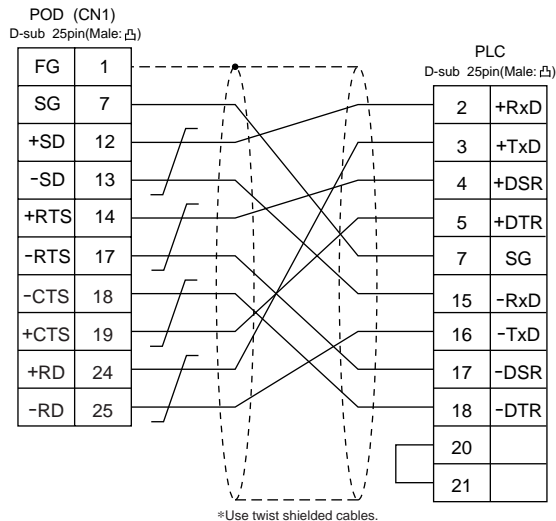
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

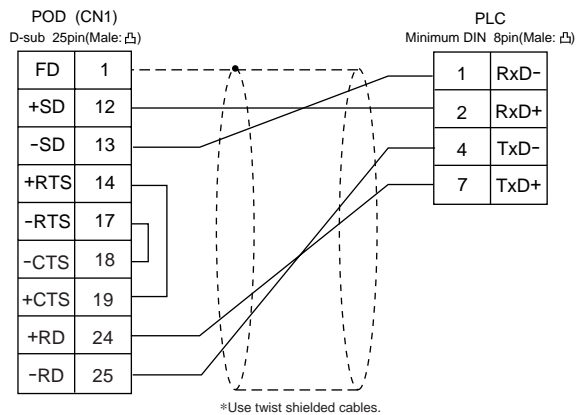
Use the cable, "UG00C-X"(3m), made by Fuji Electric Co., Ltd. in case of RS-232C connection.

### RS-422

#### Wiring Diagram 1 (connection of the UG200C-M)



#### Wiring Diagram 2 (connection of the UG00C-E)



### Note

**According to our noise tests, the attachment of a ferrite core improves noise voltage by 650~900V and aids in preventing communication errors.**

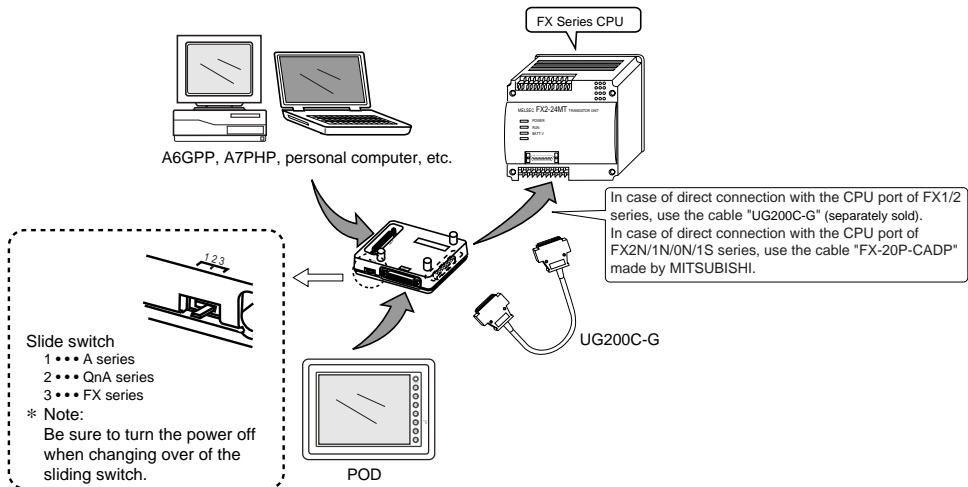
- In case of direct connection with the CPU port of A/QnA series, be sure to attach the ferrite core to the cable between POD and the CPU port of A/QnA series for noise.



- A Ferrite core is sold as an optional accessory.  
A noise filter(ferrite core) is sold as an optional accessory. When you buy it, specify "ZCAT032-0930" as the model name.

## Notes on using UG00P-DI (Dual Port Interface)

- As the UG00P-DI is powered by a CPU, check that the electric capacity of the CPU is at 5V (power consumption: max. 350mA).
- The distance between the CPU and the UG00P-DI should be as short as possible (max. 1 to 1.5m).
- For wiring, take appropriate measures to eliminate noise.
- Specify the value more than 150 (=1.5 s) in [Time-out Time] of [Comm. Parameter] in case of connecting POD to a UG00P-DI.



\* When use the cable "UG00C-E", it is impossible to use the UG00P-DI.

# 11 MITSUBISHI PLC • 5

(FX series link [A prt] )

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
FX series (A protocol)	FX2N	FX2N-232-BD	RS-232C [Wiring Diagram 1]
		FX2N-485-BD	RS-485 [Wiring Diagram 3]
		FX2N-422-BD	RS-422 [ UG00C-E ] made by Fuji Electric
	FX1N FX1S	FX1N-232-BD	RS-232C [Wiring Diagram 1]
		FX1N-485-BD	RS-485 [Wiring Diagram 3]
		FX1N-422-BD	RS-422 [ UG00C-E ] made by Fuji Electric
	FX0N	FX0N-232ADP	RS-232C [Wiring Diagram 2]
		FX0N-485ADP	RS-485 [Wiring Diagram 3]
	FX2NC	FX0N-232ADP	RS-232C [Wiring Diagram 2]
		FX0N-485ADP	RS-485 [Wiring Diagram 3]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps	19200bps
Parity		Even	Even
Transmission Code	Data Length	7	7
	Stop Bit	1	1
Function		Exclusive Protocol Communication (fixed)	—————
H/W Type *1		Normally RS-232C	RS-232C
Sumcheck		Provided (fixed)	—————
Transmission Control Mode		MODE 1	Trans. Mode 1

\*1 When the link unit, FX2N-485-BD, FX2N-422-BD, FX1N-485-BD,FX1N-422-BD or FX0N-485-ADP is used, select [RS-485] in [Signal Level].

**At the [Detail Setting] menu of the [Comm. Parameter] dialog of UG00S-CW, setting the value more than [2] in [Send Delay Time] is recommended.**

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
TN (timer/current value)	1	
CN (counter/current value)	2	
32CN (counter 32bits)	3	* 1
M (internal relay)	4	* 2
S (state)	5	
X (input relay)	6	Read only
Y (output relay)	7	
TS (timer/contact)	8	
CS (counter/contact)	9	

\*1 The meaning of CN200~CN255 is the same as the meaning of 32CN(counter 32bits).

\*2 In case of the items which can display double word data (e.g. data display, graph, sampling), the data is managed as double word data.

Both bit data and a word data are managed as lower-half 16 bits data.

Input : 16 upper-half bits are ignored.

Output : "0" is written in the 16 upper-half bits.

**Set the memory to the extent of the memory range of each PLC model.**

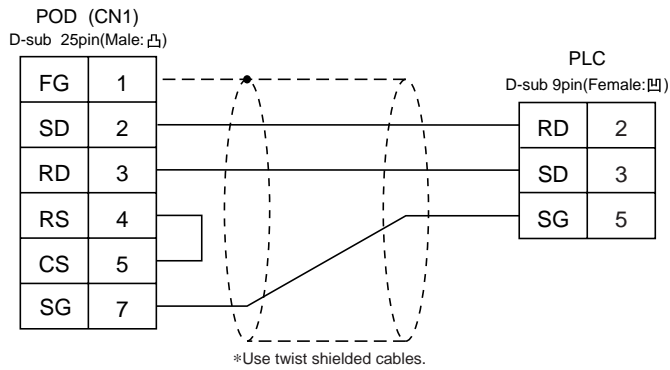
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

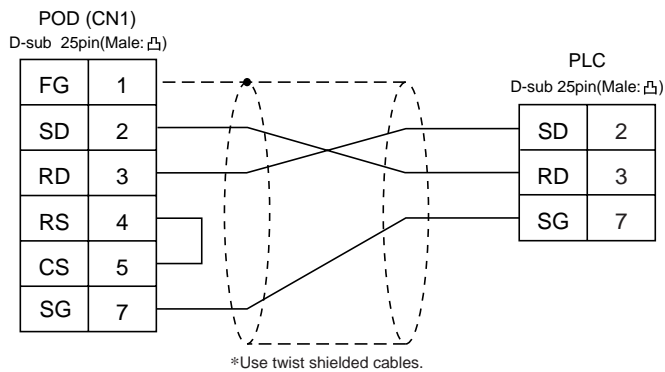
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



#### Wiring Diagram 2

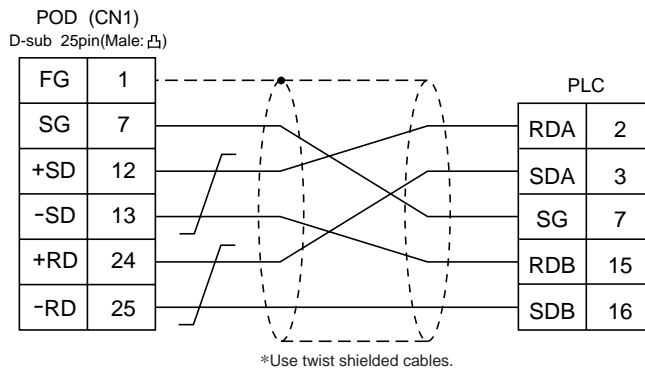


### RS-422

Use the cable, "UG00C-E", made by Fuji Electric Co., Ltd.

### RS-485

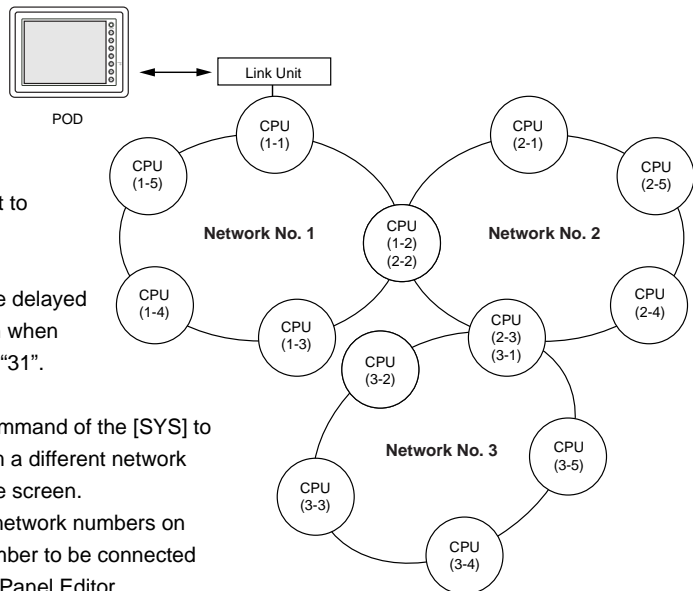
#### Wiring Diagram 3



# 12 MITSUBISHI PLC • 6

(A Link + Net 10)

- POD can access other CPUs on the NET II(/B) or NET/10 when POD is connected to one of the link units that the data link system or network system consists of.  
Select "A Link + Net10" as PLC setting when configuring the screen data on the panel editor.
- To access other CPU on the NET II (/B) or NET/10 from POD.
  - In case of NET II(/B), only the network which has the CPU with the link unit connected to the POD (e.g. No. 1) can be accessed.  
(Available CPU No.: 0 to 30)
  - In case of NET/10, other networks (No. 2, No. 3) can be accessed in addition to the network No. 1.  
(Available CPU No.: 1 to 30)
- To read/write the memories of the CPU(e.g. 1-1 of CPU) which has the link unit to be connected to the POD :



Set the CPU No. to "31" on the panel editor.

Response time will be equivalent to the case of 1 : 1 communication.

Please note that response will be delayed due to the transient transmission when the CPU No. is set to other than "31".

- In this case, use [OUT\_ENQ] command of the [SYS] to program the macro. A CPU from a different network cannot be accessed on the same screen.  
When accessing PLCs of other network numbers on NET/10, specify the network number to be connected with the screens Open Macro in Panel Editor.



- Macro type to specify network ..... [OUT\_ENQ] command of [SYS]

#### F1 Memory

n+0	0 (fixed)
n+1	Specify network: 2 (fixed)
n+2	System code
n+3	Network No.

The addresses n+0 and n+1 are fixed for 0 and 2.

Specify n+2 [System code] to 1: NET/10 2: NET II(/B)

Enter "0" to n+3 [Network No.] when n+2 [System code] indicates "2", and "the number to be accessed" to n+3 [Network No.] when n+2 [System code] indicates "1".

No macros can include this command except Open Macro. Communication error will occur due to the execution of the network change when this command is used in other kinds of macros.

Refer to the "UGseries Manual <Function> (FEH376)" for further information on Macro.

Also refer to MITSUBISHI's manual for network registration.

- See MITSUBISHI's manual for details on the NET II(/B) data link system and the NET/10 network system.

## Available Memory

See P2-16, "A/QnA series link units" and P2-22, "A/QnA series CPU port" for available memory of the PLC to be accessed.

Note that CPU No. should be set on the UG00S-CW.

## Wiring

See the wiring diagrams on P2-16,17, "1 MITSUBISHI PLC • 1."

# 13 OMRON PLC • 1

(C/CV/CS1 series)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
SYSMAC C	C20H, C28H, C40H	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 1]
	C120, C120F C200H C500, C500F C1000H C2000, C2000H	C120-LK201-V1  C120-LK202-V1	RS-232C [Wiring Diagram 3]  RS-422 [Wiring Diagram 4]
	C200H C200HS-CPU01,03 C200HS-CPU21,23 C200HS-CPU31,33	C200H-LK201 C200H-LK201-V1 C200H-LK202 C200H-LK202-V1	RS-232C [Wiring Diagram 3]  RS-422 [Wiring Diagram 4]
	C200HS-CPU21,23 C200HS-CPU31,33 CQM1-CPU21 CQM1-CPU41, 42, 43, 44	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 2]
	C500, C500F C1000H C2000, C2000H	C500-LK203	RS-232C [Wiring Diagram 3] RS-422 [Wiring Diagram 4]
	C200HX C200HG C200HE	CPU unit with a built-in RS-232C port (host link port)  Communication board (C200HW-COM02-06)	RS-232C [Wiring Diagram 2]  RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 5] *1
	SRM1-C02	RS-232C interface	RS-232C [Wiring Diagram 2]
	CPM1A	CPU unit (peripheral port)	[CQM1-CIF01] *2 made by OMRON
	SYSMAC CV	CV500, CV1000 CV2000 CVM1	CPU unit with a built-in RS-232C port (host link port)
CV500-LK201			RS-232C PORT1 [Wiring Diagram 3] PORT2 [Wiring Diagram 2] RS-422 PORT2 [Wiring Diagram 5]
SYSMAC CS1	CS1	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 2]
		CS1W-SCU21	RS-232C [Wiring Diagram 2]
		Communication board (CS1W-SCB41)	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 7] *1
	CJ1, CJ1M	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 2]

\*1 Cannot be connected to POD by multi-link connection.

\*2 Exchange the shell, the side of D-sub25. (recommendation : 17J-25 made by DDK)

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	0	0
Parity	Even	Even
Transmission Code	Data Length	7 (ASCII)
	Stop Bit	2
Command Level	3 (fixed)	_____
1:1/1:n Protocol	1 : n (fixed)	_____
Synchronizing Switch	Internal Synchronization (fixed)	_____
CTS Switch	0V (normally ON) (fixed)	_____
5V Supply Switch	OFF (fixed)	_____
Terminal Resistor	ON for RS-422	_____

- \* For the SYSMAC-  $\alpha$  Series and COM1 Series, set "0001" into DM6645 and "0304" (HEX) into DD6646 on the RS-232C port at the CPU side to use the recommended communication settings indicated in the table above.

For the CS1 Series, store the values which match the communication setting in D32000 (D32010) and the following when the communication board is used for communication; in the memory space corresponding to machine No. when the communication unit is used.

- If [SYSMAC C] is selected at the [Select PLC Type] dialog, set the [Trans. Mode] for [Detail] in the [Comm. Parameter] in UG00S-CW.

Trans. Mode	Contents
Trans. Mode 1	w/o sign BCD
Trans. Mode 2	w/+/- sign BCD *1

\*1 w/+/- sign BCD

It is possible to display the data for PLC data with signs + and -.

When higher 4 bits of the memory are [F or A], treat the data as the minus data.

[F] : regards higher 4 bits of the memory as [-0]

[A] : regards higher 4 bits of the memory as [-1]

- range      1 word :        -1999 to +9999  
              2 words :       -19999999 to +99999999

<Ex.>

PLC memory	Display of POD
0000 to 9999	0 to 9999
F001 to F999	-1 to -999
A000 to A999	-1000 to -1999
00000000 to 99999999	0 to 99999999
F0000001 to F9999999	-1 to -9999999
A0000000 to A9999999	-10000000 to -19999999

- How to set : Num. Display  
              [Input Type]    BCD  
              [Display Type] DEC(w/ -sign, w/ +sign)

## Available Memory

### ○ C

Memory	TYPE	Remarks
DM (data memory)	0	
CH (input/output relay)	1	
HR (holding relay)	2	
LR (latch relay)	3	
AR (alarm relay)	4	
T (timer/current value)	5	
C (counter/current value)	6	
EMn (extensional data memory)	7	*1
TU (timer/contact)	9	Read only
CU (counter/contact)	10	Read only

### ○ CV

Memory	TYPE	Remarks
DM (data memory)	0	
CH (input/output relay)	1	
AR (alarm relay)	4	
T (timer/current value)	5	
C (counter/current value)	6	
EMn (extensional data memory)	7	*1
TU (timer/contact)	9	Read only
CU (counter/contact)	10	Read only

### ○ CS1

Memory	TYPE	Remarks
DM (data memory)	0	
CH (input/output relay)	1	
H (holding relay)	2	
A (alarm relay)	4	
T (timer/current value)	5	
C (counter/current value)	6	
EMn (extensional data memory)	7	*1
W (Internal Relay)	8	
TU (timer/contact)	9	Read only
CU (counter/contact)	10	Read only

- \*1 When using EMn (extensional data memory), specify the bank number (CV: 0 to 7, CS1: 0 to C).  
The assigned memory is indicated while editing the screen as illustrated:

<E.g.> EM0:30000

Address No.  
Colon  
Bank No.

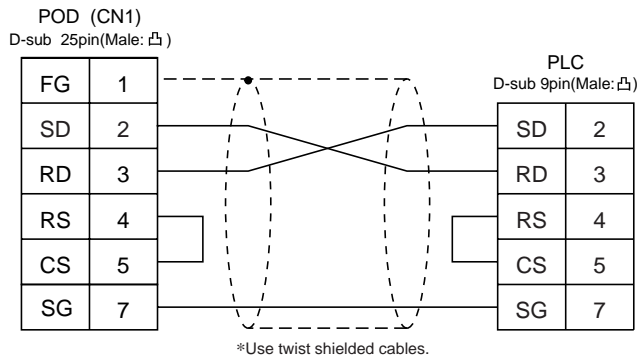
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

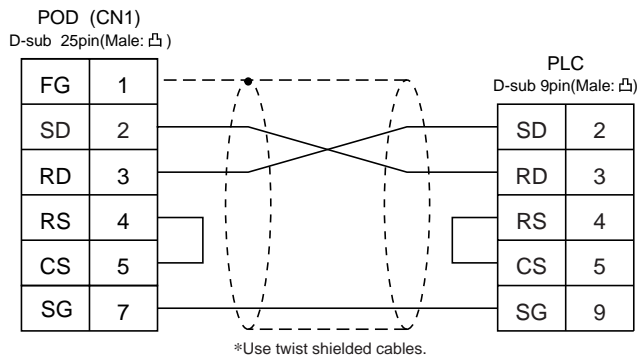
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

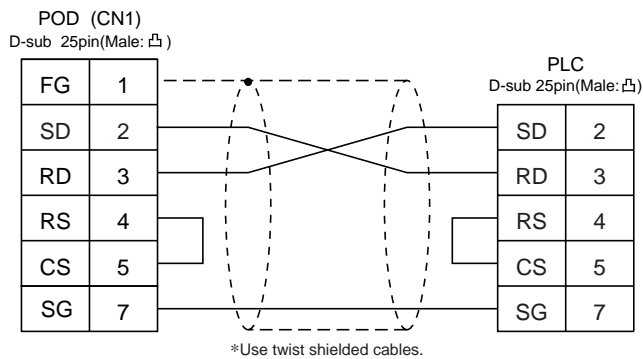
#### Wiring Diagram 1



#### Wiring Diagram 2

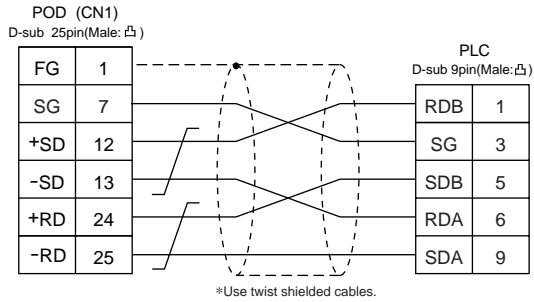


#### Wiring Diagram 3

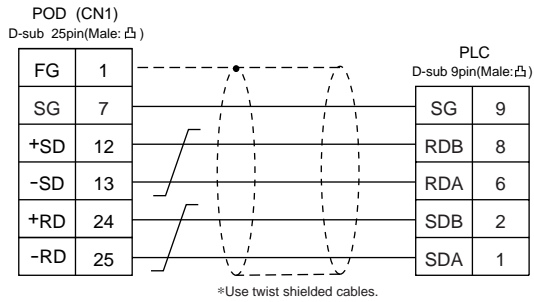


**RS-422**

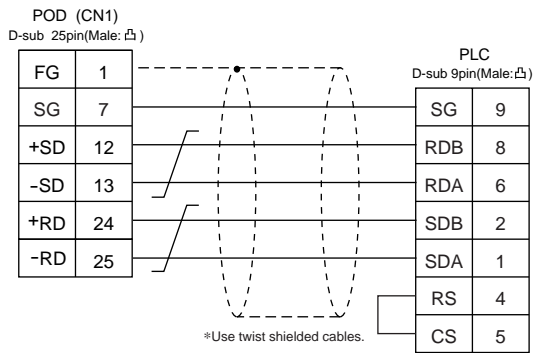
**Wiring Diagram 4**



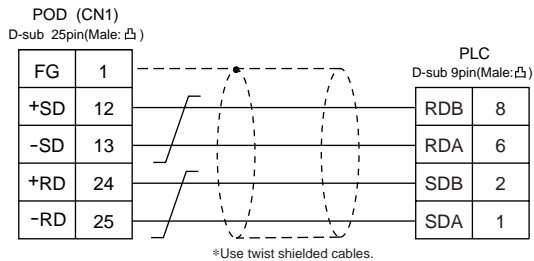
**Wiring Diagram 5**



**Wiring Diagram 6**



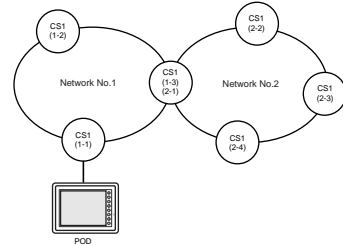
**Wiring Diagram 7**



# 14 OMRON PLC • 2

(OMRON-CS1 DNA)

When connect the POD to CS1 on a network, the POD can also access the other CS1 on a network.



## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
SYSMAC CS1 DNA	CS1	CPU unit with a built-in RS-232C port (host link port)	RS-232C [Wiring Diagram 2]
		CS1W-SCU21	RS-232C [Wiring Diagram 2]
		Communication board (CS1W-SCB41)	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 7] <sup>*1</sup>

\*1 Cannot be connected to POD by multi-link connection.

## Available Memory

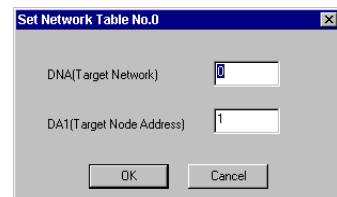
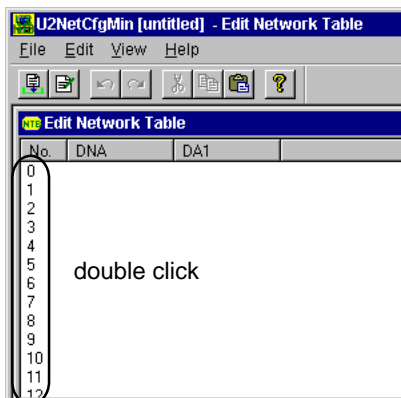
See [Available Memory] of CS1 in [13 OMRON PLC • 1].

## Wiring

See [Wiring] in [13 OMRON PLC • 1].

## UG00S-CW Setting

- Select [System Setting] from [Item], and click [Comm. Parameter]. The [Comm. Parameter] dialog is displayed. Set [Connection] to [1:n] in the [Detail] tab window.
- Select [System Setting] from [Item], and click [Network Table]. [Edit Network Table] is displayed. Double click the [No.]. The dialog is displayed. Register the CS1 on the network.



# 15 Sharp PLC • 1

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
JW series	JW50, JW70, JW100 JW50H, JW70H JW100H	ZW-10CM JW-10CM	RS-422 [Wiring Diagram 3]
	JW20 JW-31CUH	JW-21CM	RS-422 [Wiring Diagram 3]
JW100/70H COM port	JW70, JW100 JW70H, JW100H	CPU communication port	RS-232C [Wiring Diagram 1]
JW20 COM port	JW20(JW22CU) JW20H(JW22CU)		RS-422 [Wiring Diagram 2]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	0 for STA. NO x10, 1 for x1	0
Parity	Even	Even
RS-422	4-wire system (fixed)	—————
Data Length	7	7
Stop Bit	2	2
Error Check	Sumcheck (fixed)	—————
Transmission Control	Command mode (fixed)	—————



## Switch Setting of Link Unit

Baud rate: 19200bps

Switch	Setting	Contents
SW0	4	Command mode
SW1	1	Station address (lower half)
SW2	0	Station address (upper half)
SW3-1	OFF	Not used
SW3-2	ON	4-wire system
SW3-3	OFF	Not used
SW3-4	ON	Even parity
SW4	0	Baud rate 0: 19200 1: 9600 2: 4800 3: 2400 4: 1200 5: 600
SW7	ON	Terminating resistance provided

## PLC System Memory Setting (in case of a communication port)

Baud rate: 19200bps

	D7	D6	D5	D4	D3	D2	D1	D0
#0236	0	0	1	1	0	0	0	0
#0237	0	0	0	0	0	0	0	1

System memory

## Available Memory

Memory	TYPE	Remarks
X9XXX (register)	0	
XXXXX (relay)	1	□ as word device
EXXXX (self-diagnosis)	2	
bXXXX (timer counter)	3	
Fn (file register)	7	*1

\*1 To set up Fn (file register), input [File No.] + [: (colon)] + [address]

<E.g.> F1 : 00002

↑      ↑      ↑  
File No. Colon Address

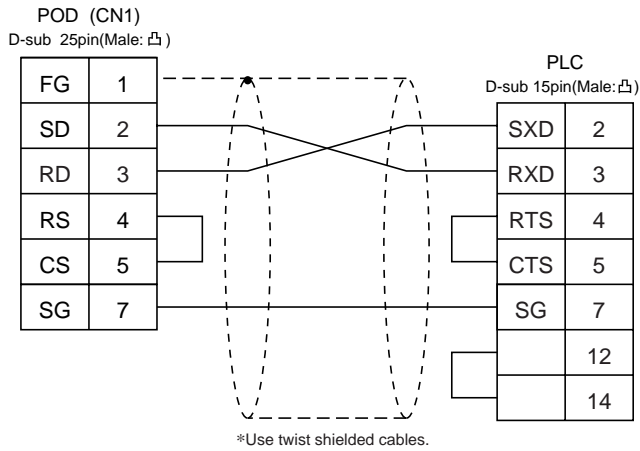
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

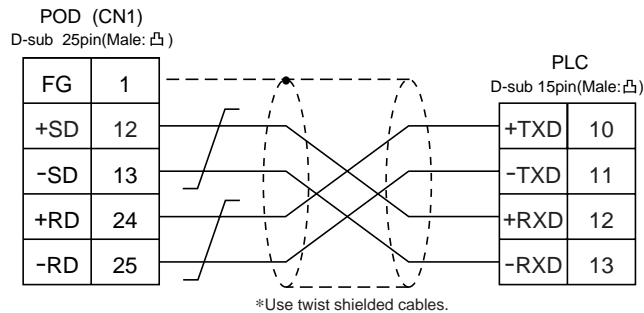
### RS-232C

#### Wiring Diagram 1

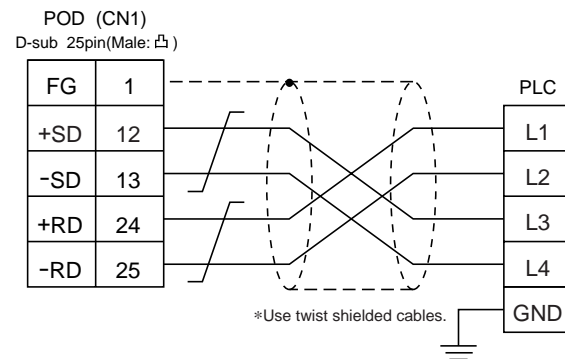


### RS-422

#### Wiring Diagram 2



#### Wiring Diagram 3



# 16 Sharp PLC • 2

(JW-32CUH/33CUH)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
JW20 COM port	JW-32CUH JW-33CUH	Communication port on a CPU unit	RS-232C PG/COMM2 [Wiring Diagram 1] RS-422 PG/COMM1 [Wiring Diagram 2] PG/COMM2 [Wiring Diagram 2]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	1	1
Parity	Even	Even
RS-422	4-wire system (fixed)	—————
Data Length	7	7
Stop Bit	2	2
Error Check	Sumcheck (fixed)	—————
Transmission Control	Command mode (fixed)	—————

## PLC System Memory Setting (in case of a communication port)

Set communication condition in the system memory #234/235(for PG/COMM port 1) or #236/237(for PG/COMM port 2) to communicate with a personal computer.

## Available Memory

Memory	TYPE	Remarks
X9XXX (register)	0	
XXXXX (relay)	1	<input type="checkbox"/> as word device
EXXXX (self-diagnosis)	2	
bXXXX (timer counter)	3	
Fn (file register)	7	*1

\*1 To set up Fn (file register), input [File No.] + [: (colon)] + [address].

<E.g.> F1 : 00002

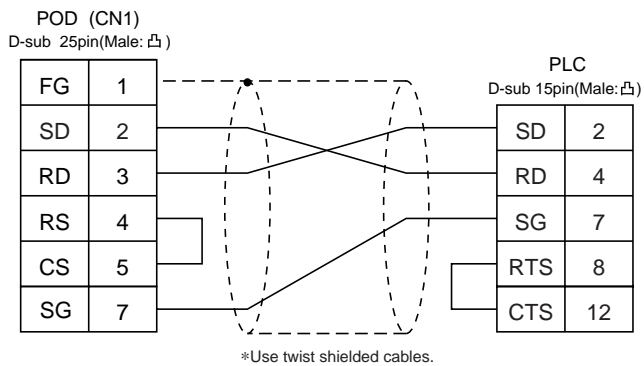
**Set the memory to the extent of the memory range of each PLC model.**  
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

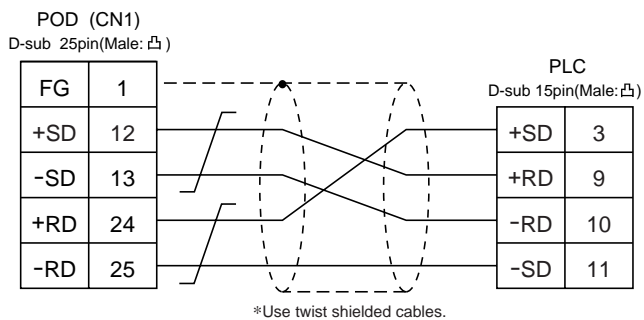
### RS-232C

#### Wiring Diagram 1



### RS-422

#### Wiring Diagram 2



# 17 HITACHI PLC • 1

(HIDIC H series)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
HIDIC-H	HIDIC H series CPU	COMM-2H	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 2]
		PERIPHERAL port on a CPU module	RS-232C [Wiring Diagram 1]
		EH150	*1 [EH-RS05] cable made by HITACHI + RS-232C [Wiring Diagram 1]
		H-252C on a CPU module	PERIPHERAL 1 RS-232C [Wiring Diagram 1] PERIPHERAL 2 *2 [CNCOM-05] cable made by HITACHI + RS-232C [Wiring Diagram 1]

\*1 When using [EH-RS05] cable made by HITACHI, connect the cable of [Wiring Diagram 1] to the D-sub 15 pins side of [EH-RS05] to communicate with POD.

\*2 When using [CNCOM-05] cable made by HITACHI, connect the cable of [Wiring Diagram 1] to the D-sub 15 pins side of [CNCOM-05] to communicate with POD.

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

### ◆COMM-2H

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps	19200bps
Port		0 for both STATION X10 and X1	0
Parity		Even	Even
Transmission Control Mode	*1 RS-232C	MODE7	Protocol 2 w/ Port
	RS-422	MODE9	Protocol 2 w/ Port
Transmission Code	Data Length	7 (ASCII)	7
	Stop Bit	1	1
Sumcheck		Provided (fixed)	—————

If "Transmission control mode" is any other type except the above, specify "Transmission control code" as below.

		Setting of PLC	Comm. Parameter of POD
Transmission Control Mode	RS-232C	MODE1 MODE2 MODE9	Protocol 1 w/o Port Protocol 1 w/ Port Protocol 2 w/o Port
	RS-422	MODE2	Protocol 1 w/ Port *1

\*1 Cannot be connected to POD by multi-link connection.

### ◆CPU module

Peripheral port is only available with "pattern 1."

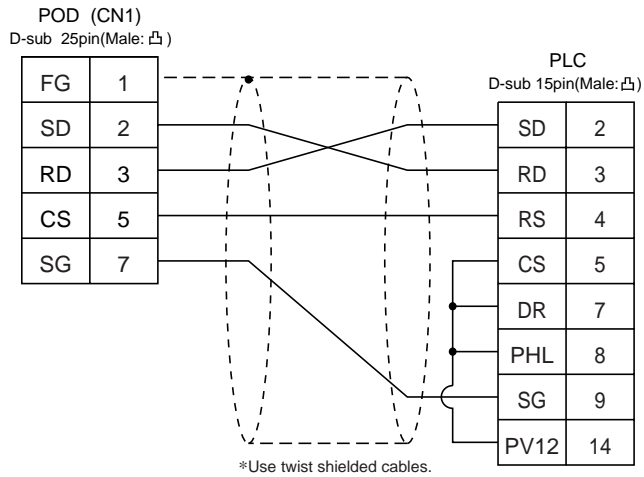


## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

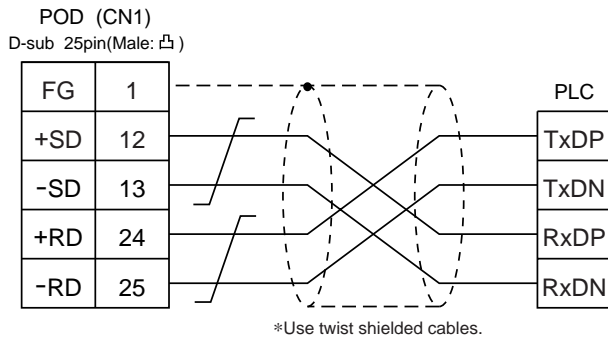
### RS-232C

#### Wiring Diagram 1



### RS-422

#### Wiring Diagram 2



# 18 HITACHI PLC • 2

(HIDIC-S10  $\alpha$ )

## Available PLC

Host Link H-7338

Select PLC Type	PLC	Link Unit	Wiring Diagram
HIDIC-S10/2alpha	S10 2 $\alpha$	Interface on a CPU unit	RS-422 [Wiring Diagram 3]
	S10 mini	Interface on a CPU unit	RS-422 [Wiring Diagram 3]
		RS-232C connector on a CPU unit	RS-232C [Wiring Diagram 1]
		LQE060	RS-232C [Wiring Diagram 2]
HIDIC-S10/ABS	ABS *1	—————	RS-422 [Wiring Diagram 3]

\*1Specify the memory by absolute addresses. For further information, refer to the relevant PLC manual.

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	7	19200bps

## Available Memory

○ HIDIC-S10 2  $\alpha$  /S10 mini

Memory	TYPE	Remarks
FW (work register)	0	
X (input relay)	1	XW as word device
Y (output relay)	2	YW as word device
R (internal relay)	3	RW as word device
G (global link)	4	GW as word device
K (keep relay)	5	KW as word device
T (on-delay timer contact)	6	TW as word device
U (one shot timer contact)	7	UW as word device
C (up/down counter contact)	8	CW as word device
TS (on-delay timer set value)	9	
TC (on-delay timer elapsed value)	10	
US (one shot timer set value)	11	
UC (one shot timer elapsed value)	12	
CS (up/down counter set value)	13	
CC (up/down counter elapsed value)	14	
DW (data register)	15	



E (event register)	16	EW as word device
S (system register)	17	SW as word device
J (transfer register)	18	JW as word device
Q (receive register)	19	QW as word device
M (extension input register)	20	MW as word device

○ HIDIC ABS

Memory	TYPE	Remarks
0E	0	
06	1	
18	2	
19	3	
1A	4	
1B	5	
1C	6	
1D	7	

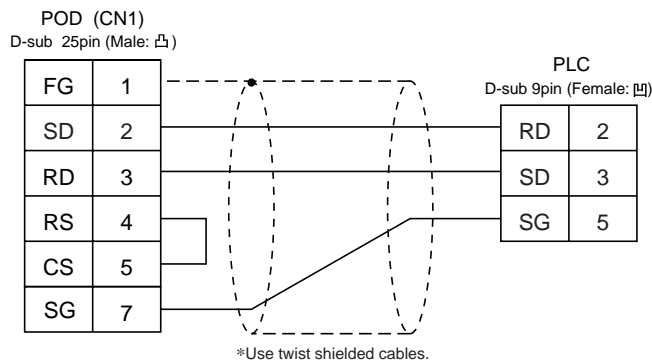
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

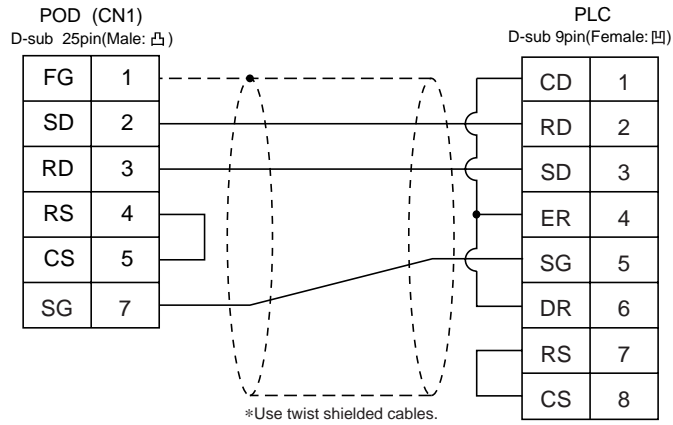
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



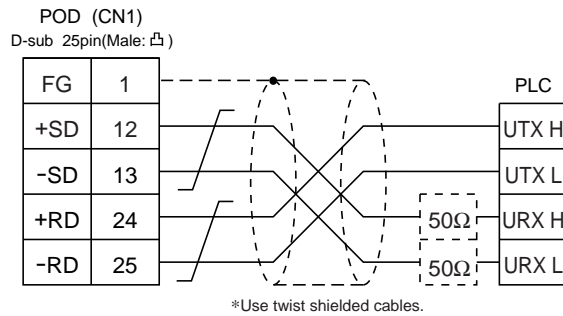
## Wiring Diagram 2



## RS-422

### Wiring Diagram 3

For connection to the S10x  $\alpha$  series, use a  $50\ \Omega$  ( $1/2W$ ) resistance as shown below.



# 19 Matsushita PLC

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
MEWNET	FP1	RS-232C port on a CPU unit	RS-232C [Wiring Diagram 1]
	FP3	AFP3462	RS-232C [Wiring Diagram 1]
		AFP3463	RS-422 [Wiring Diagram 4]
	FP5	AFP5462	RS-232C [Wiring Diagram 1]
	FP10	RS-232C port on a CPU unit	RS-232C [Wiring Diagram 1]
		AFP5462	RS-232C [Wiring Diagram 1]
	FP10S	RS-232C port on a CPU unit	RS-232C [Wiring Diagram 1]
		AFP3462	RS-232C [Wiring Diagram 1]
		AFP3463	RS-422 [Wiring Diagram 4]
	FP0	RS-232C tool port on a CPU unit	RS-232C cable made by Matsushita AFC8513
		RS-232C port on a CPU unit	RS-232C [Wiring Diagram 3]
	FP2	RS-232C tool port on a CPU unit	RS-232C cable made by Matsushita AFC8513
		RS-232C port on a CPU unit	RS-232C [Wiring Diagram 2]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	"0" for ×10, "1" for ×1	1
Parity	Even	Even
Transmission Code	Data Bit	7 (ASCII)
	Stop Bit	1
Transmission Control	Computer link system (fixed)	—————
Control Signal	Invalid (fixed)	—————

\* If a tool port (the ladder port for RS-232C) of FP0 is used, the range of PLC parameter setting is limited as below. Adjust PLC parameter setting to comm. parameter setting of POD.

Baud rate : 9600, 19200bps  
 Parity : Odd (fixed)  
 Data bit : 8 (7 can be selected. Normally 8.)  
 Stop bit : 1 (fixed)

## Switch Setting of Link Unit

No	Setting	Contents
1	ON	Same as POD (normally 19200bps)
2	OFF	
3	OFF	
4	OFF	Data length 7
5	ON	Parity provided
6	ON	Even
7	OFF	Stop bit 1
8	OFF	CS, CD invalid

## Available Memory

Memory	TYPE	Remarks
DT (data register)	0	
X (external input relay)	1	WX as word device, read only
Y (external output relay)	2	WY as word device
R (internal relay)	3	WR as word device, special relay included
L (link relay)	4	WL as word device
LD (link register)	5	
FL (file register)	6	
SV (timer/counter set value)	7	
EV (timer/counter elapsed value)	8	
T (counter/contact)	9	Read only
C (counter/contact)	10	Read only

**Set the memory to the extent of the memory range of each PLC model.**

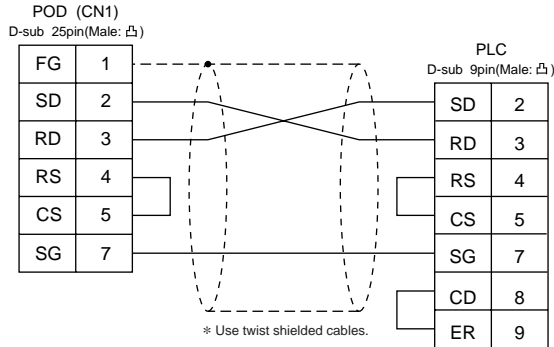
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

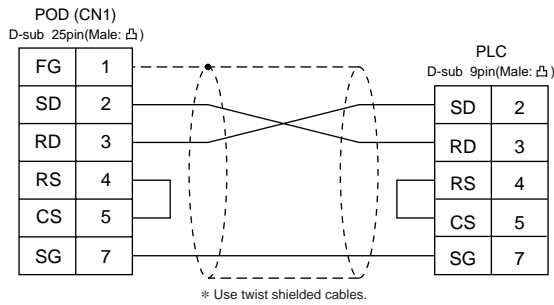
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

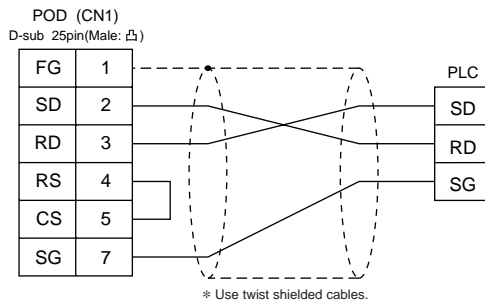
#### Wiring Diagram 1



#### Wiring Diagram 2

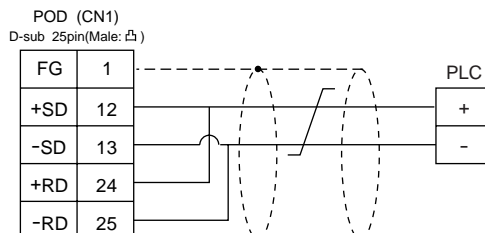


#### Wiring Diagram 3



### RS-422

#### Wiring Diagram 4



# 20 YOKOGAWA PLC • 1

(FA-500)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
FA500	FA500	LC01-0N	RS-232C [Wiring Diagram 1]
		LC02-0N	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 2]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	1	1
Parity	Even	Even
Transmission Code	Data Length	7
	Stop Bit	1
Sumcheck	Provided (fixed)	_____
Terminal Character	None (fixed)	_____
Protection Function	None (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
B (common register)	1	
TP (timer/current value)	2	
TS (timer/set value)	3	
CP (counter/current value)	4	
CS (counter/set value)	5	
X (input relay)	6	
Y (output relay)	7	
I (internal relay)	8	
E (external relay)	9	

**Set the memory to the extent of the memory range of each PLC model.**

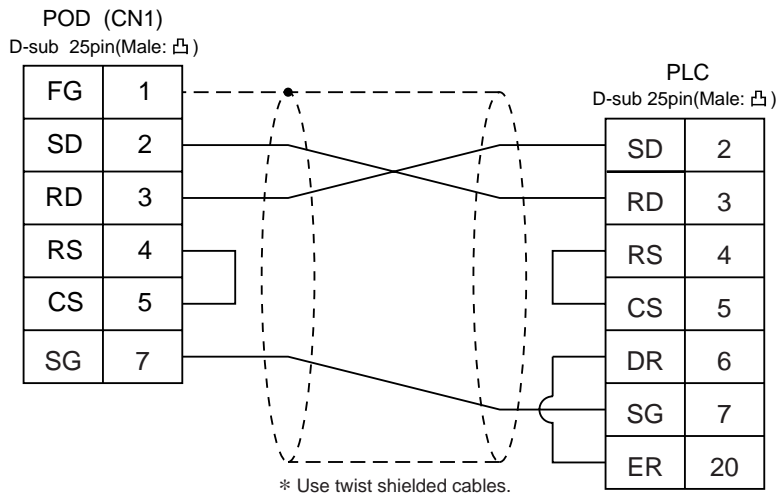
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

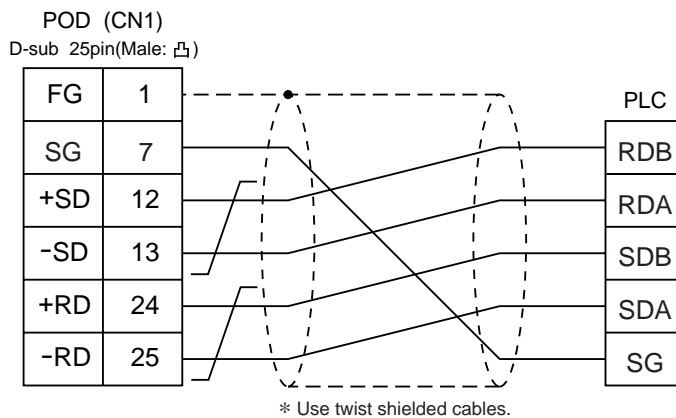
### RS-232C

#### Wiring Diagram 1



### RS-422

#### Wiring Diagram 2



# 21 YOKOGAWA PLC • 2

( FA-M3 / FA-M3R )

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
FA-M3	FA-M3	Programming tool port on a CPU module * 1	Cable made by YOKOGAWA [KM11-2N]
		F3LC01-1N * 2	RS-232C [Wiring Diagram 1]
		F3LC11-1N	RS-232C [Wiring Diagram 1]
		F3LC11-2N	RS-422 [Wiring Diagram 2]
FA-M3R	FA-M3 R	Programming tool port on a CPU module	Cable made by YOKOGAWA [KM11-2N]
		F3LC12-1F	RS-232C [Wiring Diagram 1]

- \*1 CPU types which can be connected directly to programming tool port on a CPU module are "F3SP21-0N," "F3SP25-2N" and "F3SP35-5N."
- \*2 When the link unit, F3LC01-1N, is used, the communication setting and available memory are the same as the contents of "20 YOKOGAWA PLC • 1(FA-500)," provided that B(common register) cannot be used.

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps	19200bps
Parity		Even	Even
Transmission Code	Data Length*	7	7
	Stop Bit	1	1
Sumcheck		Provided	Provided
Terminal Character		None (fixed)	_____
Protection Function		None (fixed)	_____

- \* When using programming tool port on a CPU module for direct connection to POD, set [Data Length] as [8-bit] in the [comm. Parameter] dialog of POD because data length "8" is fixed. Also, specify the "CPU Communication Port" setting of "Configuration" in the ladder making tool as follows.

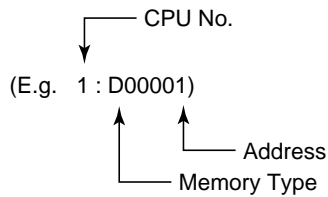
Personal Computer Link Function : Use



## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
R (common register)	1	
V (index register)	2	
W (link register)	3	
Z (special register)	4	
TP (down timer current value)	5	
TS (timer set value)	6	Read only
CP (down counter current value)	7	
CS (down counter set value)	8	
X (input relay)	9	
Y (output relay)	10	
I (internal relay)	11	
E (common relay)	12	
L (link relay)	13	
M (special relay)	14	
B (file register)	15	

- \* The CPU No. is required in addition to the memory type/address. The assigned memory is indicated while editing the screen as illustrated:



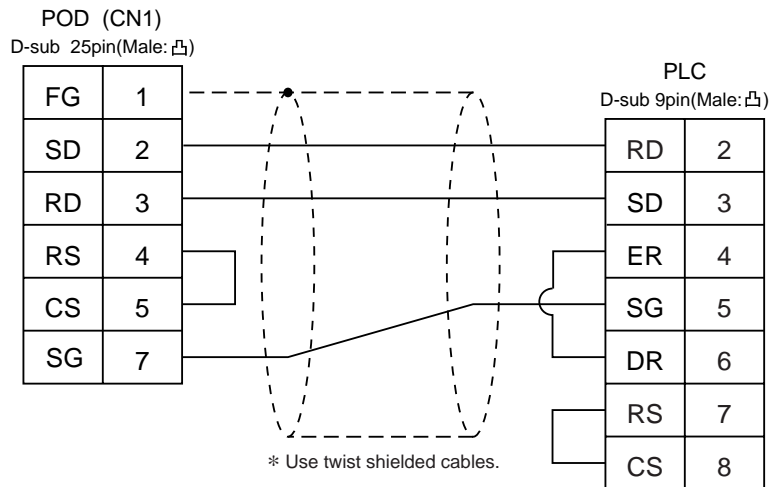
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

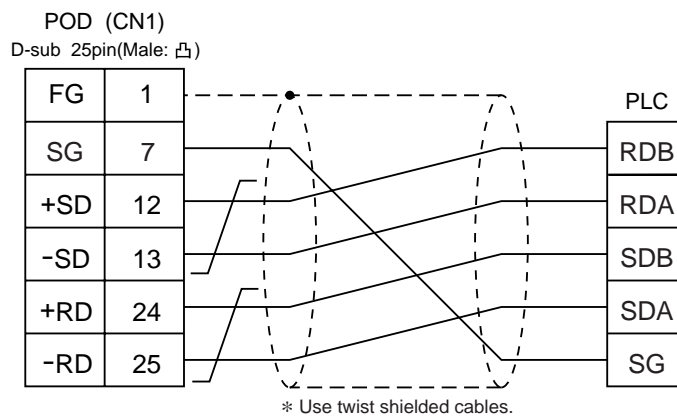
### RS-232C

#### Wiring Diagram 1



### RS-422

#### Wiring Diagram 2



# 22 YASKAWA PLC • 1

(memobus)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
Memobus	GL60 series	JAMSC-IF60 JAMSC-IF61 JAMSC-IF611	RS-232C [Wiring Diagram 1]
		JAMSC-IF612 JAMSC-IF613	RS-422 [Wiring Diagram 3]
	GL120, GL130 series	Memobus port on a CPU module	RS-232C [Wiring Diagram 1]
		JAMSC -120NOM27100	RS-422 [Wiring Diagram 4]
	PROGIC-8	PORT2 on a CPU unit	RS-232C [Wiring Diagram 2]

\* Other kinds of MEMOBUS unit can be connected.

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	1	1
Parity	Even	Even
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1
Error Check	CRC (fixed)	—————
Port Delay Timer	0 (fixed)	—————

Select [TYPE 1] or [TYPE 2] from [Trans. Mode] in [Comm. Parameter] of the UG00S-CW.

PLC Type	Setting of POD	Contents
GL60 series, PROGIC-8	Type 1	Same as before
GL120/130 series	Type 2	Standard binary mode

## Available Memory

Memory	TYPE	Remarks
4 (word device)	0	
3 (input register)	1	Constant register included
R (link register)	2	
A (extension register)	3	
0 (coil)	4	
D (link coil)	5	
1 (input relay)	6	Read only
7 (constant register)	7	

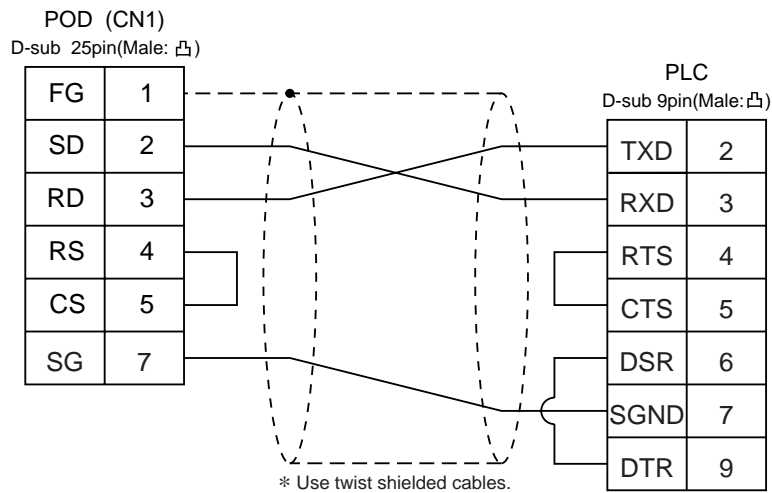
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

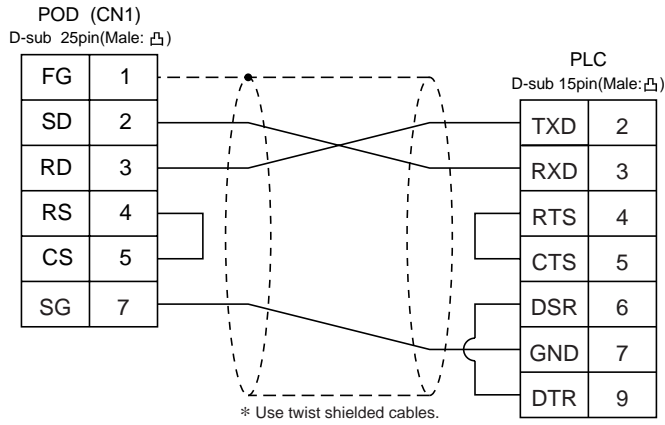
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1

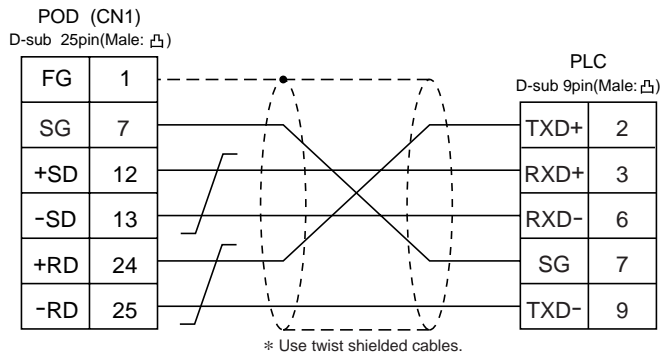


### Wiring Diagram 2

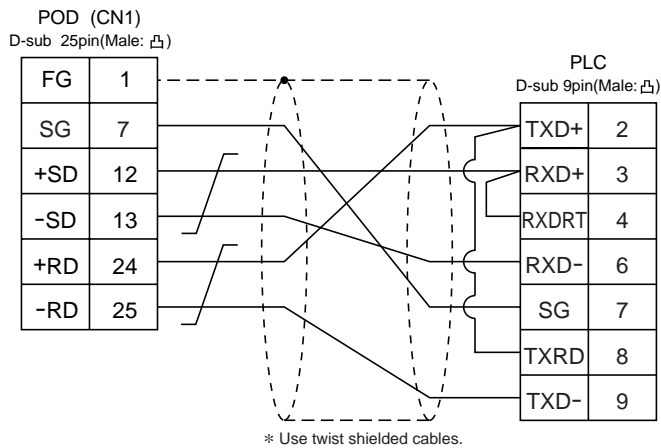


### RS-422

#### Wiring Diagram 3



#### Wiring Diagram 4



# 23 YASKAWA PLC • 2

(CP9200SH/MP900)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
CP9200SH /MP900	CP9200SH	CP-217IF	RS-232C [Wiring Diagram 1] [Wiring Diagram 2] RS-422 [Wiring Diagram 3]
	MP920, MP930	Memobus port on a CPU module	RS-232C [Wiring Diagram 1]
		217IF	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 4]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	1	1
Parity	Even	Even
Transmission Code	Data Length	8
	Stop Bit	1
Error Check	CRC (fixed)	_____
Port Delay Timer	0 (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
MW (word device)	0	
IW (input register)	1	Read only
MB (coil)	4	
IB (input coil)	6	Read only

When setting the MB/IB memories, set the bit number by HEX.

MBxxxx □  
 |  
 DEC  
 Bit No. : HEX

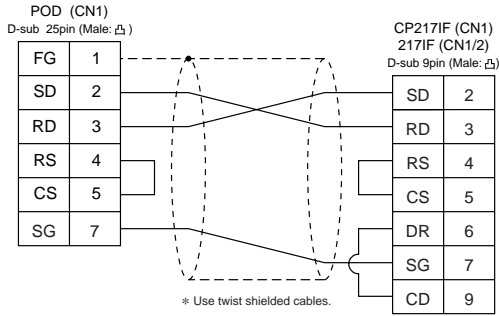
**Set the memory to the extent of the memory range of each PLC model.**  
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

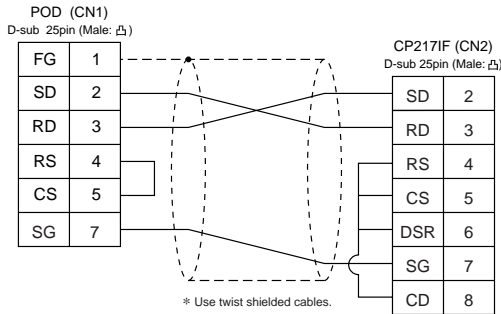
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1

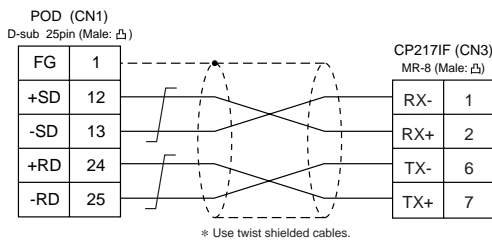


#### Wiring Diagram 2

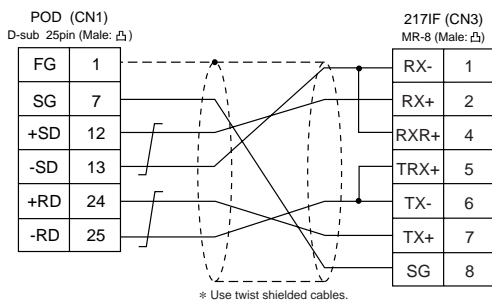


### RS-422

#### Wiring Diagram 3



#### Wiring Diagram 4



# 24 TOYOPUC PLC

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
TOYOPUC	L2/PC2 Series PC3J	CMP-LINK	RS-422 [Wiring Diagram 1]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	0	0
Parity	Even	Even
Transmission Code	Data Length	7
	Stop Bit	2

Set the [Trans. Mode] for [Detail] in the [Comm. Parameter].

- PC3J : Select [Single Data Area] or [Split Data Area].
- L2/PC2 series : Select [Single Data Area].

Trans. Mode	Contents
Single Data Area	Data area is common.
Split Data Area	Divide each PLC device into a program file.

## Switch Setting

Baud rate: 19200bps

Switch	Setting	Contents
SW1	0	Station address (lower half)
SW2	0	Station address (upper half)
SW3	1	Baud rate 1 : 19200 2 : 9600 3 : 4800 4 : 2400 5 : 1200 6 : 600

Switch	Short bar	Contents
SET2	Provided	Data bit 7
SET3	Provided	Stop bit 2



## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
R (link register)	1	
B (file register)	2	
N (current value register)	3	
X (input relay)	4	WX as word device
Y (output relay)	5	WY as word device
M (internal relay)	6	WM as word device
K (keep relay)	7	WK as word device
L (link relay)	8	WL as word device
T (counter/contact)	9	WT as word device
C (counter/contact)	10	WC as word device
U (extension data register)	11	
H (extension set value register)	12	
EN (extension current value register)	13	
EX (extension input relay)	14	WEX as word device
EY (extension output relay)	15	WEY as word device
EM (extension internal relay)	16	WEM as word device
EK (extension keep relay)	17	WEK as word device
EL (extension link relay)	18	WEL as word device
ET (extension counter/contact)	19	WET as word device
EC (extension counter/contact)	20	WEC as word device
V (special register)	21	WV as word device

**Set the memory to the extent of the memory range of each PLC model.**

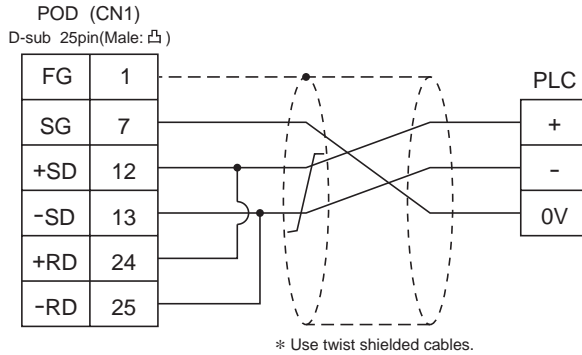
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-422

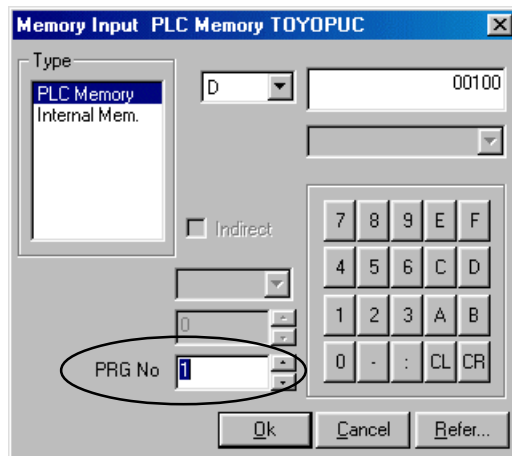
#### Wiring Diagram 1



## Screen Editing (Memory Input)

If [Split Data Area] is selected at the [Trans. Mode], the [PRG No] setting is available at the [Memory Input] dialog.

- range : 1 to 3



# 25 Koyo PLC

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
SU/SG	SU-5/5E/6B/5M/6M	U01-DM	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]
	SU-5E/6B	Port 1 on a CPU unit	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 7]
	SU-5M/6M		
	SZ-4	Port 3 on a CPU unit	RS-485 [Wiring Diagram 8]
		Port 2 on a CPU unit	RS-232C Program transfer cable made by Koyo [S-30JG-E] + Convert connector cable made by Koyo [S-15CNUJ]
	SZ-4M	Port 2 on a CPU unit	RS-232C Program transfer cable made by Koyo [S-30JG-E] + Convert connector cable made by Koyo [S-15CNUJ] + Convert connector made by Koyo [S-15HCNP1]
	SG-8	G01-DM	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 4]
		Port on a CPU unit	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 4]
PZ3	Universal communication port	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 6]	
SR-T	SR-6T (TOYOTA version)	U01-DM	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]
		G01-DM	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 4]
SR-T (K prt)	SR-1T (TOYOTA version)	Terminal blocks on a CPU unit	RS-422 [Wiring Diagram 5]
SU/SG (K-Sequence)	SU-5E/6B	Port 1 on a CPU unit	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 7]
	SU-5M/6M		
		Port 3 on a CPU unit	RS-485 [Wiring Diagram 8]
		Port 2 on a CPU unit	RS-232C Program transfer cable made by Koyo [S-30JG-E] + Convert connector cable made by Koyo [S-15CNUJ]
	SZ-4	Port 1 on a CPU unit Port 2 on a CPU unit	
	SZ-4M	Port 1 on a CPU unit	RS-232C Program transfer cable made by Koyo [S-30JG-E] + Convert connector cable made by Koyo [S-15CNUJ] + Convert connector made by Koyo [S-15HCNP1]
	Port 2 on a CPU unit		

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	"0" for x 10, "1" for x 1	1
Parity	Odd	Odd
Transmission Code	Data Length	8
	Stop Bit	1
Function	Host link system (fixed)	_____
Response Delay Time	0 (fixed)	_____
Time-out	None (fixed)	_____
ASCII/HEX	HEX (fixed)	_____

## Available Memory

- SU/SG , SU/SG(K-Sequence)

Memory	TYPE	Remarks
R (data register)	0	
I (input relay)	1	
Q (output relay)	2	
M (internal relay)	3	
S (stage)	4	
GI (global inputs)	5	
GQ (global outputs)	6	
T (timer/contact)	7	
C (counter/contact)	8	

- SR-1T/SR-T (K prt)

Memory	TYPE	Remarks
D (data register)	0	
X (input relay)	1	X/Y common use
Y (output relay)	2	X/Y common use
M (internal relay)	3	
S (stage)	4	
K (keep relay)	5	
L (link relay)	6	
T (timer/contact)	7	
C (counter/contact)	8	

**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Switch Setting

### ○ U-01DM

On-line/off-line switch: on-line

UNIT ADR switch: "0" for x 10, "1" for x 1

SW4 Dip Switch:

No	Setting	Contents
1	ON	Same as POD (normally 19200bps)
2	ON	
3	ON	
4	ON	Parity provided
5	OFF	Self-diagnosis
6	OFF	Response delay time 0msec
7	OFF	
8	OFF	

SW5 Dip Switch:

No	Setting	Contents
1	OFF	Master/slave control
2	OFF	Slave
3	OFF	Communication time-out
4	OFF	HEX mode

### ○ G-01DM

On-line/off-line switch: on-line

Short plug 1 : open

Short plug 2 RS-232C : ENABLE

RS-422 : DISENABLE

SW1 Dip Switch:

No	Setting	Contents
1	ON	Unit No. 01
2	OFF	
3	OFF	
4	OFF	
5	OFF	
6	OFF	
7	OFF	
8	OFF	1 : N
9	OFF	Slave

SW2 Dip Switch:

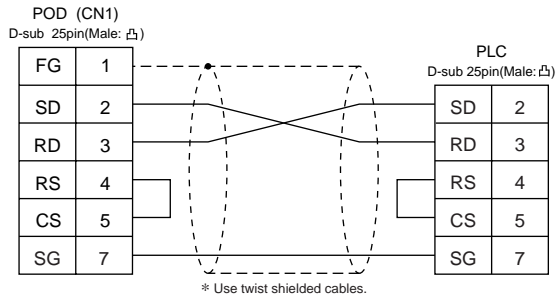
No	Setting	Contents
1	ON	Same as POD (normally 19200bps)
2	ON	
3	ON	
4	ON	Parity provided
5	OFF	Self-diagnosis
6	OFF	Turn-around delay
7	OFF	Response delay time 0msec
8	OFF	
9	OFF	HEX mode

# Wiring

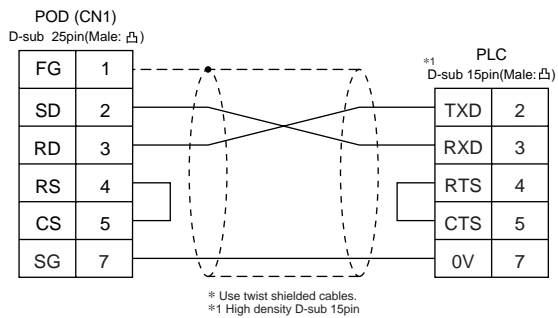
The following is a diagram to show the wiring of the cable which connects POD to PLC.

## RS-232C

### Wiring Diagram 1

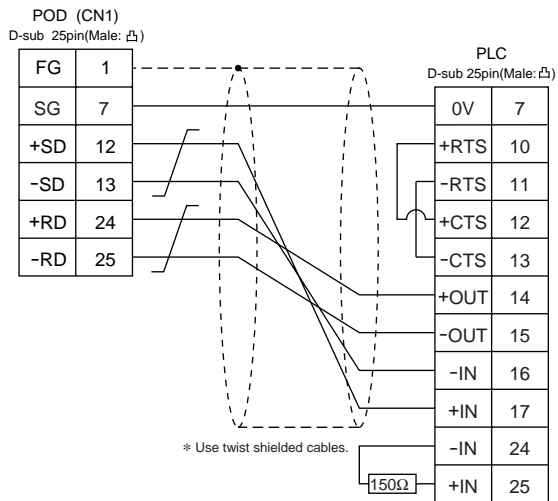


### Wiring Diagram 2

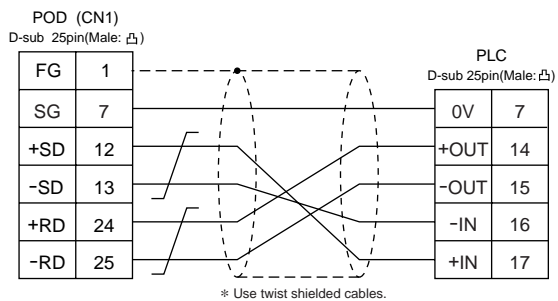


## RS-422

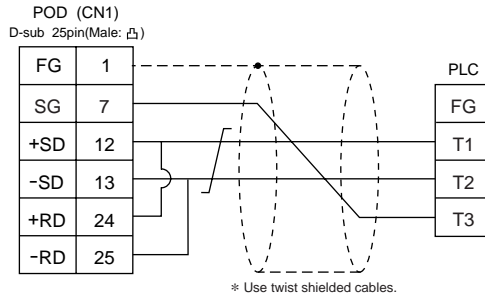
### Wiring Diagram 3



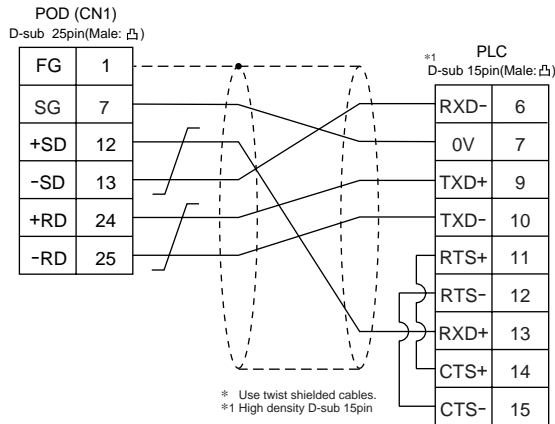
### Wiring Diagram 4



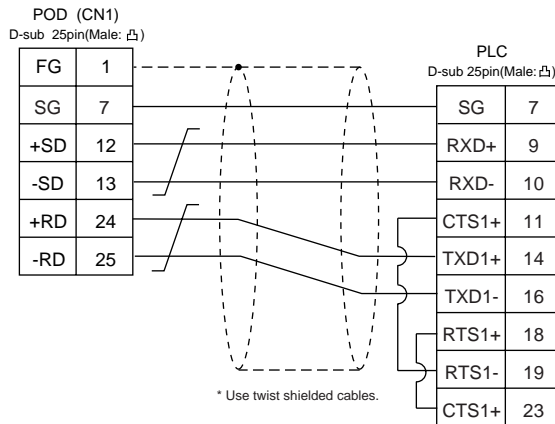
### Wiring Diagram 5



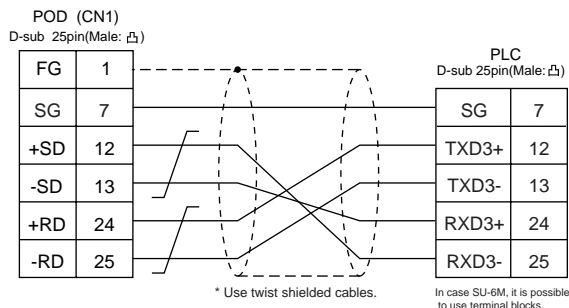
### Wiring Diagram 6



### Wiring Diagram 7



### Wiring Diagram 8



# 26 Allen-Bradley PLC • 1

(PLC-5 series)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
PLC-5	PLC-5	1785-KE	RS-232C [Wiring Diagram 1]
		1770-KF2	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 3]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	0	0
Parity	Even	Even
Transmission Control Mode	RS-232C	_____
	RS-422	Not available with 1785-KE
Transmission Code	Data Length	8
	Stop Bit	1
Protocol	Full duplex (fixed)	_____
Error Check	BCC (fixed)	_____
Response	NO (fixed)	_____



## Available Memory

Memory	TYPE	Remarks
N (integer)	0	
B (bit)	1	
T.ACC (timer/current value)	2	
T.PRE (timer/set value)	3	
C.ACC (counter/current value)	4	
C.PRE (counter/set value)	5	
I (input)	6	
O (output)	7	
S (status)	8	
T (timer/control)	9	
C (counter/control)	10	
R (control/control)	11	
R.LEN (control/data length)	12	
R.POS (control/data position)	13	
D (BCD)	14	
A (ASCáU)	15	

**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Switch Setting

○ 1785-KE

SW1 (protocol)

No	Setting	Contents
1	ON	BCC, Even, no
2	OFF	
3	OFF	
4	ON	Duplicate message unacceptable
5	OFF	Handshaking signal ignored
6	ON	Diagnosis execution

SW2 (port)

Specify the port for 1785-KE. (This port should not be duplicated in the network.)

No	Setting	Contents
1	ON	1st digit (octal)
2	ON	
3	ON/OFF	2nd digit (octal)
4	ON/OFF	
5	ON/OFF	
6	ON/OFF	3rd digit (octal)
7	ON/OFF	
8	ON/OFF	

## SW3 (network link transmission speed)

Adjust the setting according to the network you are using.

No	Setting	Contents
1	ON	Data highway (57.6k bps)
2	ON	
3	ON	Link transmission speed (19.2k bps)
4	ON	
5	ON	
6	ON	Local/remote selection

## SW4 (spare)

No	Setting	Contents
1	OFF	Normally OFF (for expansion)
2	OFF	
3	OFF	
4	OFF	

## ○ 1770-KF2

## SW1 (protocol)

No	Setting	Contents
1	ON	Protocol
2	OFF	Protocol
3	ON	Duplicated message unacceptable
4	OFF	Handshaking signal ignored
5	OFF	Protocol

## SW2, SW3, SW4 (port)

Specify the port for 1770-KF2. (This port should not be duplicated in the network.)

## SW5 (network link transmission speed)

Adjust the setting according to the network you are using.

Switch Setting		Contents
1	2	
ON	ON	57.6k bps

SW6 (asynchronous link transmission speed)

Set the same speed as POD.

No	Setting	Contents
1	OFF	9600bps
2	ON	
3	ON	
4	ON	Diagnosis execution

SW7 (network link selection)

Switch Setting		Contents
1	2	
ON	OFF	Peer transmission link

SW8 (RS-232C/RS-422 selection)

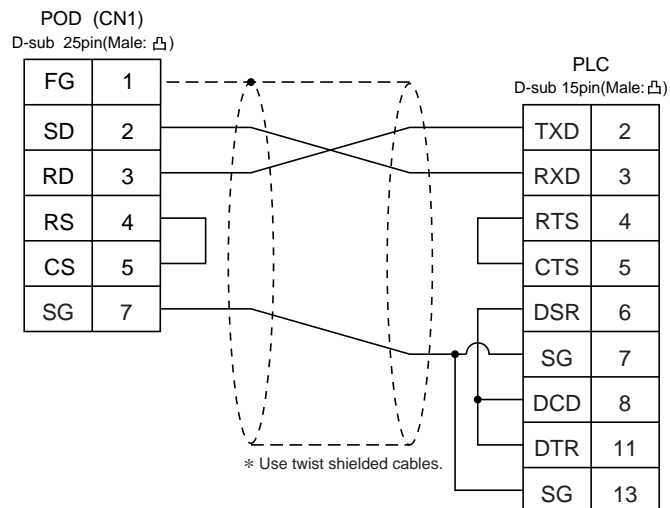
Switch Setting		Contents
1	2	
OFF	ON	RS232C
ON	OFF	RS422

## Wiring

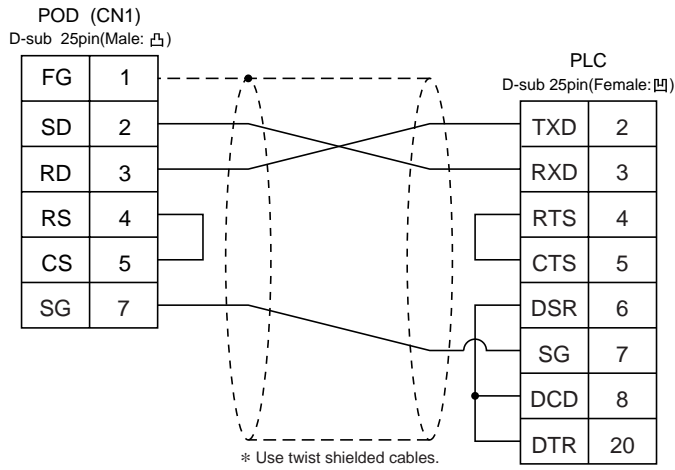
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1

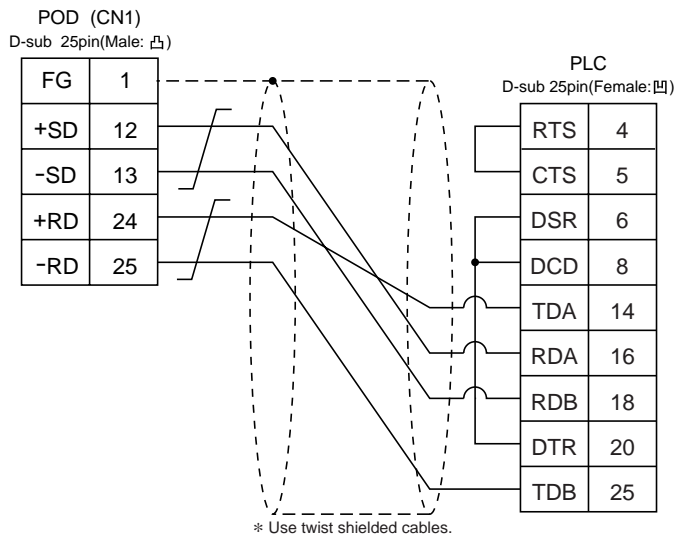


### Wiring Diagram 2



### RS-422

#### Wiring Diagram 3



# 27 Allen-Bradley PLC • 2

(SLC500 series • Micro Logix1000)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
SLC500	SLC 5/03 or later models	CPU (Processor module) RS-232C channel	RS-232C [Wiring Diagram 1]
		1747-KE	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 4]
Micro Logix 1000	Micro Logix 1000	Port on a CPU	RS-232C program transfer * cable made by Allen-Bradley + RS-232C [Wiring Diagram 3]

\* When using RS232C program transfer cable made by Allen-Bradley , connect the cable of [Wiring Diagram 3] to the D-sub 9 pin side of program transfer cable to communicate with POD .

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

### ◆ SLC500 series

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	0	0
Parity	Even	Even
Transmission Control Mode	RS-232C	_____
	RS-422	not supported on Channel 0
Transmission Code	Data Length	8
	Stop Bit	1
Protocol	Full duplex (fixed)	_____
Error Check	BCC (fixed)	_____
Response	NO (fixed)	_____

### ◆ Micro Logix 1000

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Port	0	0
Parity	None (fixed)	None
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1 (fixed)
Error Check	CRC (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
N (integer)	0	
B (bit)	1	
TP (timer/current value)	2	
TA (timer/set value)	3	
CP (counter/current value)	4	
CA (counter/set value)	5	
I (input)	6	
O (output)	7	
S (status)	8	
TC (timer/control)	9	
CC (counter/control)	10	
R (control/control)	11	
R.LEN (control/data length)	12	
R.POS (control/data position)	13	
D (BCD)	14	
A (ASC II)	15	
F (Float)	16	
ST (String)	17	

**Set the memory to the extent of the memory range of each PLC model.**

**Use TYPE number to assign indirect memory for macro programs.**

## Transmission Parameter Setting

- CPU Port Channel 0

Set up the parameters for CPU port channel 0, using the software specifically designed for this purpose.

Baud Rate : 19200  
 Duplicate Detect : ON  
 ACK Timeout( × 20 ms) : 20  
 Control Line : NO HANDSHAKING  
 Parity : EVEN  
 Error Detect : BCC  
 NAK Retries : 3  
 ENQ Retries : 3  
 Embedded Responses : AUTO-DETECT

## ○ 1747-KE

Set up the parameters for 1747-KE, using the software specifically designed for this purpose.

## DF1 Port Setup Menu

Baudrate : 19200  
 Bits Per Character : 8  
 Parity : Even  
 Stop Bits : 1

## DF1 Full-Duplex Setup Parameters

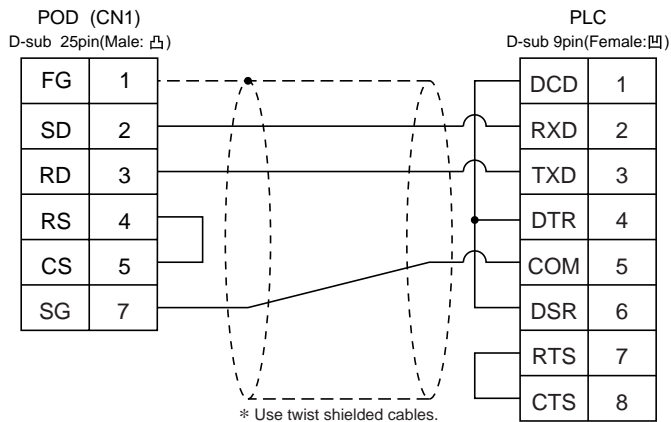
Duplicate Packet Detection : Enabled  
 Checksum : BCC  
 Constant Carrier Detect : Disabled  
 Message Timeout : 400  
 Hardware Handshaking : Disabled  
 Embedded Response Detect : Auto Detect  
 ACK Timeout( × 5ms) : 90  
 ENQuery Retries : 3  
 NAK Received Retries : 3

## Wiring

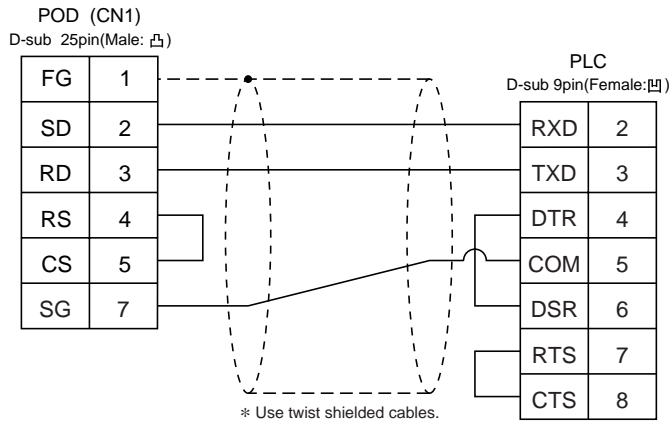
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

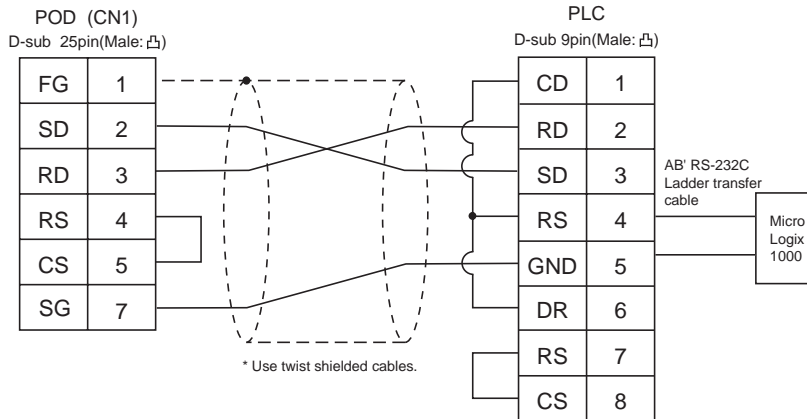
#### Wiring Diagram 1



### Wiring Diagram 2

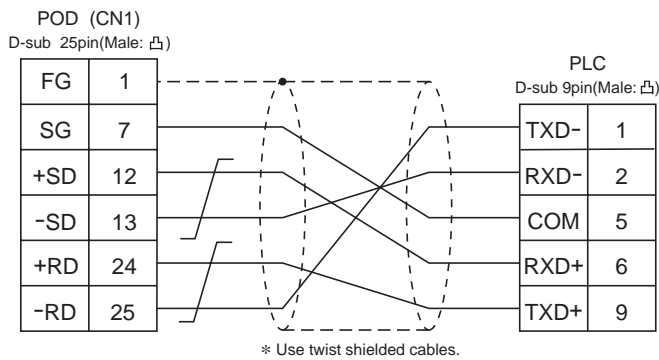


### Wiring Diagram 3



## RS-422

### Wiring Diagram 4





# 28 GE Fanuc PLC • 1

(90 series)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
90 Series	Series 90-30	Programmable co-processor (PCM)	RS-232C [Wiring Diagram 1]
			RS-485 [Wiring Diagram 2]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps	19200bps
Port		01 ("0" for x 10, "1" for x 1)	1
Parity		Odd	Odd
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Function		Host link system (fixed)	_____
Response Delay Time		0 (fixed)	_____
Time-out		None (fixed)	_____
ASCII/HEX		HEX (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
R (data register)	0	
I (input)	1	
Q (output)	2	

**Set the memory to the extent of the memory range of each PLC model.**

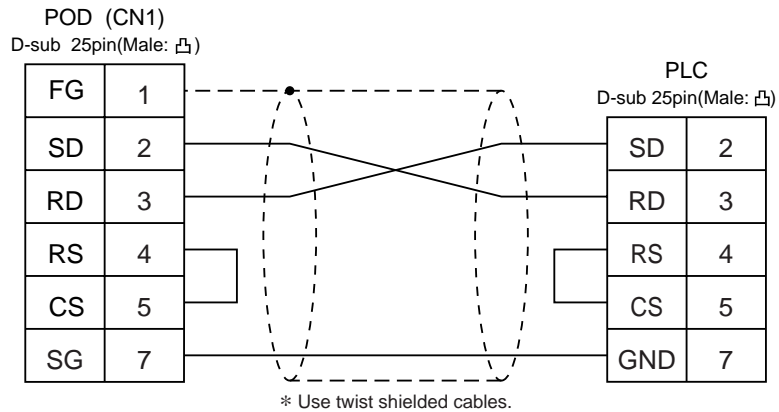
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

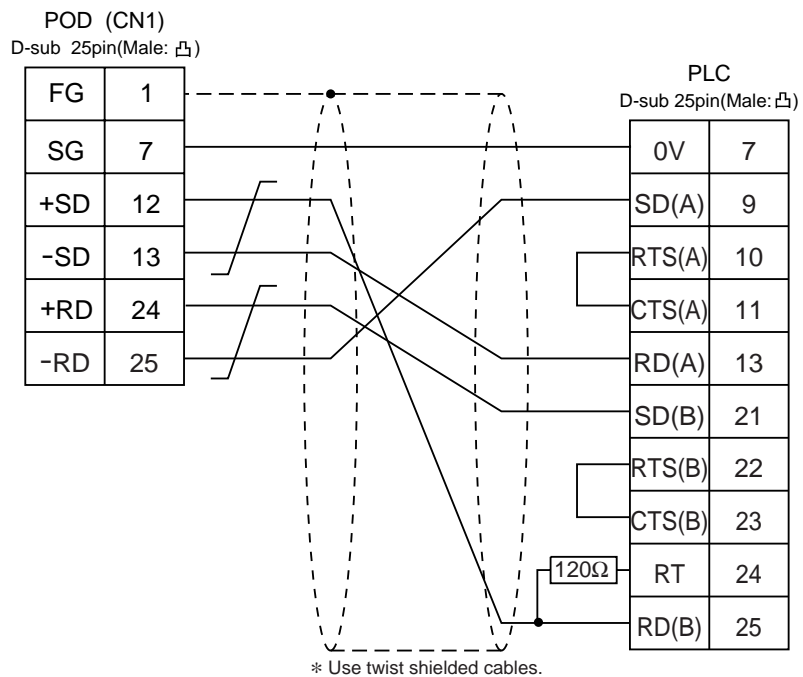
### RS-232C

#### Wiring Diagram 1



### RS-485

#### Wiring Diagram 2



# 29 GE Fanuc PLC • 2

(90 series SNP-X)

## Available PLC

Select PLC Type	PLC	Wiring Diagram
90 Series (SNP-X)	Series 90 micro (CPU port) Series 90-30 (CPU port)	RS-485 [Wiring Diagram 1]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Parity	Odd	Odd
Transmission Code	Data Length	8
	Stop Bit	1
Function	SNP-X (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
R (data register)	0	
I (input)	1	
Q (output)	2	
M (internal relay)	3	
G (global relay)	4	
AI (analog input)	5	
AQ (analog output)	6	
T (temporary memory)	7	
S (system status)	8	Read only
SA (system status)	9	
SB (system status)	10	
SC (system status)	11	

**Set the memory to the extent of the memory range of each PLC model.**

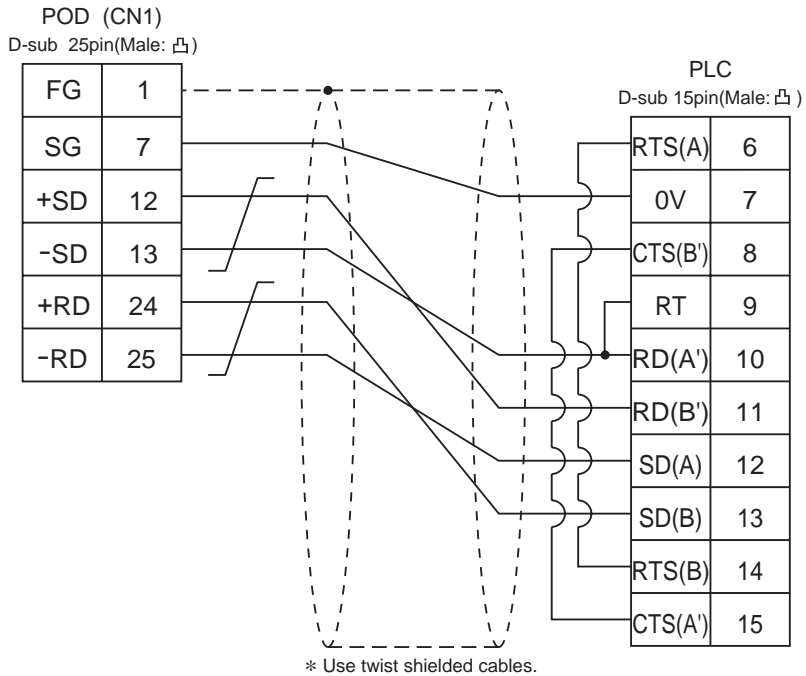
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-485

#### Wiring Diagram 1



# 30 TOSHIBA PLC

(T series)

## Available PLC

Select PLC Type	PLC	Wiring Diagram
T Series	T series	RS-422 [Wiring Diagram 1]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows.

For further information, refer to the TOSHIBA's PLC manual.

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	01	1
Parity	Odd	Odd
Transmission Code	Data Length	8
	Stop Bit	1

## PLC Transmission Parameter Setting

For specifying parameters in the T series PLC, use a T-series programmer and enter the following data in the system information "7. COMPUTER LINK".

Station No. 1  
 Baud rate 19200 BPS  
 Parity Odd  
 Data bit 8 bit  
 Stop bit 1 bit

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
X (input register)	1	XW as word device
Y (output register)	2	YW as word device
R (auxiliary relay)	5	RW as word device
L (link relay)	6	LW as word device
W (link register)	7	
F (file register)	8	
TN (timer/current value)	9	Read only
CN (counter/current value)	10	Read only
TS (timer/contact)	11	Read only
CS (counter/contact)	12	Read only

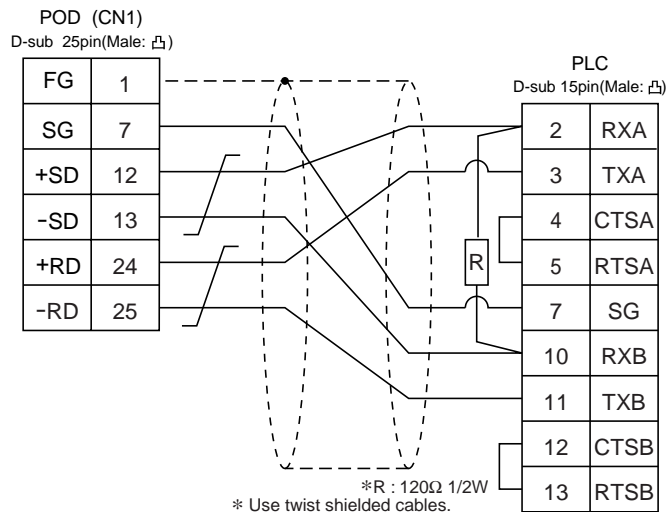
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-422

#### Wiring Diagram 1



# 31 TOSHIBA MACHINE PLC

## (TC200)

### Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
TC200	TC200	Port on a CPU unit	RS-232C [Wiring Diagram 1]
		TCCMW TCCMO	

### Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows.

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Port	1	1

### Available Memory

Memory	TYPE	Remarks
D (register 1)	0	
B (register 2)	1	
X (input relay)	2	XW as word device
Y (output relay)	5	YW as word device
R (temporary storage)	6	RW as word device
G (extension temporary storage 1)	7	GW as word device
H (extension temporary storage 2)	8	HW as word device
L (latch)	9	LW as word device
S (shift register)	10	SW as word device
E (edge relay)	11	EW as word device
P (timer counter current value)	12	
V (timer counter set value)	13	
T (timer)	14	TW as word device
C (counter)	15	CW as word device
A (special auxiliary relay)	16	AW as word device

**Set the memory to the extent of the memory range of each PLC model.**

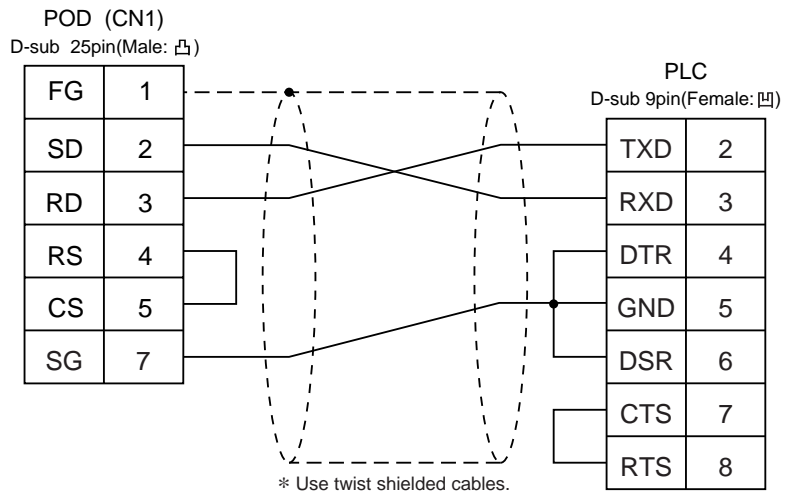
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1





# 32 SIEMENS PLC • 1

(S5-90, S5-95U, S5-100U)

## Available PLC

A similar program as RK512 is required.

Select PLC Type	PLC	Link Unit	Wiring Diagram
S5 (S5 UG400)	S5-90U S5-95U S5-100U	CP-521SI (3964R Transmission Protocol)	RS-232C [Wiring Diagram 1]
	S5-95U	Second serial interface (3964R Transmission Protocol)	[6ES5 734-1BD20] cable made by SIEMENS + RS-232C [Wiring Diagram 2] <sup>*1</sup>

\*1 When using [6ES5 734-1BD20] cable made by SIEMENS , connect cable of [ Wiring Diagram 2 ] to the D-sub 25 pins side of [6ES5 734-1BD20] to communicate with POD .

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

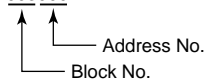
Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		9600bps	9600bps
Parity		Even parity	Even
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Busy Signal		NO (fixed)	_____
Hand Shake		OFF (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
DB (data register)	0	Use memories more than DB3.
I (input relay)	1	IW as word device    Read only
Q (output relay)	2	QW as word device    Read only
F (internal relay)	3	FW as word device    Read only
T (timer/current value)	4	Read only
C (counter/current value)	5	Read only
AS (absolute address)	6	

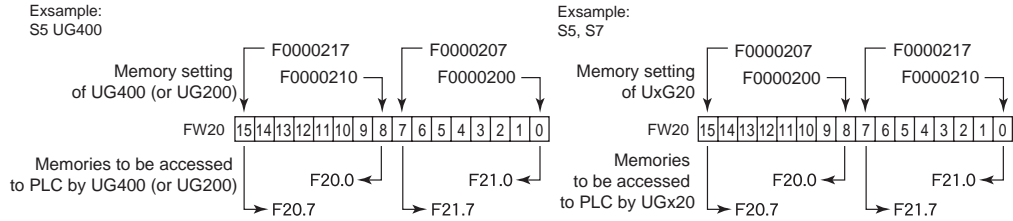
The assigned memory is indicated while editing the screen as illustrated:

<E.g.> DB003000



**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

**\* Notes on converting the data file of UG400 (or UG200) into the UGx20 data file.**  
**When converting the data file of UG400 (or UG200) into the UGx20 data file, the PLC type is automatically selected as “SIEMENS S5 UG400.”**  
**In UG400 (or UG200) , the order of bytes in I (input relay), Q (output relay) and F (internal relay) is reversed.**

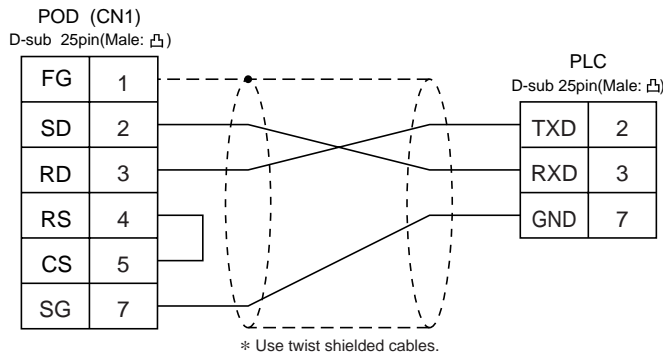


## Wiring

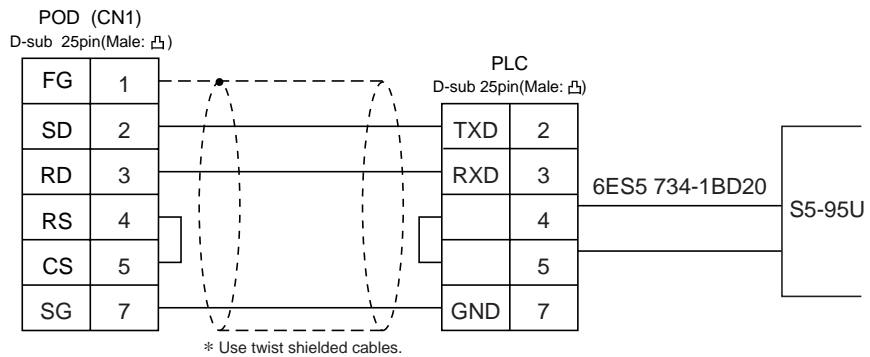
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



#### Wiring Diagram 2



# 33 SIEMENS PLC • 2

(S5-115U/135U/155U , S7-300,400)

## Available PLC

A similar program as RK512 is required.

Select PLC Type	PLC	Link Unit	Wiring Diagram
S5 (S5 UG400)	S5-115U	CP-524(3964R/RK512)	RS-232C [Wiring Diagram 1]
	S5-135U S5-155U	CP-544(3964R/RK512)	RS-422 [Wiring Diagram 3]
S7	S7-300	CP-341(3964R/RK512)	RS-232C [Wiring Diagram 2]
	S7-400	CP-441(3964R/RK512)	RS-422 [Wiring Diagram 3]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Parity	_____	Even (fixed)
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1 (fixed)

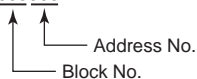
## Available Memory

Memory	TYPE	Remarks
DB (data register)	0	Use memories, more than DB1 for S7, more than DB3 for S5.
I (input relay)	1	IW as word device    Read only
Q (output relay)	2	QW as word device    Read only
F (internal relay)	3	FW as word device    Read only only in S5 series
M (internal relay)	3	MW as word device    Read only only in S7 series
T (timer/current value)	4	Read only
C (counter/current value)	5	Read only
AS (absolute address)	6	Can not be used in S7 series.

The assigned memory is indicated while editing the screen as illustrated:

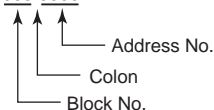
<E.g.> S5, S5 UG400

DB003000



S7

DB003:0000

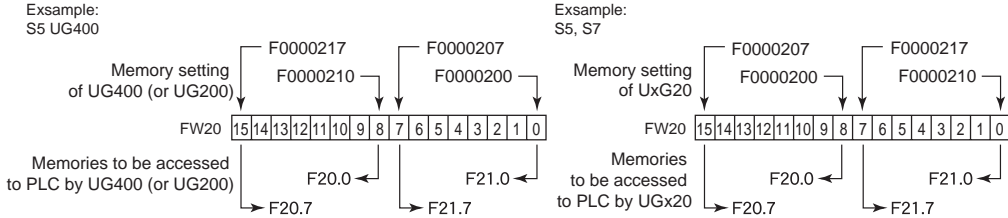


**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

\* **Notes on converting the data file of UG400 (or UG200) into the UGx20 data file.**

**When converting the data file of UG400 (or UG200) into the UGx20 data file, the PLC type is automatically selected as “SIEMENS S5 UG400.”**

**In UG400 (or UG200) , the order of bytes in I (input relay), Q (output relay) and F (internal relay) is reversed.**

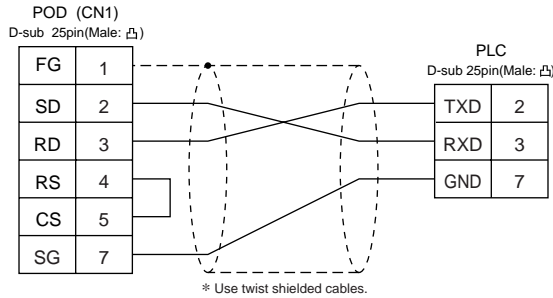


## Wiring

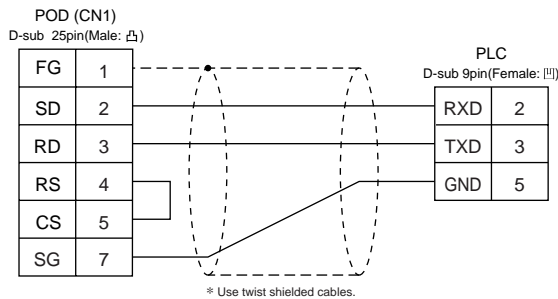
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1

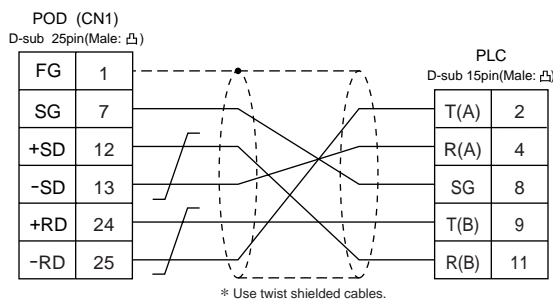


#### Wiring Diagram 2



### RS-422

#### Wiring Diagram 3



# 34 SIEMENS PLC • 3

(S5 PG Port)

## Connection

Connect to the S5 series PG port. The communication parameter setting of POD is done automatically.

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
S5 PG Port	S5 series	Programing port on a CPU unit	[6ES5 734-1BD20] cable made by SIEMENS* +RS-232C [Wiring Diagram 1]

\* When using [6ES5 734-1BD20] cable made by SIEMENS , connect the cable of [ Wiring Diagram 1 ] to the D-sub 25 pin side of [6ES5 734-1BD20] to communicate with POD.

## Available Memory

Memory	TYPE	Remarks
DB (data register)	0	Use memories more than DB3.
I (input relay)	1	IW as word device
Q (output relay)	2	QW as word device
F (internal relay)	3	FW as word device
T (timer/current value)	4	
C (counter/current value)	5	
AS (absolute address)	6	

The assigned memory is indicated while editing the screen as illustrated: <E.g.> DB003000

**Set the memory to the extent of the memory range of each PLC model.**

**Use TYPE number to assign indirect memory for macro programs.**

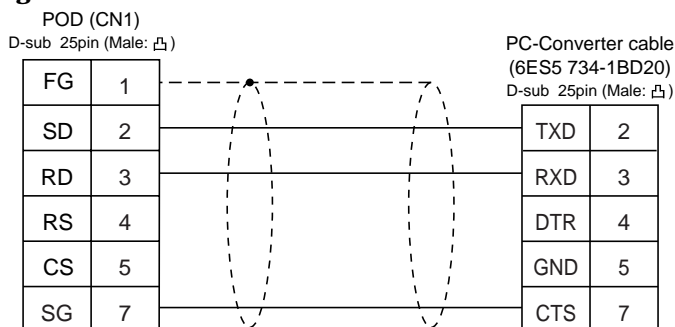
Address No.  
Block No.

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



# 35 SIEMENS PLC • 4

(S7-200 PPI)

## Available PLC

Select PLC Type	PLC	Wiring Diagram
S7-200 PPI	S7-200 series	RS-422 [Wiring Diagram 1]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Port	2	2
Parity	Even (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
V (data register)	0	VW as word device
I (input relay)	1	IW as word device Possible to write only to the area which is not used
Q (output relay)	2	QW as word device
M (bit memory)	3	MW as word device
T (timer/current value)	4	
C (counter/current value)	5	
TB (timer/contact)	6	Read only
CB (counter/contact)	7	Read only
HC (high-speed counter/contact)	8	Possible to use double word
AIW (analog input)	9	
AQW (analog output)	10	
SM (special memory/special relay)	11	SMW as word device
S (stage)	12	SW as word device

**Set the memory to the extent of the memory range of each PLC model.**

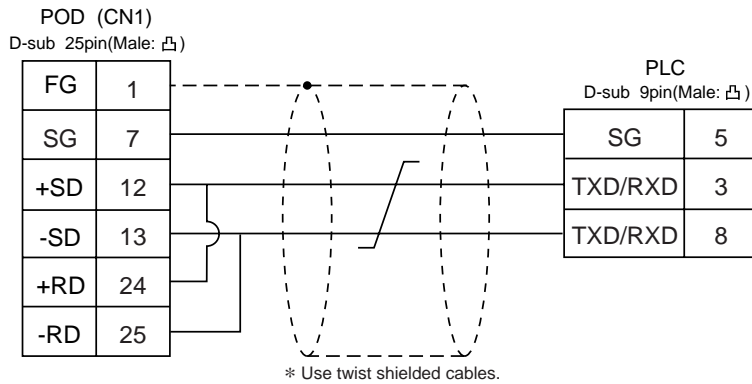
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-422

#### Wiring Diagram 1

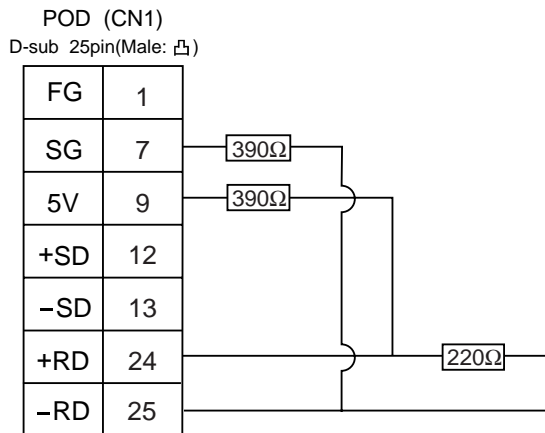


## Setting of Terminal Resistance

Set the dip switch 7,8 of POD to OFF.

Connect terminal resistance to the POD serial connector (CN1) as follows.

If terminal resistance is not connected, the communication error may occur.



# 36 SIEMENS PLC • 5

(TI545, 555)

## Available PLC

Select PLC Type	PLC	Wiring Diagram
TI500/505 (TI500/505 UG400)	TI545/555 CPU port (built-in)	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 2]

## Communication Setting

Connect the cable to the CPU port (RS-232C built-in port) for TI545/555.

The recommended communication parameter setting of both PLC and POD is as follows:

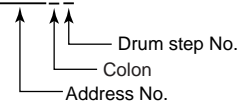
Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Parity	_____	None (fixed)
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1 (fixed)

## Available Memory

Memory	TYPE	Remarks
V (variable memory)	0	
WX (word input)	1	
WY (word output)	2	
X (discrete input)	3	
Y (discrete output)	4	
CR (control relay)	5	
TCP (timer counter/set value)	6	
TCC (timer counter/current value)	7	
DCP (drum count/set value)	8	*1
DCC (drum count/current value)	9	Read only
DSP (drum step/set value)	10	
DSC (drum step/current value)	11	
K (fixed memory)	12	
STW (system state)	13	

- \*1 In case of using DCP (drum count/set value), set the drum step No.1 to 16.  
The assigned memory is indicated while editing the screen as illustrated:

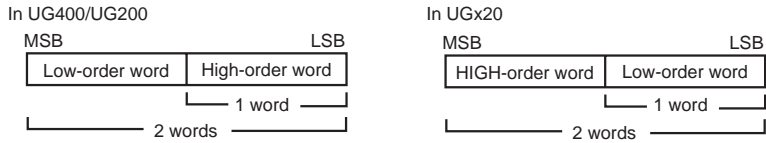
<E.g.> DCP30000:1



**Set the memory to the extent of the memory range of each PLC model.**  
**Use TYPE number to assign indirect memory for macro programs.**



**Notes on converting the data file of UG400 (or UG200) into the UGx20 data file.**  
**When converting the data file of UG400 (or UG200) into the UGx20 data file, the PLC type is automatically selected as “TI500/505 UG400.”**  
**In UG400 (or UG200), the order of words is reversed when the double words.**

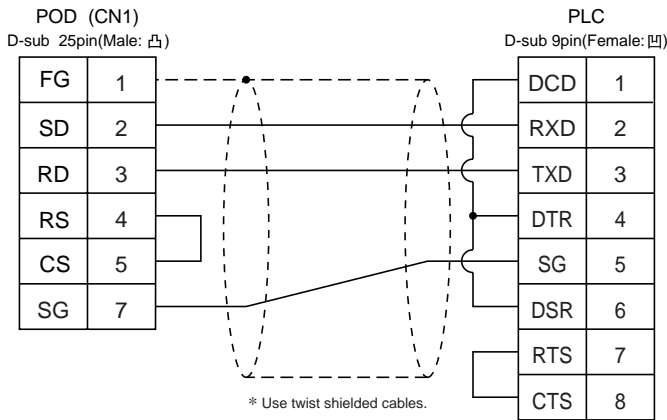


**Wiring**

The following is a diagram to show the wiring of the cable which connects POD to PLC.

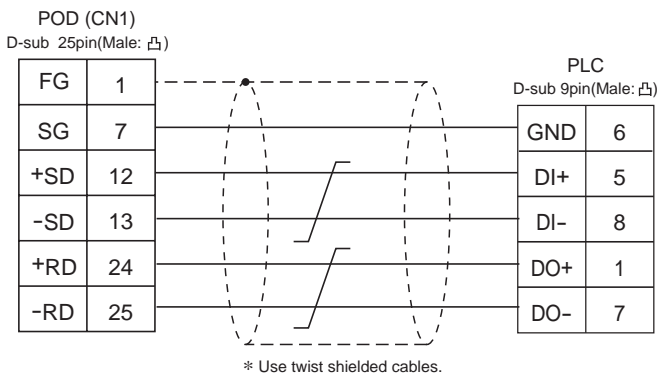
**RS-232C**

**Wiring Diagram 1**



**RS-422**

**Wiring Diagram 2**



# 37 SIEMENS PLC • 6

(S7-300/400MPI, S7-300/400MPI ADP)

## Available PLC

Select PLC Type	CPU	Adapter	Wiring Diagram
S7-300/400MPI	S7-300/400 series	MPI port	RS-422 [Wiring Diagram 2]
S7-300MPI (HMI ADP)	S7-300/400 series (MPI port)	SIEMENS HMI Adapter 6ES7 972 0CA11-0XA0	RS-232C [Wiring Diagram 1]
S7-300MPI (PC ADP)		SIEMENS PC Adapter 6ES7 9720CA23-0XA0	
S7-300MPI (Helmholz SSW7 ADP)		Helmholz SSW7 Adapter	

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

### ○ S7-300/400 MPI

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps (fixed)
Parity	—————	Even (fixed)
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1 (fixed)
Local No. (station no. of PLC)	2	2

### ○ S7-300 MPI (HMI ADP / PC ADP / Helmholz SSW7 ADP )

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	38400bps	HMI ADP : 38400bps (fixed) PC ADP : 38400bps
Parity	—————	None (fixed)
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1 (fixed)
Local No. (PLC station No.)	2	2

Set the [MPI SETTING] in the [Comm. Parameter] in Panel editor.

Item	MPI setting
Highest MPI Address	15/31/63/126
Source No. (UG station No.)	0

Highest MPI Address : Specify the highest number on the network.

Source No :

Station number of POD. Make sure that this number is unique. Set difference number for [Source No.] and [Local No.], and make sure that [Source No.] ≤ [Node Cnt.]

<E.g.> PLC is "13" and POD is "20", select "31".

## Available Memory

Memory	TYPE	Remarks
DB (data register)	0	Use memories more than DB1.
I (input relay)	1	IW as word device
Q (output relay)	2	QW as word device
M (Merker Word)	3	MW as word device
T (timer/current value)	4	
C (counter/current value)	5	

The assigned memory is indicated while editing the screen as illustrated:

<E.g.> DB0001: 0000

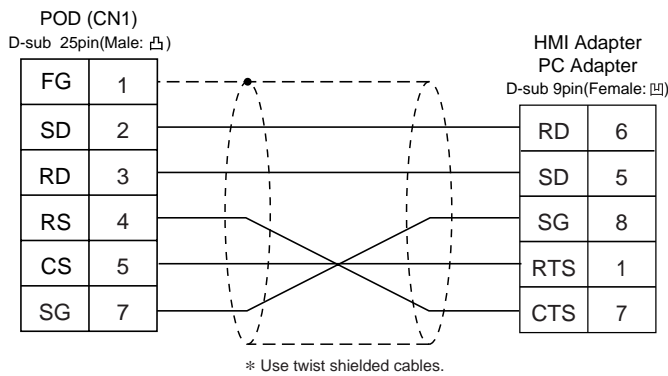
**Set the memory to the extent of the memory range of each PLC model.**  
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

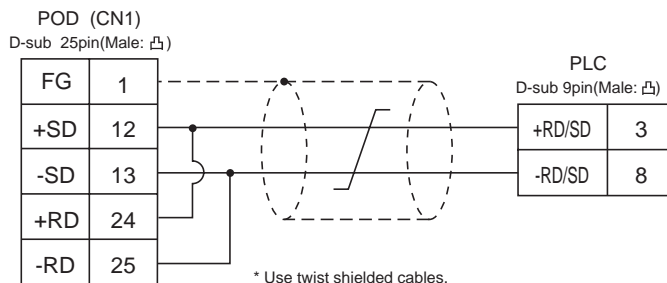
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



#### Wiring Diagram 2



# 38 Shinko PLC

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
SELMART	SELMART-100 or later series	Version O1M2-UCI-6x	RS-232C [Wiring Diagram 1]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Parity	Even	Even
Transmission Code	Data Length	7 (ASCII)
	Stop Bit	1
Sum Check	Provided (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	

**Only D register is available for this PLC model.**

**No other devices can be used although they are available to be set in theUG00S-CW.**

**Set the memory to the extent of the memory range of each PLC model.**

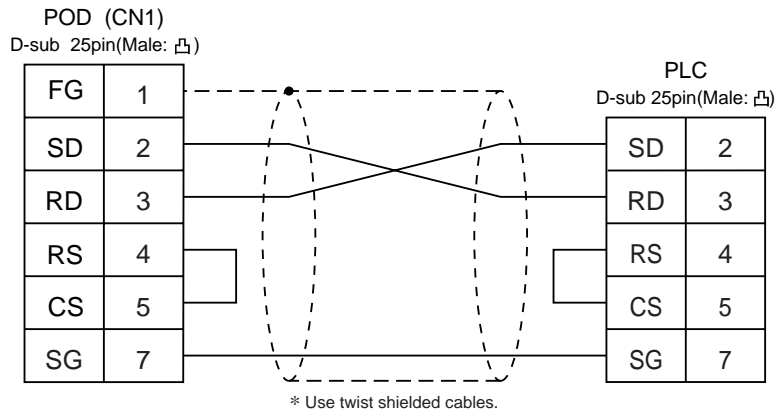
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



# 39 SAMSUNG PLC

(SPC series)

## Available PLC

Select PLC Type	PLC	Wiring Diagram
SPC Series	SPC series	RS-232C [Wiring Diagram 1] RS-422/485 [Wiring Diagram 2]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Parity	None	None
Stop Bit	1	1
Terminal Resistor	ON for RS-485	_____

## Available Memory

Memory	TYPE	Remarks
R (input/output)	0	
L (link relay)	1	
M (internal relay)	2	
K (keep relay)	3	
F (special relay)	4	
W (data register)	5	

**Set the memory to the extent of the memory range of each PLC model.**

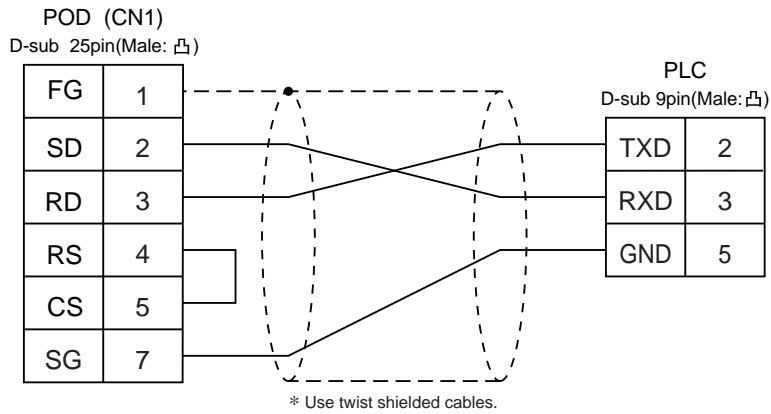
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

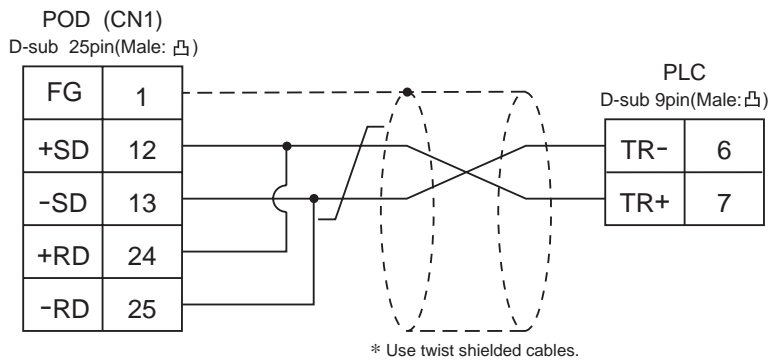
### RS-232C

#### Wiring Diagram 1



### RS-422

#### Wiring Diagram 2



# 40 KEYENCE PLC • 1

(KZ series link)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
KZ Series link	KZ300 KZ350	KZ-L2	Port 1 RS-232C [Wiring Diagram 1] Port 2 RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 3]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:  
For further information, refer to the communication specifications of KEYENCE link unit.

Item	Setting of PLC	Comm. Parameter of POD
Port	0	0
Baud Rate	19200bps	19200bps
Parity	Even	Even
Transmission Code	Data Length	7 (ASCII)
	Stop Bit	2
Terminal Resistor	ON for RS-422	_____

**Set the port with the port setting switch, the terminating resistance with terminator, and the baud rate/data bit/parity/stop bit with SET B dip switches.**

## Available Memory

Memory	TYPE	Remarks
DM (data memory)	0	
CH (input/output relay)	1	

**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

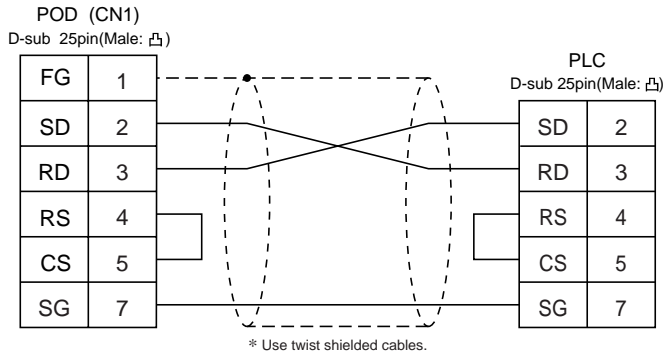


## Wiring

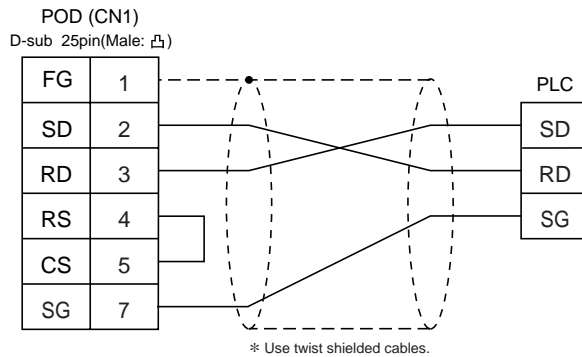
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1

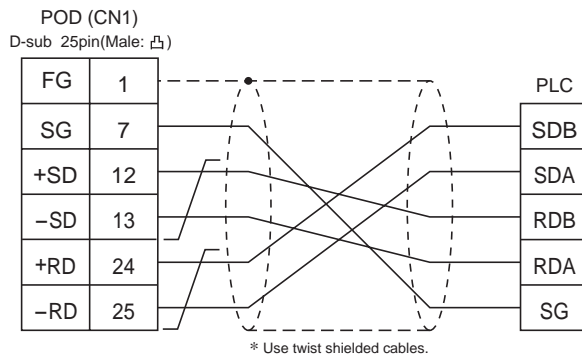


#### Wiring Diagram 2



### RS-422

#### Wiring Diagram 3



# 41 KEYENCE PLC • 2

(KZ-A500)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
KZ-A500 CPU	KZ-A500	CPU Modular Port	RS-232C [Wiring Diagram 1] RS-422 Cable made by KEYENCE [ KZ-C20 ] + Cable made by Fuji [ UG200C-M ]
MITSUBISHI A series link		KZ-L10	Port 1 RS-232C [Wiring Diagram 2] Port 2 RS-232C [Wiring Diagram 3] RS-422 [Wiring Diagram 4]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

### ◆ CPU modular port of KZ-A500

Item	Setting of PLC	Comm. Parameter of POD
Port	0	0
Baud Rate	9600bps	9600bps * 1
Parity	Odd	Odd
Transmission Code	Data Length	8
	Stop Bit	1
Terminal Resistor	ON for RS-422	_____

\*1 In case of RS-422, the baud rate is fixed at 9600bps.

### ◆ Link Unit KZ-L10

Item	Setting of PLC	Comm. Parameter of POD
Port	0	0
Baud Rate	19200bps	19200bps
Parity	Even	Even
Transmission Code	Data Length	7
	Stop Bit	1
Terminal Resistor	ON for RS-422	_____

**Set the port with the port setting switch, the terminating resistance with terminator, and the baud rate/data bit/parity/stop bit with SET B dip switches. For further information, refer to the communication specifications of KZ-L10.**

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
W (link register)	1	
R (file register)	2	
TN (timer/current value)	3	
CN (counter/current value)	4	
M (internal relay)	6	
L (latch relay)	7	
B (link relay)	8	
X (input relay)	9	
Y (output relay)	10	
TS (timer/contact)	11	
TC (timer/coil)	12	
CS (counter/contact)	13	
CC (counter/coil)	14	

**Set the memory to the extent of the memory range of each PLC model.**

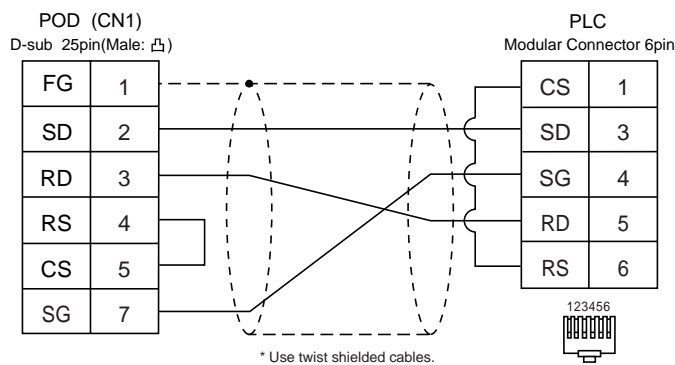
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

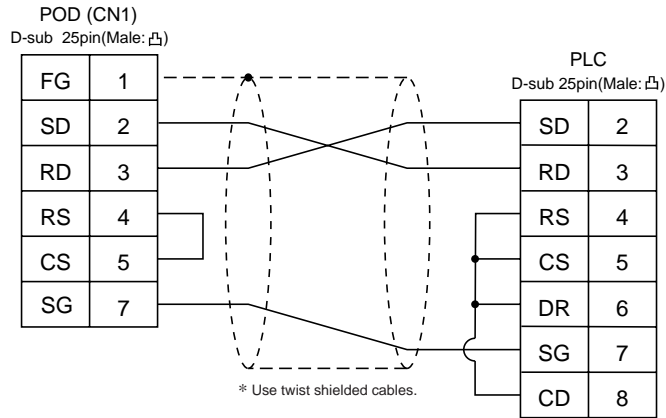
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

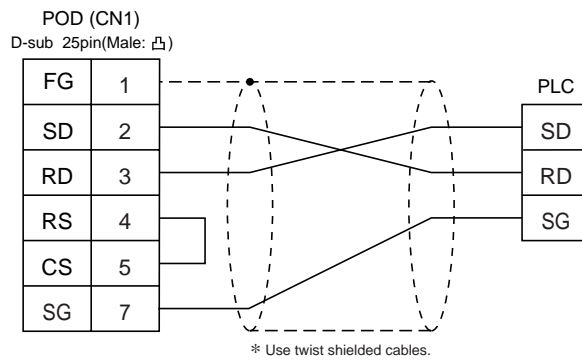
#### Wiring Diagram 1



### Wiring Diagram 2

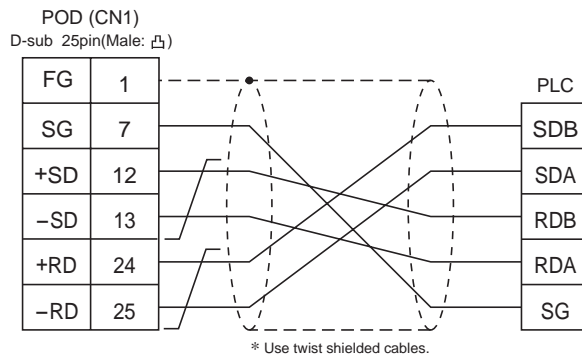


### Wiring Diagram 3



### RS-422

#### Wiring Diagram 4



# 42 KEYENCE PLC • 3

(KV / KZ series)

## Available PLC

Select PLC Type	PLC	Wiring Diagram
KZ/KV Series CPU	KZ-10/16/24/40/80/300/350 (Program port direct connection)	RS-232C [Wiring Diagram 1] or Cable made by KEYENCE [OP-26487] +Connector made by KEYENCE [OP-26485]
	KV Series (Program port direct connection)	RS-422 Cable made by KEYENCE [KZ-C20] +Cable made by FUJI [ UG200C-M ]
KZ 24/300 CPU	KZ-24/300 (Program port direct connection)	RS-232C [Wiring Diagram 1] or Cable made by KEYENCE [OP-26487] +Connector made by KEYENCE [OP-26485]
KZ 10/24 CPU	KZ-10/24 (Program port direct connection)	
KV 700 CPU	KZ 700 (Program port direct connection)	

\* When using RS232C cable made by KEYENCE [OP-26487] , attach the D-sub 25 pins connector [OP-26485] to the modular jack on the POD side to communicate.

## Communication Setting

### ◆ KV series / KV 700 series CPU

The communication parameter setting of POD is done automatically.

### ◆ KZ24/300 series CPU

Item	Setting of PLC	Comm. Parameter of POD
Port	0	0
Baud Rate	38400bps	38400bps *1
Parity	Even	_____
Transmission Code	Data Length	8
	Stop Bit	1

\*1 Maximum baud rate is 38400 bps.If 57600bps or 115000bps is selected, POD communicates with a PLC forcibly at 9600 bps.

### ◆ KV10/24 series CPU

Item	Setting of PLC	Comm. Parameter of POD
Port	0	0
Baud Rate	57600bps	57600bps *1
Parity	Even	_____
Transmission Code	Data Length	8
	Stop Bit	1

\*1 Maximum baud rate is 38400 bps.If 57600bps or 115000bps is selected, POD communicates with a PLC forcibly at 9600 bps.

### ◆ KV700 series CPU

Item	Setting of PLC	Comm. Parameter of POD
Port	0	0
Baud Rate	9600bps	9600bps *1
Parity	Even	_____
Transmission Code	Data Length	8
	Stop Bit	1

\*1 Maximum baud rate is 57600 bps.

## Available Memory

Memory	TYPE	Remarks
DM (data memory)	0	
CH (input/output relay)	1	
TC (timer/current value)	2	
CC (counter/current value)	3	
TS (timer/set value)	4	
CS (counter/set value)	5	
T (timer/contact)	6	
C (counter/contact)	7	
TM (temporary data memory)	8	
CTH (*1)	9	only in KV700
CTC (*2)	10	only in KV700
CT (*3)	11	only in KV700
CR (control relay)	12	only in KV700
CM (control relay)	13	only in KV700

\*1 high-speed counter / current value

\*2 high-speed counter comparator / set value

\*3 high-speed counter comparator / contact

**Set the memory to the extent of the memory range of each PLC model.**

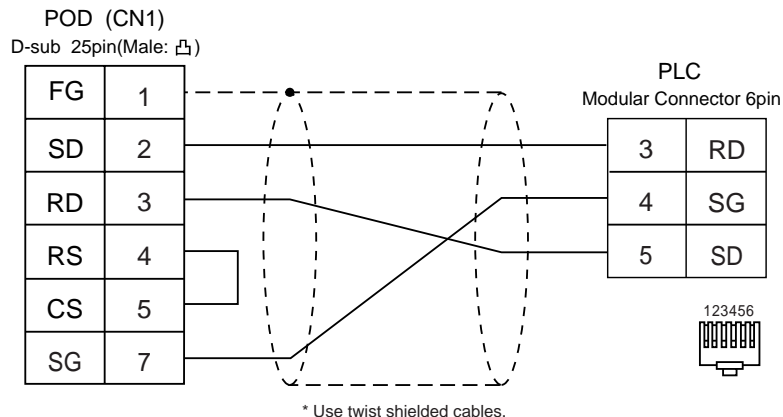
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



# 43 LG PLC

## Available PLC

Select PLC Type	PLC	Wiring Diagram
MASTER-K10/60/200	K10/60/200	RS-232C [Wiring Diagram 1]
MASTER-K500/1000	K500/1000	RS-232C [Wiring Diagram 2] RS-422 [Wiring Diagram 6]
MASTER-KxxxS	K200S/K300S/K1000S CPU port	RS-232C [Wiring Diagram 3]
MASTER-KxxxS CNET	K4F-CUEA	RS-232C [Wiring Diagram 4]
GLOFA CNET	G4L-CUEA	RS-422 [Wiring Diagram 7]
GLOFA GM series CPU	GM4/GM6/GM7 CPU port	RS-232C [Wiring Diagram 5]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

### ◆ MASTER-K10/60/200

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps (fixed)	_____
Parity	None (fixed)	_____
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1 (fixed)

### ◆ MASTER-K500/1000

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps * 1	19200bps
Parity	None (fixed)	_____
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1 (fixed)

\*1 In case of RS-422, the baud rate is fixed at 9600bps.

### ◆ MASTER-KxxxS

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	38400bps	38400bps
Parity	None (fixed)	_____
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1 (fixed)

## ◆ MASTER-KxxxS CNET / GLOFA CNET / GM series CPU

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		38400bps	38400bps
Parity		None	None
Transmission Code	Data Length	8	8
	Stop Bit	1	1

**Available Memory**

## ○ MASTER-K10/60/200

Memory	TYPE	Remarks
D (data register)	0	
M (auxiliary relay)	1	
P (input/output relay)	2	Input : Read only
K (keep relay)	3	
TC (timer/current value)	4	
CC (counter/current value)	5	
TS (timer/set value)	6	
CS (counter/set value)	7	

## ○ MASTER-K500/1000

Memory	TYPE	Remarks
P (input/output)	0	Input : read only
M (relay)	1	
L (link relay)	2	
K (keep relay)	3	
F (special relay)	4	Read only
T (timer/current value)	5	
C (counter/set value)	6	
D (data register)	7	



## ○ MASTER-KxxxS

Memory	TYPE	Remarks
P (input/output)	0	Input : read only
M (relay)	1	
L (link relay)	2	
K (keep relay)	3	
F (special relay)	4	Read only
T (timer/current value)	5	
C (counter/set value)	6	
D (data register)	7	
TC (time/contact)	9	
CC (counter/contact)	10	

## ○ MASTER-KxxxS CNET

Memory	TYPE	Remarks
P (input/output)	0	Input : read only PW as word device
M (relay)	1	MW as word device
L (link relay)	2	LW as word device
K (keep relay)	3	KW as word device
F (special relay)	4	Read only FW as word device
T (timer/current value)	5	
C (counter/set value)	6	
D (data register)	7	
TC (time/contact)	9	
CC (counter/contact)	10	

## ○ GLOFA CNET / GM series CPU

Memory	TYPE	Remarks
M (internal memory)	0	MW as word device
Q (output)	1	QW as word device
I (input)	2	IW as word device

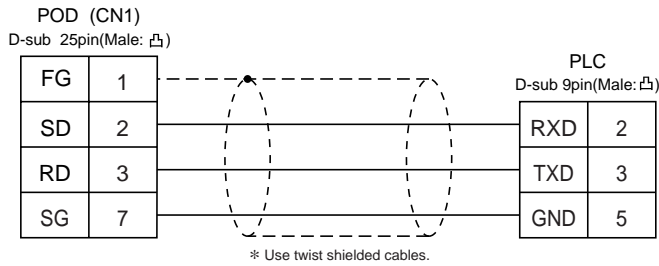
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

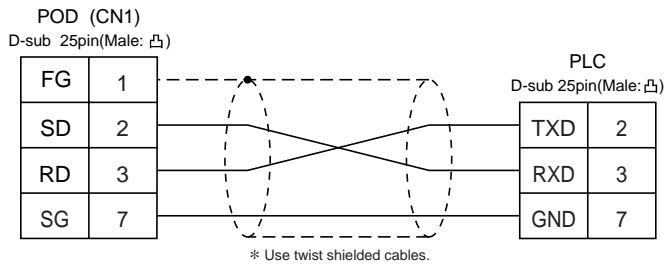
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

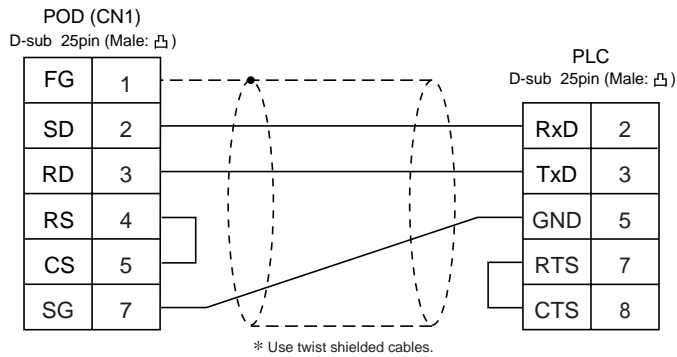
#### Wiring Diagram 1



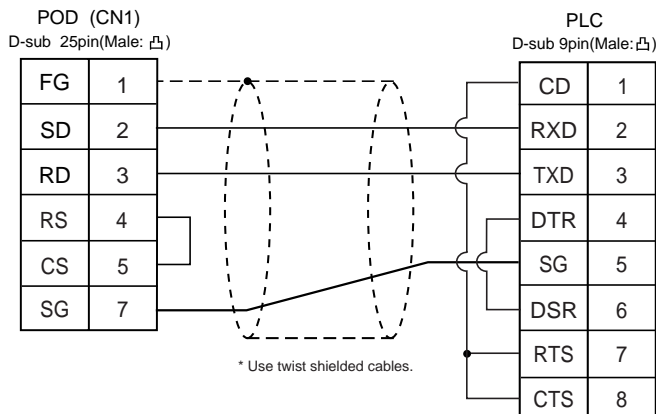
#### Wiring Diagram 2



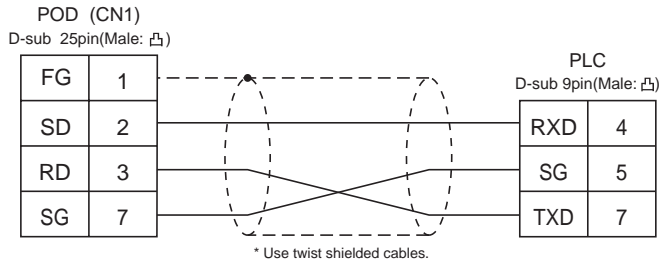
#### Wiring Diagram 3



#### Wiring Diagram 4

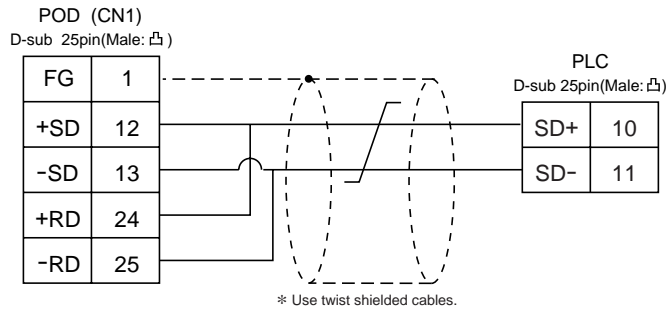


**Wiring Diagram 5**

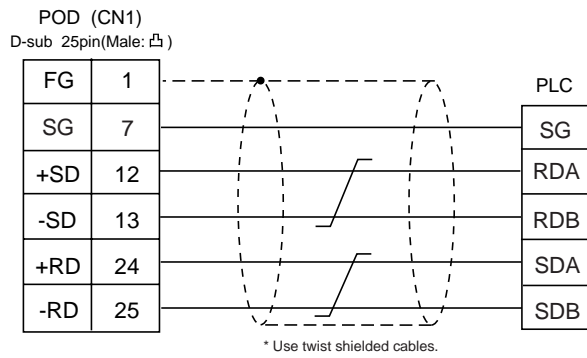


**RS-422**

**Wiring Diagram 6**



**Wiring Diagram 7**



# 44 FANUC PLC

## Available PLC

Select PLC Type	PLC	Wiring Diagram
Power Mate	Port of CPU unit (JD14) of Power Mate-Model H/D	RS-422 [Wiring Diagram 2]
	Power Mate i Model H/D	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 3]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps (fixed)	_____
Signal		RS-422 (fixed)	_____
Port		0 (fixed)	_____
Parity		Even (fixed)	_____
Transmission Code	Data Length	8 (fixed)	_____
	Stop Bit	1 (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
X (input relay)	1	WX as word data
Y (output relay)	2	WY as word data
R (internal relay)	3	WR as word data
K (keep relay)	4	WK as word data
T (timer)	5	
C (counter)	6	

**Set the memory to the extent of the memory range of each PLC model.**

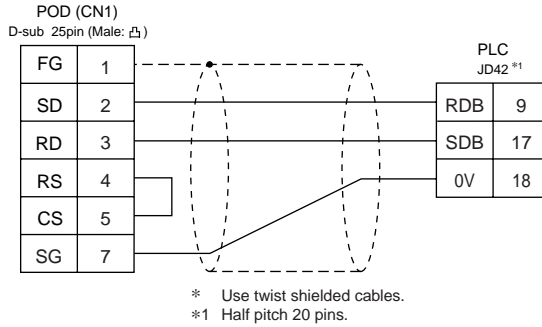
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

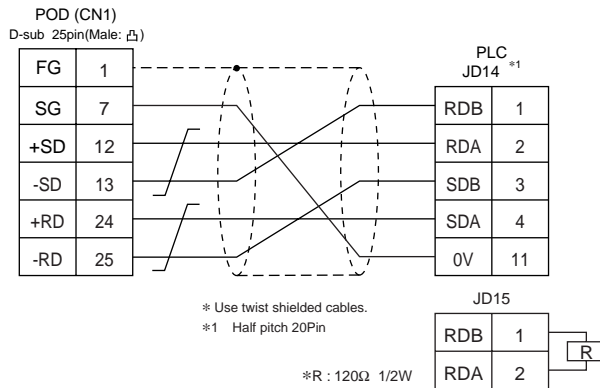
### RS-232C

#### Wiring Diagram 1

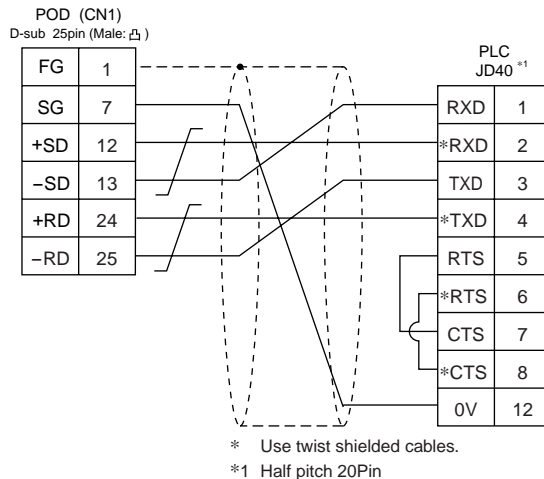


### RS-422

#### Wiring Diagram 2



#### Wiring Diagram 3



# 45 FATEK AUTOMATION PLC

(FACON FB series)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
FACON FB series	FACON FB series	CPU Port	RS-232C [Wiring Diagram 1] [Wiring Diagram 2] RS-422 [Wiring Diagram 3]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		9600bps	9600bps
Signal		RS-232C	RS-232C
Parity		Even (fixed)	_____
Transmission Code	Data Length	7 (fixed)	_____
	Stop Bit	1 (fixed)	_____

## Available Memory

Memory	TYPE	Remarks
HR (data register)	0	
DR (data register)	1	
X (input relay)	2	
Y (output relay)	3	
M (internal relay)	4	
S (step relay)	5	
T (timer/contact)	6	Read only
C (counter/contact)	7	Read only
RT (timer/current value)	8	
RC (counter/current value)	9	
DRC (counter 32bits/current value)	10	

**Set the memory to the extent of the memory range of each PLC model.**

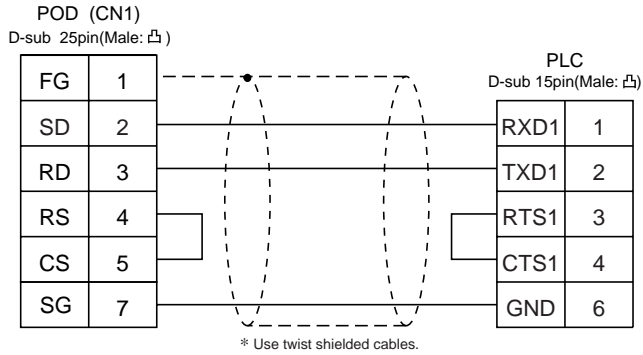
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

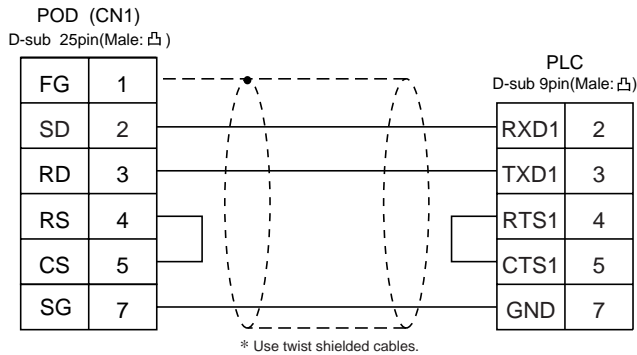
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1

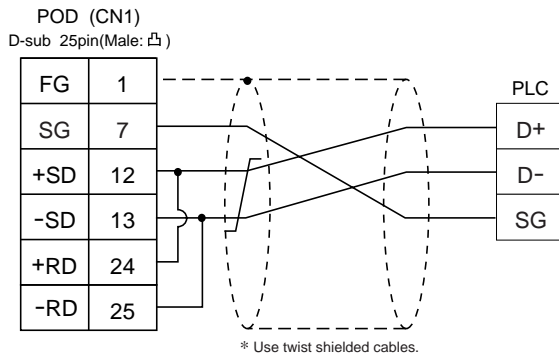


#### Wiring Diagram 2



### RS-422

#### Wiring Diagram 3



# 46 IDEC PLC

## Available PLC

Selet PLC Type	PLC	Wiring Diagram
MICRO3	MICRO3	RS-232C Cable made by IDEC [FC2A-KC1] or * Cable made by IDEC [FC2A-KC2] +RS-232C [Wiring Diagram 1]
MICRO Smart	MICRO Smart	RS-232C * Cable made by IDEC [FC2A-KC4C] +RS-232C [Wiring Diagram 1]

\* When using RS-232C cable made by IDEC [FC2A-KC2] or [FC2A-KC4C], connect the cable of [Wiring Diagram 1] to the D-dub 9 pins side of [FC2A-KC2] or [FC2A-KC4C] to communicate with POD .

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		9600bps	9600bps
Port		1	1
Parity		Even	Even
Transmission Code	Data Length	7	7
	Stop Bit	1	1

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
I (input relay)	1	
Q (output relay)	2	
M (internal relay)	3	
R (shift register)	4	
TS (timer/set value)	5	
TN (timer/elapsed value)	6	
T (timer/contact)	7	Read only
CS (timer/set value)	8	
CN (counter/elapsed value)	9	
C (counter/contact)	10	Read only

**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

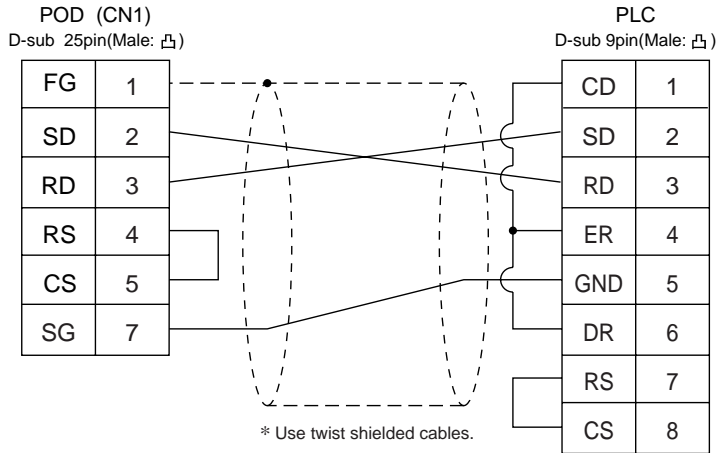


## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



# 47 MODICON PLC

## Available PLC

Select PLC Type	PLC	Wiring Diagram
Modbus RTU	Modbus RTU	RS-232C [Wiring Diagram 1]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Port	1	1
Parity	Even	Even
Transmission Code	Data Length	8
	Stop Bit	1

## Available Memory

Memory	TYPE	Remarks
4 (word device)	0	
3 (input register)	1	
0 (output coil)	4	
1 (input relay)	6	Read only

**Set the memory to the extent of the memory range of each PLC model.**

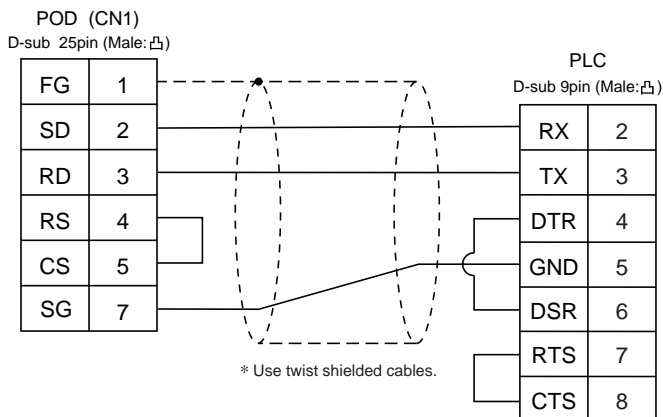
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



# 48 YAMATAKE PLC

## Available PLC

Select PLC Type	PLC	Wiring Diagram
MX Series	MX200/MX50	RS-232C [Wiring Diagram 1]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Port	1	1
Parity	Even	Even
Transmission Code	Data Length	8
	Stop Bit	1

## Available Memory

Memory	TYPE	Remarks
R (data register)	0	
M (auxiliary relay)	1	
L (latch relay)	2	
X (input relay)	3	
Y (output relay)	4	
TP (timer/current value)	5	
TS (timer/set value)	6	
CP (counte/current value)	7	
CS (counter/set value)	8	
T (timer/contact)	9	
C (counter/contact)	10	
P (link register)	11	

**Set the memory to the extent of the memory range of each PLC model.**

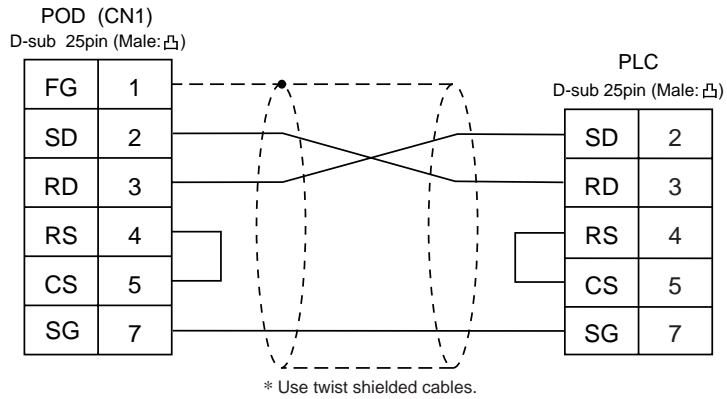
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



# 49 TAIAN PLC

## Available PLC

Select PLC Type	PLC	PORT	Wiring Diagram
TP02	TP02	Communication Port (T/R+, T/R-) MMI Port (9pin) (4-5 Short Computer Link Mode)	RS-422 [Wiring Diagram 1] RS-422 [Wiring Diagram 2]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps	19200bps
Port		1	1
Parity		None	None
Transmission Code	Data Length	7	7
	Stop Bit	1	1

## Available Memory

Memory	TYPE	Remarks
D (data register/timer•counter/contact)	0	
V (imer•counter/contact)	1	
WS (system register)	2	
WC (constant register)	3	
X (input relay)	4	
Y (output relay)	5	
C (internal relay)	6	
SC (special register)	7	

**Set the memory to the extent of the memory range of each PLC model.**

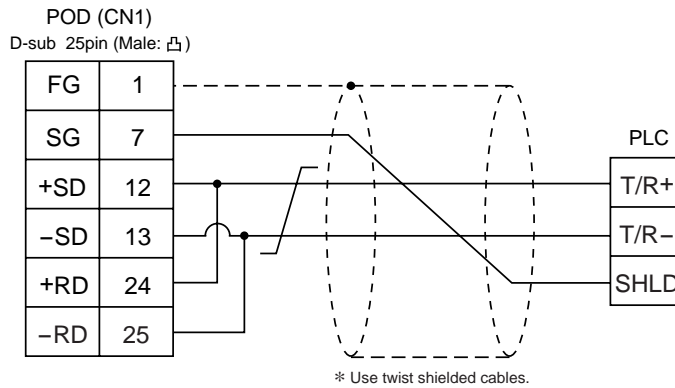
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

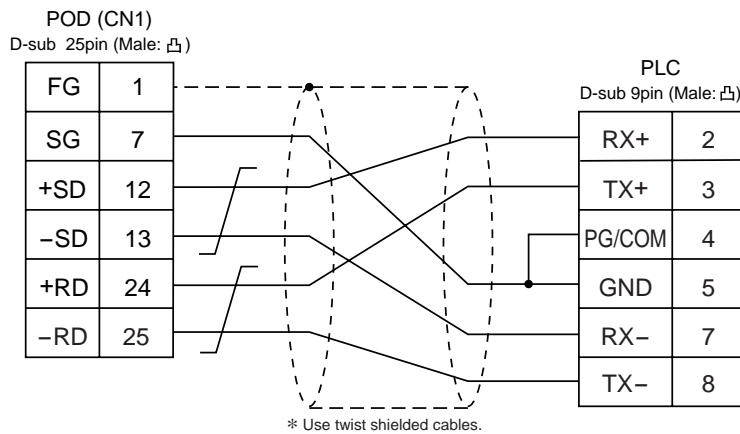
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-422

#### Wiring Diagram 1



#### Wiring Diagram 2



# 50 SAIA PLC

## Available PLC

Select PLC Type	PLC	Communication module	Wiring Diagram
PCD	PCD1	PGU port PCD7.F120 PCD4.F110	RS-232C [Wiring Diagram 1] RS-232C [Wiring Diagram 2] RS-485 [Wiring Diagram 3]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	0	0
Transmission code	Data Length	8
	Stop Bit	1

## S-BUS Configuration

S-BUS Mode                      Parity  
 PGU Port Number              0 (PGU port), 1 (PCD7.F120, PCD4.F110)

## Available Memory

Memory	TYPE	Remarks
R (Register Word)	0	
Rfp (Float)	1	
T (Timer-Counter Word)	2	
C (Timer-Counter Coil)	3	
I (Input Bit)	4	read only
O (Output Bit)	5	
F (Flag Bit)	6	

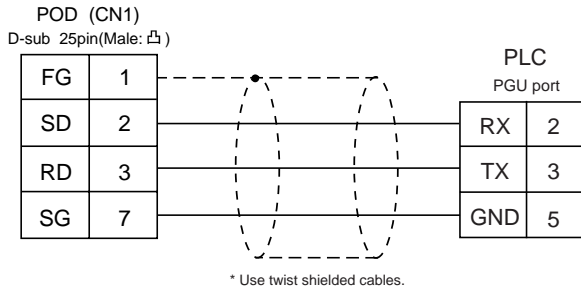
**Set the memory to the extent of the memory range of each PLC model.**  
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

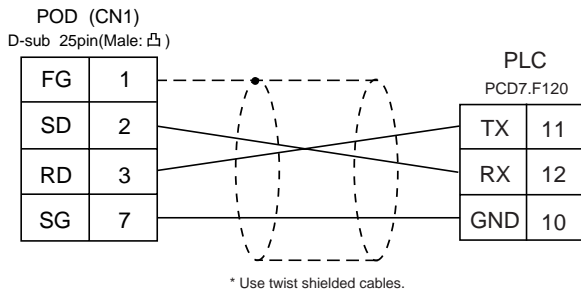
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1

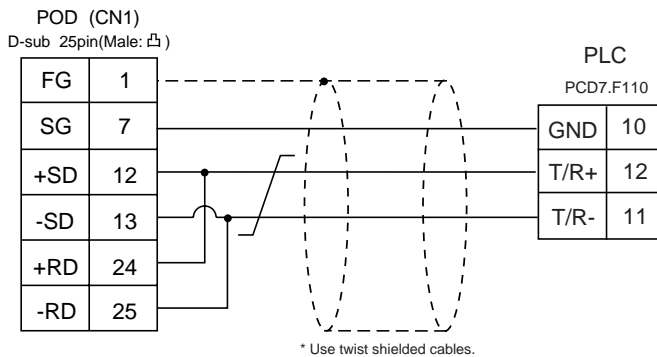


#### Wiring Diagram 2



### RS-485

#### Wiring Diagram 3





# 51 MOELLER PLC

## Available PLC

Select PLC Type	PLC	Wiring Diagram
PS4	PS4-201-MM1(PRG port)	RS-232C [Wiring Diagram 1] + ZB4-303-KB1 Cable made by MOELLER

## Communication Setting

The recommended communication parameter setting of both PLC and V6 is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Port	1	1
Parity	None	None
Transmission code	Data Length	8
	Stop Bit	1

## Available Memory

Memory	TYPE	Remarks
M (Marker)	0	MW as word device

**Set the memory to the extent of the memory range of each PLC model.**

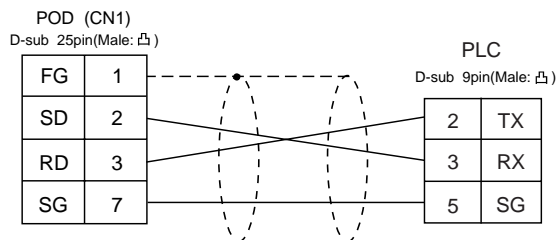
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



# 52 Telemecanique PLC

## Available PLC

Select PLC Type	PLC	Wiring Diagram
TSX Micro	TSX Micro	RS-485 [Wiring Diagram 1]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Connection	—————	Multi-Link (fixed)
Parity	Odd	Odd
Transmission Code	Data Length	8 (fixed)
	Stop Bit	1

## Available Memory

Memory	TYPE	Remarks
MW (memory Word)	0	
KW (constant word)	1	
M (bit memory)	2	

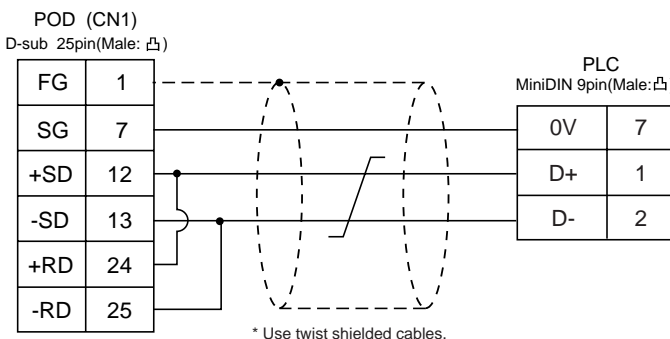
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-485

#### Wiring Diagram 1



# 53 Automationdirect PLC

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
Direct LOGIC	D4-430 D4-440	Port 1 on a CPU unit	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 5]
	D4-450	Port 3 on a CPU unit	RS-485 [Wiring Diagram 6]
		Port 2 on a CPU unit	RS-232C [Wiring Diagram 2]
	D2-240	Port 2 on a CPU unit	
	D2-250	Port 2 on a CPU unit	RS-232C [Wiring Diagram 3]
Direct LOGIC (K-Sequence)	D4-430 D4-440	Port 1 on a CPU unit	RS-232C [Wiring Diagram 1] RS-422 [Wiring Diagram 5]
	D4-450	Port 0 on a CPU unit	RS-232C [Wiring Diagram 4]
		Port 3 on a CPU unit	RS-485 [Wiring Diagram 6]
		Port 2 on a CPU unit	RS-232C [Wiring Diagram 2]
	D2-240	Port 1 on a CPU unit Port 2 on a CPU unit	
	D2-250	Port 1 on a CPU unit	RS-232C [Wiring Diagram 3]
		Port 2 on a CPU unit	

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		19200bps	19200bps
Port		"0" for x10, "1" for x1	1
Parity		Odd	Odd
Transmission Code	Data Length	8	8
	Stop Bit	1	1
Function		Host link system (fixed)	_____
Response Delay Time		0 (fixed)	_____
Time-out		None (fixed)	_____
ASCII/HEX		HEX (fixed)	_____

## Available Memory

- Direct LOGIC, Direct LOGIC(K-Sequence)

Memory	TYPE	Remarks
V (data register)	0	
X (input relay)	1	
Y (output relay)	2	
C (internal relay)	3	
S (stage)	4	
GX (global inputs)	5	
GY (global outputs)	6	
T (timer/contact)	7	
CT (counter/contact)	8	

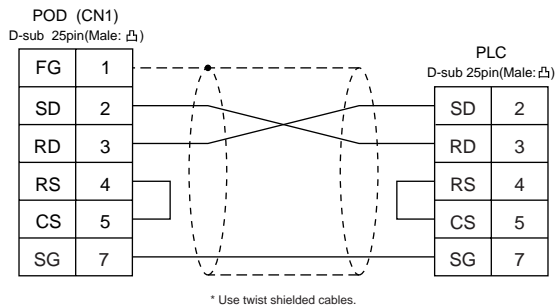
**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

## Wiring

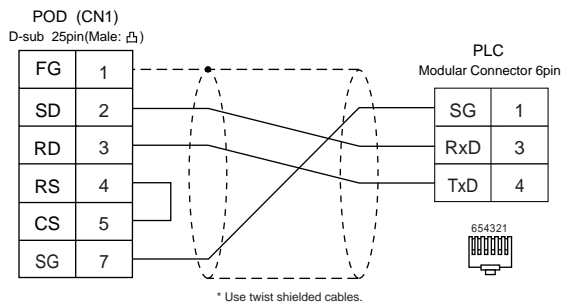
The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

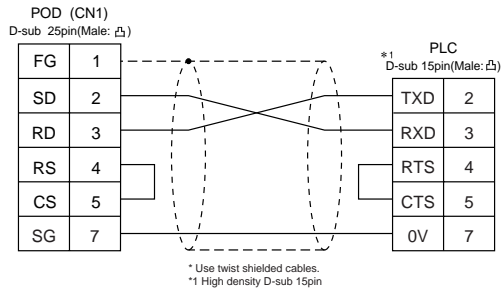
#### Wiring Diagram 1



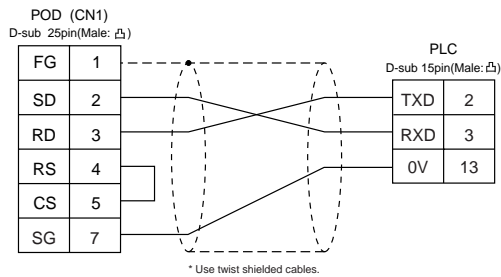
#### Wiring Diagram 2



### Wiring Diagram 3

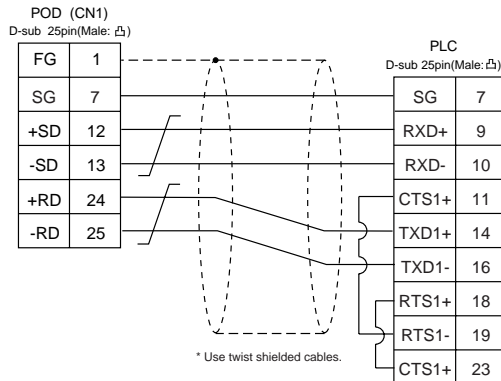


### Wiring Diagram 4

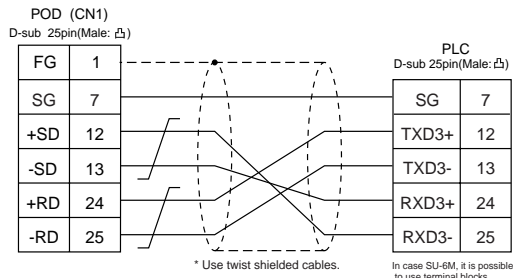


### RS-422

### Wiring Diagram 5



### Wiring Diagram 6



# 54 VIGOR PLC

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
M series	M1-CPU1	COM PORT	RS-232C [Wiring Diagram 1] RS-485 [Wiring Diagram 2]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	19200bps	19200bps
Port	0	0
Parity	Even	Even
Transmission Code	Data Length	7
	Stop Bit	1

## Available Memory

Memory	TYPE	Remarks
D (data register/special register)	0	
X (input relay)	1	
Y (output relay)	2	
M (internal relay/special relay)	3	
S (internal relay/step relay)	4	
T (timer/current value)	5	
C (counter/current value)	6	
32C (high-speed counter/current value)	7	*1
TS (timer/contact)	8	
CS (counter/contact)	9	
TC (timer/coil)	10	
CC (counter/coil)	11	

\*1 In case of the items which can display double word data (e.g. data display, graph, sampling), the data is managed as double word data.

Both bit data and word data are managed as lower-half 16 bits data.

Input : 16 upper-half bits are ignored.

Output : "0" is written in the 16 upper-half bits.

**Set the memory to the extent of the memory range of each PLC model.**

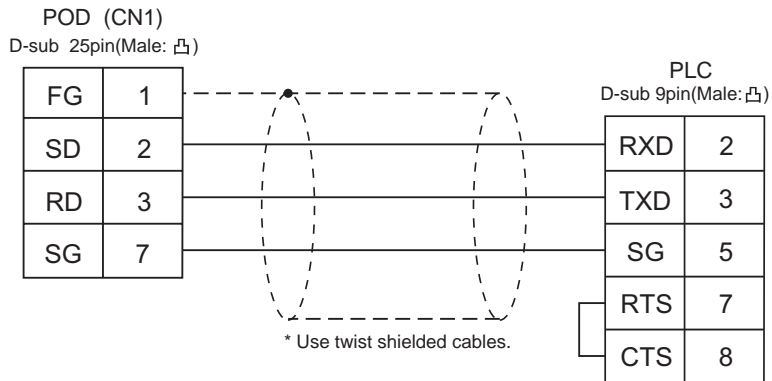
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

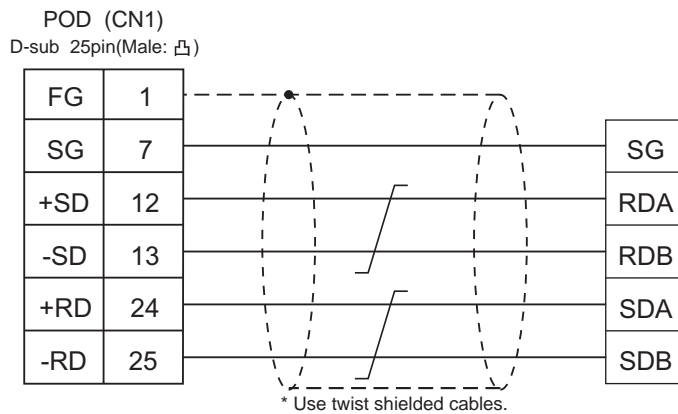
### RS-232C

#### Wiring Diagram 1



### RS-485

#### Wiring Diagram 2



# 55 DELTA PLC

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
DVP series	DVP series	RS-485 Communication port	RS-485 [Wiring Diagram 1]

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Port	1	1
Parity	Even	Even
Transmission Code	Data Length	7
	Stop Bit	1

## Available Memory

Memory	TYPE	Remarks
D (data register)	0	
X (input relay)	1	
Y (output relay)	2	
M (auxiliary relay)	3	
S	4	
T (timer)	5	
C (counter)	6	
32C (high-speed counter)	7	

**Set the memory to the extent of the memory range of each PLC model.  
Use TYPE number to assign indirect memory for macro programs.**

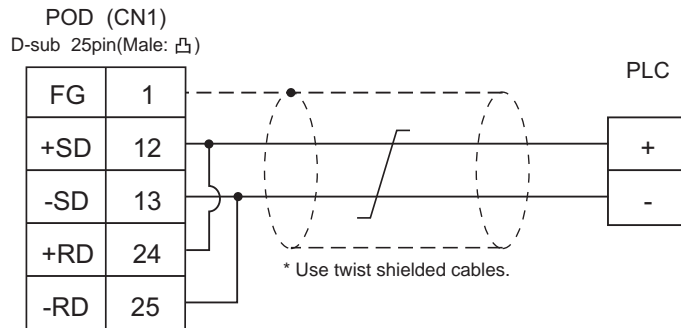


## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-485

#### Wiring Diagram 1



# 56 BALDOR PLC

## Available PLC

Select PLC Type	Controller	Wiring Diagram
Mint	NextMove (Comms Data Array)	RS-232C [Wiring Diagram 1]
	Optimum (Comms Data Array)	

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item	Setting of PLC	Comm. Parameter of POD
Baud Rate	9600bps	9600bps
Port	0	0
Parity	None	None
Transmission Code	Data Length	8
	Stop Bit	1

## Available Memory

Memory	TYPE	Remarks
I (Integer)	0	
F (Float)	1	
B (Integer omitting decimals)	2	

**Set the memory to the extent of the memory range of each PLC model.**

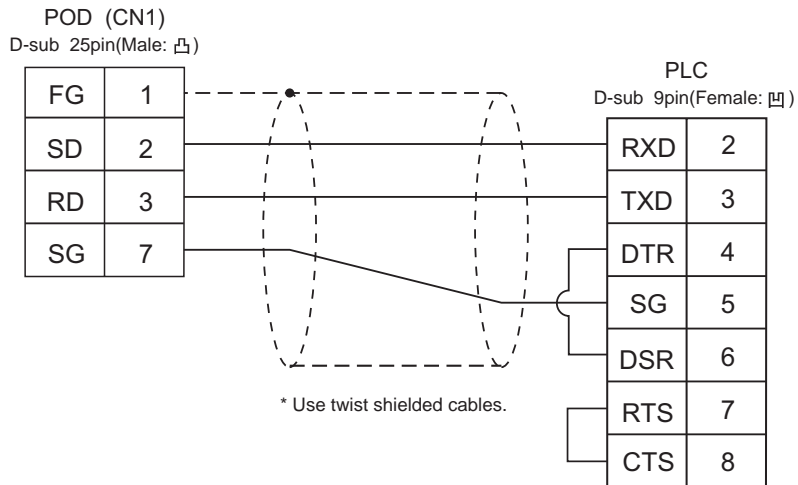
**Use TYPE number to assign indirect memory for macro programs.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

### RS-232C

#### Wiring Diagram 1



# 57 TOYO DENKI PLC

(uGPC sx series)

## Available PLC

Select PLC Type	PLC	Link Unit	Wiring Diagram
uGPCsx Series	uGPCsx Series	NP1L-RS1	RS-232C [Wiring Diagram 1] RS-485 [Wiring Diagram 2]
		NP1L-RS2	RS-232C [Wiring Diagram 1]
		NP1L-RS4	RS-485 [Wiring Diagram 2]
uGPCsx CPU		—	UG00C-S

\* Only one unit of POD can be connected to one link unit, except for "Multi-link 2" connection.

## Communication Setting

The recommended communication parameter setting of both PLC and POD is as follows:

Item		Setting of PLC	Comm. Parameter of POD
Baud Rate		38400bps (fixed)	
Transmission Control Mode	RS-232C	Mode 1	RS-232C
	RS-422	Mode 2	RS-422
Parity		Even (fixed)	
Data Length		8 (fixed)	
Stop Bit		1 (fixed)	

\* No function block (FB) settings are required on the PLC.

## Available Memory

Standard Memory	TYPE	Remarks
I (input memory)	-	
O (output memory)	-	
M (standard memory)	2	
RM (retain memory)	4	
SM (system memory)	8	

**Set the memory to the extent of the memory range of each PLC model.**

**Use TYPE number to assign indirect memory for macro programs.**

**To set an indirect memory using a macro, specify the CPU No. using the extended code.**

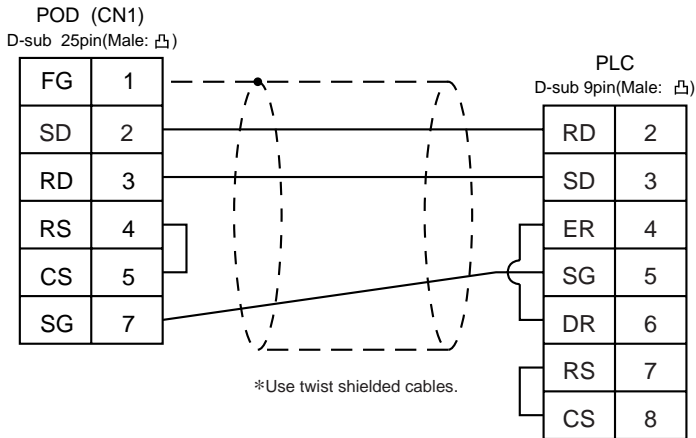
**Indirect memory setting by macro is not available for input (I) or output (Q) memory.**

## Wiring

The following is a diagram to show the wiring of the cable which connects POD to PLC.

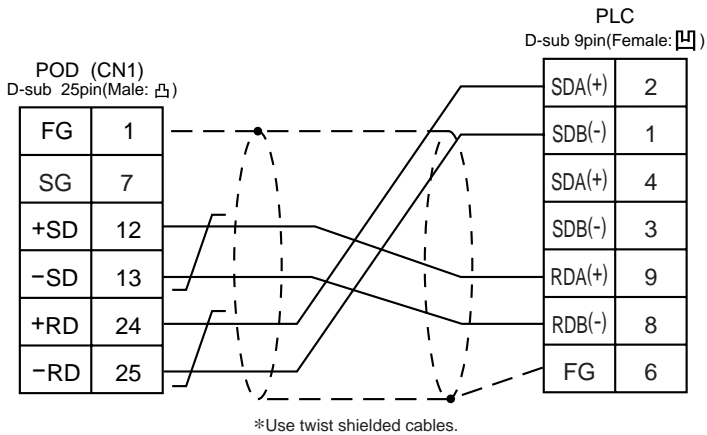
### RS-232C

#### Wiring Diagram 1



### RS-485

#### Wiring Diagram 2



- \* When signals are easily influenced by noise, attach a ferrite core (TDK ZCAT2032-0930 is recommended) to both the ends of the cable.

# 3

## Handling of Peripheral Equipment

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1. Connecting the UG00P-U1
2. Connecting the UG00P-U2
3. Connecting the Memory Card Recorder
4. Connecting the Memory Extension Unit
5. Connecting Communication Interface
6. Connecting Dual Port Interface
7. How to Replace the Backlight Unit

# 1 Connecting the UG00P-U1

The I/O unit (UG00P-U1) is attached to the rear side of the UG520/420. It uses 16 pins for input and 16 pins for output to support external I/O of a PLC or another unit. Note that UG00P-U1 does not support UG320/221/220, and UG00P-U1 cannot be used with the UG00P-U2 simultaneously.

For assignment in the memory or how to use UG00P-U1, refer to the User's Manual <Function> (FEH376).

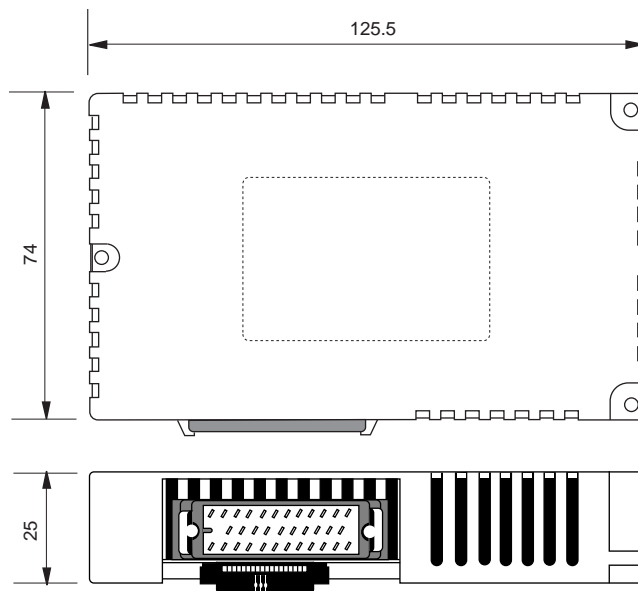
## ⚠ Warning

- Turn OFF the power before mounting, dismounting, wiring, maintaining, or checking, otherwise, electric shock, erratic operation, or troubles might occur.

## ⚠ Caution

- The extension I/O unit uses a link. Thus, do not use the unit in places where high-speed operation, urgent operation, or dangerous operation (emergency stop) may be performed.

## External Dimensions



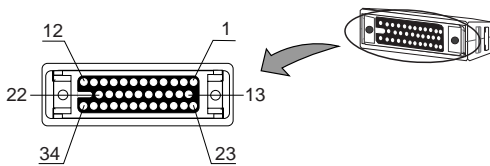
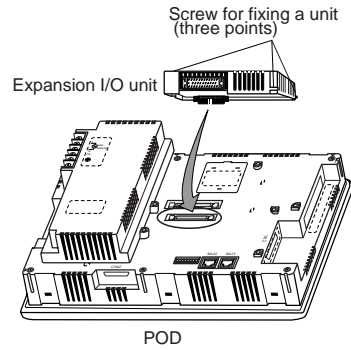
## Mounting the I/O Unit

- Remove the seal for preventing dust attached on the back of the POD as shown in the figure on the right. Mount the extension I/O unit, then secure it using the three screws.
- Set the DI/DO connector (attached to the package) to the extension I/O unit connector, then secure it using the two screws.

### Tightening the screws for securing a unit

The following table shows the screw to be used and tightening torque:

Screw type	Screw size	Tightening torque (N·m)
Screw for securing a unit	M3	0.3 to 0.5



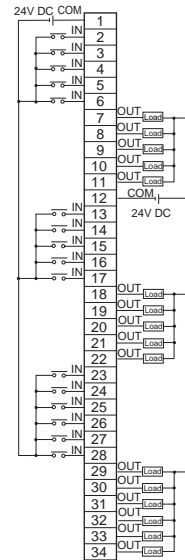
DI/DO connector (included in the package)

#### Input

IN NO.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pin No.	23	13	2	24	14	3	25	15	4	26	16	5	27	17	6	28

#### Output

OUT NO.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Pin No.	18	29	7	19	30	8	20	31	9	21	32	10	22	33	11	34

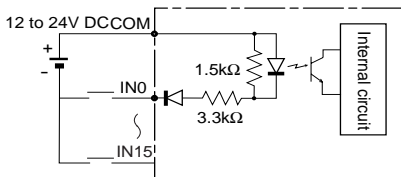


## I/O Circuit

The following figures show the circuit diagrams for the I/O pins:

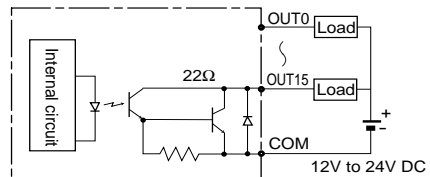
### Input circuit

Input voltage : NPN type with off-voltage contact,  
12 V to 24 V DC  
Input impedance : 3.3kΩ  
Input current : 3 to 7 mA



### Output circuit

Maximum drive current : 50 mA (12V to 24V DC)  
Residual current : 1.7V





# 2 Connecting the UG00P-U2

The UG00P-U2 (serial connection I/O unit) is connected with the UG520/420/320/221/220. It uses 16 input points and 16 output points for connection to an external device such as a PLC. Note that the UG00P-U2 cannot be used with the UG00P-U1 simultaneously.

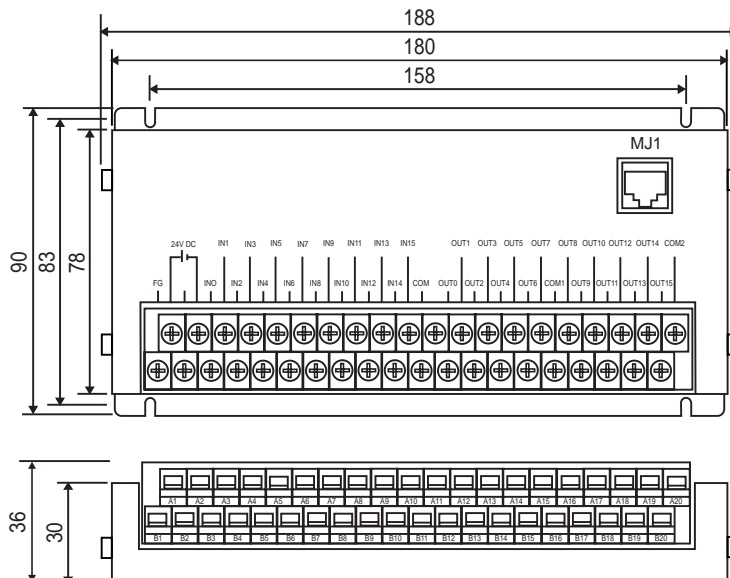
### Warning

- Turn OFF the power before mounting, dismounting, wiring, maintaining, or checking, otherwise, electric shock, erratic operation, or troubles might occur.

### Caution

- The serial connection I/O unit uses a link. Therefore, do not use the unit in places where high-speed operations, urgent operations, or dangerous operations (emergency stop-type) are performed.

## External Dimensions

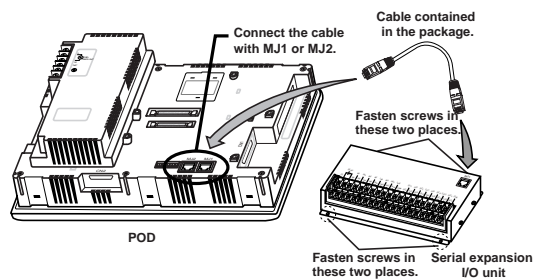


## Specifications

Item		Specifications
Power supply	Rated voltage	24V DC $\pm 10\%$
	Consumption current	60 mA max.
	Inrush current	1.5 A (200 $\mu$ s) max.
Physical environmental conditions	Operating temperature	0 to +50 deg.C
	Storage temperature	-10 to +60 deg.C
	Operating humidity	20 to 85%; No condensation.
	Dust	Conductive dust.
	Corrosive gas	No corrosive gases.
Mechanical service conditions	Vibration resistance	Vibration frequency: 10 to 150 Hz, Acceleration: 14.7 m/s <sup>2</sup> , Directions: X, Y, and Z. (Vibration was applied in each direction for one hour.)
	Shock resistance	Pulse wave: Half sine waves, Peak acceleration: 147 m/s <sup>2</sup> , Directions: X, Y, and Z. (Shock was applied in each direction twice.)
Electrical service conditions	Resistance to noise	Noise voltage: 1,500V, Pulse width: 1 $\mu$ s, Rising time: 1 ns.
	Withstand voltage	Between power supply and FG terminal: 500V AC, 1 minute
	Isolation resistance	500V DC, 10 M $\Omega$ or more
Mounting conditions	Ground	Type II grounding
	Cooling method	Natural air-cooling
	External dimensions (W $\times$ H $\times$ D (mm))	182 (188) $\times$ 90 $\times$ 36
	Mounting dimensions (W $\times$ H (mm))	158 $\times$ 83
Others	Case color	Munsell 5Y3/0.5 (dark gray). The bottom plate is not colored.
	Case material	Steel plate
	Mass	500g



## Mounting the serial expansion I/O unit

- Mount the serial extension I/O unit, then secure it using the four screws as shown in the figure on the right.
- Connect MJ1 on the serial expansion I/O unit with MJ1 (MJ2) at the bottom of the POD using the cable contained in the package.



### Tightening the terminal screws on the terminal base

The following table shows the screw to be used and tightening torque:

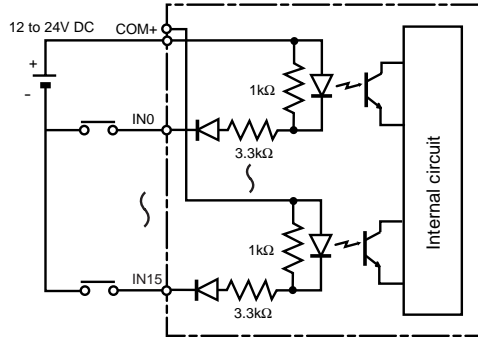
Place	Screw size	Tightening torque (N•m)	Crimp terminal (unit: mm)
Screw for I/O terminal base	M3	0.3 to 0.5	6.2 Max. 
minal			6.2 Max. 

## I/O Circuits

The following figures show the I/O terminal circuit diagrams:

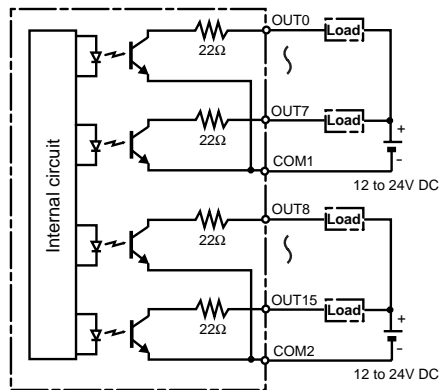
### ○ Input circuit

- Input points : 16
- Common point : 1
- Input type : Off-voltage contact, NPN type
- Input voltage : 12V to 24V DC
- Voltage at ON : 9.6 to 30V
- Voltage at OFF : 0 to 3.6V
- Maximum allowable voltage : 30V DC
- Allowable ripple ratio : 5% or less
- Insulation type : Insulation using photocoupler
- Input impedance : 3 K $\Omega$
- Input current : 5 to 7 mA



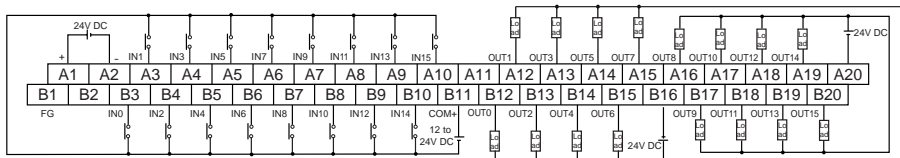
### ○ Output circuit

- Output points : 16
- Common points : 2 (8-points groups)
- Output type : Output with transistor sink
- Rated voltage : 12V to 24V DC
- Maximum loaded current : 50 mA
- Output delay : Off to On : 1 ms or less  
On to Off : 1 ms or less
- Residual voltage : 1.7V
- Leak current when turned off : Up to 0.1 mA
- Insulation type : Insulation using photocoupler



## Terminal base wiring

The figure below shows the serial expansion I/O unit terminal base configuration. Refer to the figure below when connecting the lines.



# 3 Connecting the Memory Card Recorder

The memory card recorder (UG00P-MR) is connected with the UG520/420/320/221/220. The memory card recorder supports “screen data transmission” and an “external storage device (functions for data logging and memory manager)” for the memory card.

\* For the UG400/210 Series, use the UG200P-MR or UG400P-MR.

## ⚠ Warning

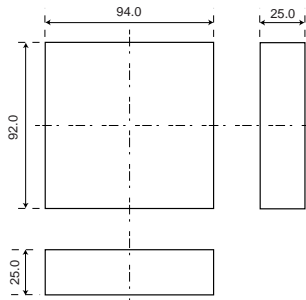
- Turn OFF the power before mounting, dismantling, wiring, maintaining, or checking, otherwise, electric shock, erratic operation, or troubles might occur.

## ⚠ Caution

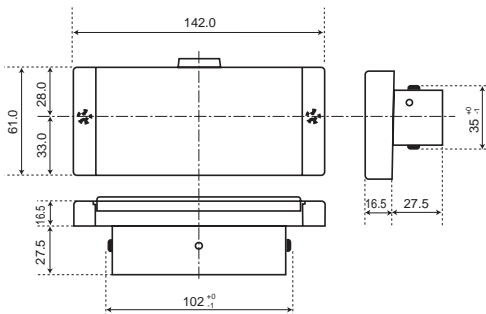
- Do not bundle the control line communication cable with the power cables or route it close to the power cables. Route the control line communication cable 200 mm or more apart from the power cables. Otherwise, the recorder may incorrectly operate due to noise.

## External Dimensions

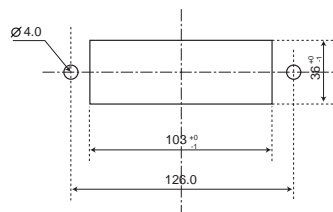
### ◆UG00P-MR, body◆



### ◆UG00P-MR, attachment cover◆

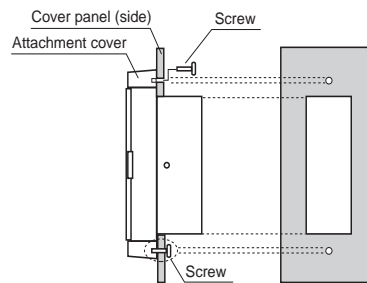
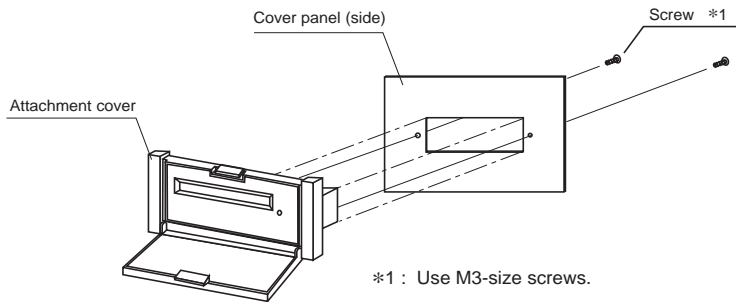


### ◆Cover panel◆

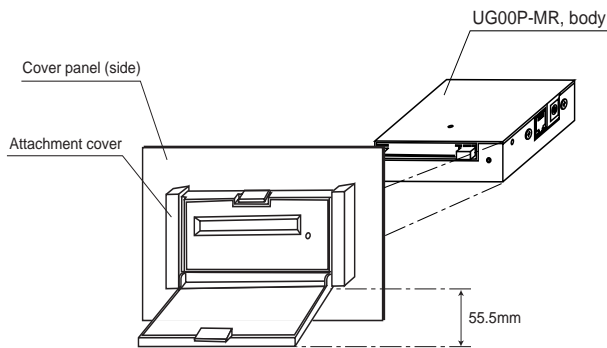


## Assembling the Recorder

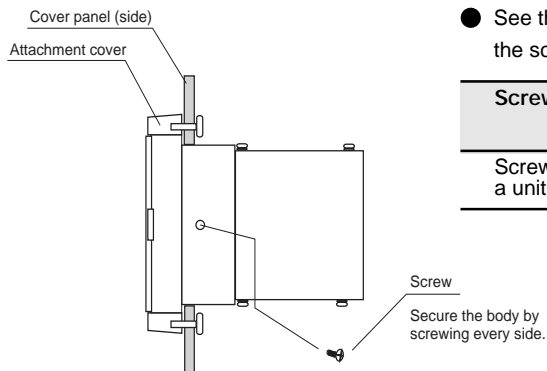
- ① Cut the cover panel (maximum thickness: 5 mm) so that the attachment cover can be set, then insert the attachment cover into the cover panel.



- ② Secure the attachment cover to the cover panel using the screws.



- ③ Insert the UG00P-MR into the attachment cover, then secure it using four screws.



- See the table below for how to tighten the screw for fixing a unit:

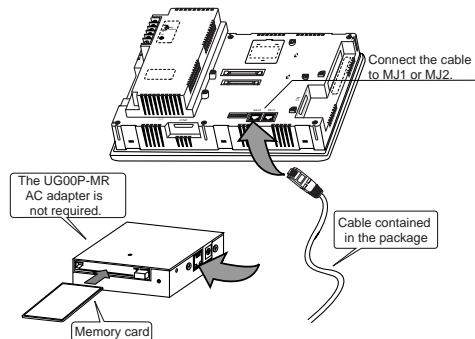
Screw type	Screw size	Tightening torque(N·m)
Screw for securing a unit	M3	0.3 to 0.5

## Connecting the Memory Card Recorder with the POD

### ■ Connecting the UG00P-MR with the POD

“Screen data transmission” and an “external storage device (functions for data logging and memory manager)” can be used when connecting the UG00P-MR with the POD.

Connect the UG00P-MR with the POD as shown in the figure on the right.



### ◆External Storage Device (data logging and memory manager)◆

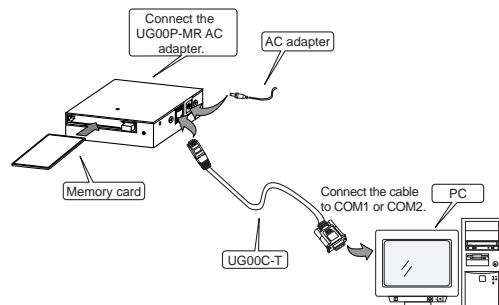
- To use MJ2 (MJ1) for an external storage device, specify [Memory Card] for [Modular Jack 2] ([Modular Jack 1]) at [Modular] in [System Settings] on the editor.
- To use data logging or memory manager with modular jack 1, set DIP SW6 to ON (termination resistor: Enabled) at the back of the POD.

### ◆Transferring Screen Data between the UG00P-MR and POD◆

- To use MJ1 to transfer screen data, specify either [Editor Port], [Memory Card], or [Barcode] for the [Modular Jack 1] setting on the editor.  
To use MJ2, specify [Modular Jack 2] for [Memory Card]. MJ2 takes priority, and data transmission from MJ1 is prohibited.
- For how to transfer POD screen data to the memory card or how to transfer screen data recorded in the memory card to the POD, see Section 1, “17. POD Operation.”

## Connecting the Memory Card Recorder with PC

To write screen data to or read screen data from the UG00P-MR using a personal computer, or to read/write data using memory manager or data logging, connect the UG00P-MR with the PC as shown on the right.



- Before reading/writing screen data, be sure to start up UG00S-CW (screen development software) on the PC. For the procedure, refer to the User's Manual <Operation> (FEH375).
- Before reading/writing data using memory manager or data logging, be sure to start up UG00P-MSE. For the details of UG00P-MSE, refer to the User's Manual <Memory Card Editor> (FEH359).

# 4 Connecting the Memory Extension Unit

The following types of memory expansion unit are prepared:

Type	Type of object POD	Capacity	Battery	Use
UG00P-D4	UG520H/UG420H/UG320H	4M byte	Unnecessary	Expand the screen data memory
UG221P-D4	UG221H			
UG00P-SR	UG520H/UG420H/UG320H	512K bytes (Data part)	Necessary	Calendar function SRAM backup function
UG221P-SR	UG221H			

\* UG220 cannot be used.

## ⚠ Warning

- Turn OFF the power before mounting, dismounting, wiring, maintaining, or checking, otherwise, electric shock, erratic operation, or troubles might occur.
- Do not connect in reverse polarity, charge (except rechargeable ones), disassemble, heat, throw in fire or short-circuit the batteries, otherwise, they might burst or take fire.
- If batteries have any deformation, spilled fluids, or other abnormality, do not use them. The use of such batteries might cause explosion or firing.

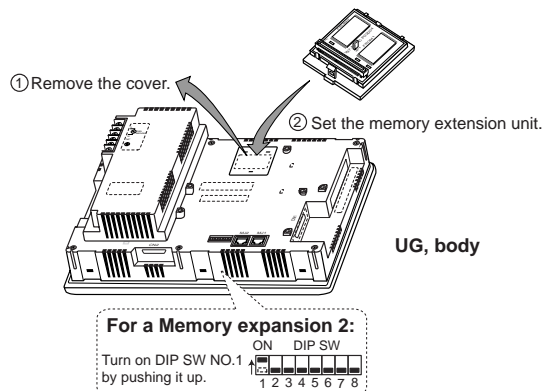
## ⚠ Caution

- Follow the directions of the operating instructions and the manual when mounting the product. If mounting is improper, the product might drop or develop problems or erratic operations.

## Connecting the Memory Extension Unit

1. Turn off the power.
2. Remove the cover indicated in the figure below, then set the memory extension unit.
3. Turn on the power.

\* Firmly press the edges of the memory extension unit to mount it securely



## How to Use the UGxxP-D4

The extension memory can be used for the two ways:

① Memory expansion 1

The memory size increases as listed in the table below (\*1).

② Memory expansion 2

Turn on DIP SW NO.1 at the back of the UG body (extension mode).

Write data other than programs for the UG (fonts, interface drivers, or screen data) into the extension memory.

The table below shows the sizes of screen data (\*2).

\* Be sure to turn off the power to the UG then turn it on again after turning on DIP SW NO.1.

③ The UG screen data size changes depending on the font used, as shown in the table below.

Font \ UG	Standard	Memory Expansion 1 +4M *1	Memory Expansion 2 4M *2
Japanese	3,200 (1,216)	7,232 (5,248)	3,712 (3,712)
Japanese 32 *3	2,816 ( 768)	6,848 (4,800)	3,200 (3,264)
English (Western Europe)	3,456 (1,408)	7,488 (5,440)	3,840 (3,904)
Chinese (traditional)	3,328 (1,280)	7,360 (5,312)	3,712 (3,776)
Chinese (simplifide)	3,200 (1,216)	7,232 (5,248)	3,712 (3,712)
Korean	3,328 (1,344)	7,360 (5,376)	3,840 (3,840)

\*1 The screen data size when the expansion memory is used and DIP SW NO.1 is turned off (standard).

\*2 The screen data size when the expansion memory is used and DIP SW NO.1 is turned on.

\*3 Japanese 32 supports 32-dot fonts. When the magnification coefficient for characters is an even number, a 32-dot font is used as the base, thus the characters are smoothly displayed.

Setting from the editor is also necessary.

With the UG screen development software (UG00S-CW), set items in the [Memory Expansion] dialog box on the [Unit Setting] window under [System Setting].

## How to Use the UGxxP-SR

The following functions are available when the SRAM cassette is installed:

③ Calendar function

Calendar can be displayed even when the PLC is connected that has no calendar function.

③ SRAM backup function

The following data can be backed up:

- Backup of sampling data (data logging function)
- As external memory for PLC (memory manager function)
- Backup of the internal memory used for macros
- Saving of memo pad data

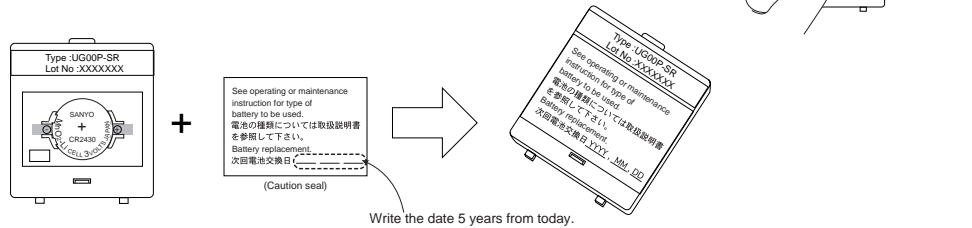
The setting is made from the [Main Menu] screen of the POD main unit or from the editor. For details regarding the [Main Menu] screen, refer to Section 1; for details regarding the setting on the editor, refer to the User's Manual <Function> (FEH376).



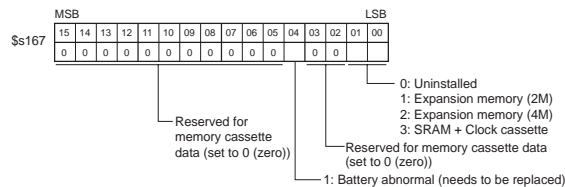
## About the Battery for UGxxP-SR

To set the battery in the SRAM cassette, use the following procedure:

- With the "+" (plus) side of the battery faced up, set the battery in the socket of the SRAM cassette.  
To set the battery, insert the battery first in the "+" (plus) side of the SRAM cassette, and then insert it also in the "-" (minus) side while pushing toward the "+" side.
- Write the date (year, month, day) 5 years from today in the "Next date to replace battery" field on the attached "Caution" seal, and stick the seal on the cassette, according to the following figure:



- \* The life of the battery for the SRAM cassette is approximately 5 years at 25°C. When the battery voltage drops, 4th bit of address \$s167 in the POD internal memory turns ON to prompt you to replace the battery. In such case, replace the battery as early as possible.



## Precautions for Using the UGxxP-SR

### Ⓞ About battery replacement

Before replacing the battery, be sure to make backup files of the data stored in the UGxxP-SR from the screen development editor. For the backing up procedure, refer to the User's Manual <Operation> (FEH375).

### Ⓞ Adapted version

To use the UGxxP-SR, the versions of the POD main unit and the screen development editor must be the following:

POD main unit and program version: 1.200 or newer  
 Font data version: 1.100/1.090/1.000 or newer  
 Screen development editor (UG00S-CW): 2.4.0.0 or newer

### Ⓞ About the replacement battery

The following replacement battery is prepared:

Name	Type	Remarks
Replacement battery for UG00P-SR, UG221P-SR	UG00P-BT	Coin type lithium primary battery

# 5 Connecting Communication Interface

- The optional communication I/F unit is installed on the rear of the POD main unit to construct individual network. UG520/420/320/221 uses UG03I - x ; UG220 uses UG02I - x .

Network Name	I/F Type	Refer to the Manual
T-Link	UG03I-T UG02I-T	T-Link Communications (FEH356)
OPCN-1	UG03I-J UG02I-J	OPCN-1 Communications (FEH358)
SX-BUS	UG03I-S UG02I-S	SX-BUS Communications (FEH357)
Ethernet	UG03I-E (2)	Ethernet Communications (FEH366)
CC-Link	UG03I-C	CC-Link Communications (FEH355)
FL-NET	UG03I-E (2)	FL-NET Communications (FEH367)
PROFIBUS	UG03I-P	PROFIBUS Communications (FEH368)

## ⚠ Warning

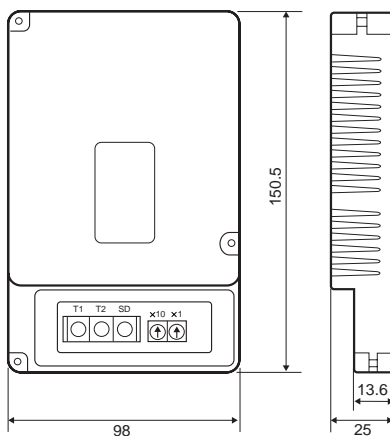
- Turn OFF the power before mounting, dismounting, wiring, maintaining, or checking, otherwise, electric shock, erratic operation, or troubles might occur.

## ⚠ Caution

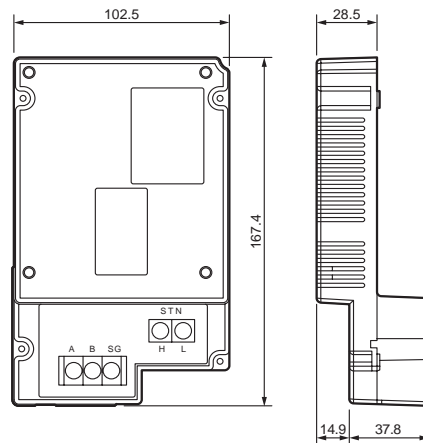
- Follow the directions of the operating instructions and the manual when mounting the product. If mounting is improper, the product might drop or develop problems or erratic operations.

## External Dimensions

### ●UG03I-x



### ●UG02I-x

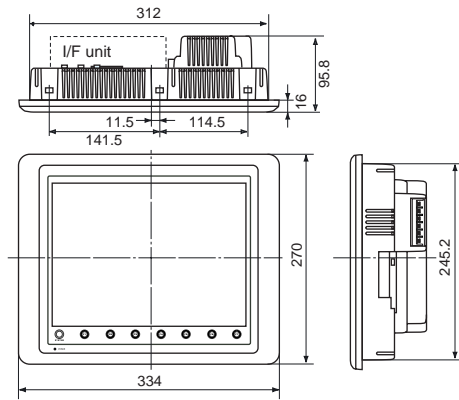


\* The dimensions are the same for all UG03I-x.

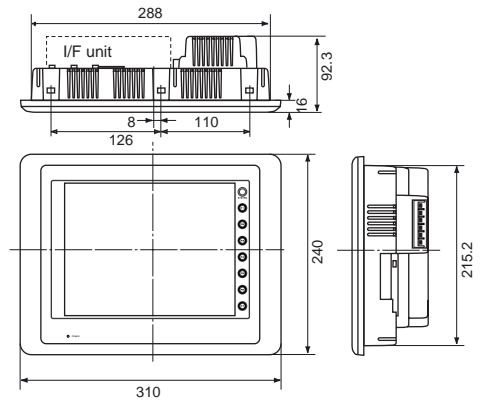
\* The dimensions are the same for all UG02I-x.

## External Dimensions of the I/F Unit on the POD

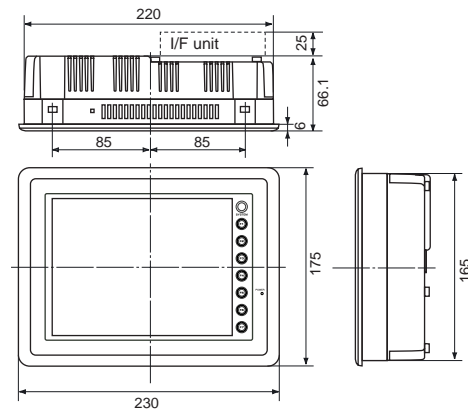
### ● UG520



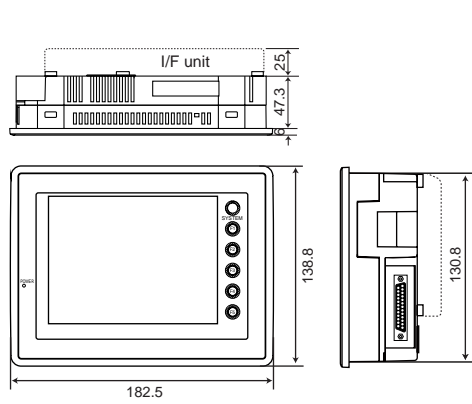
### ● UG420



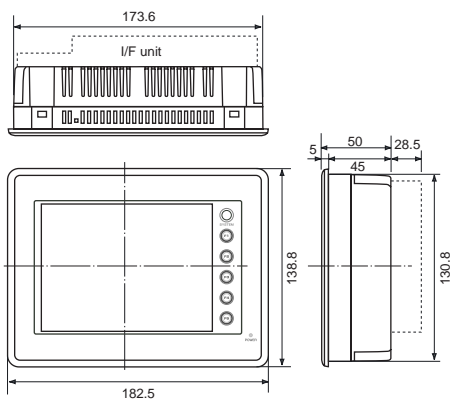
### ● UG320



### ● UG221

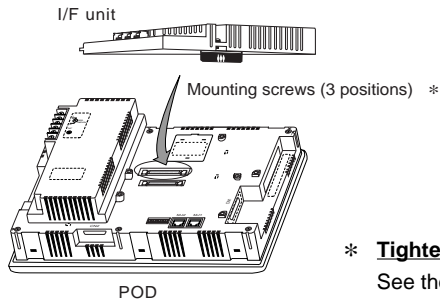


### ● UG220



### Mounting the I/F unit(UG03I-x)

- Remove the seal for preventing dust attached on the back of the POD as shown in the figure on the right. Mount the I/F unit, then secure it using the 3 screws.
- Route the communication cable. For details regarding how to lay and connect the communication cable, refer to the corresponding user's manual.
- For the UG320/UG221, set the spacer contained in the package to the hole on the upper left side, then mount the I/F unit.



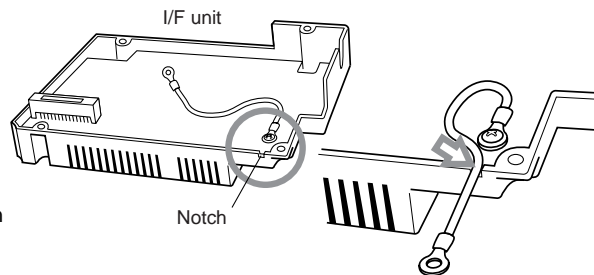
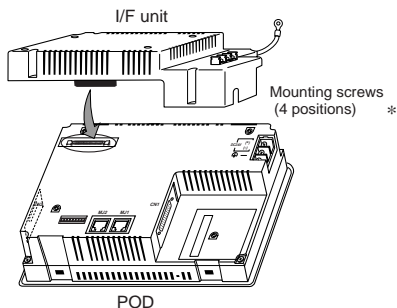
\* **Tightening screws for fixing a unit**

See the table below for how to tighten the screw for fixing a unit:

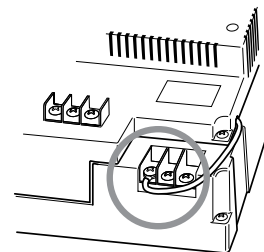
Type of screw	Screw size	Tightening torque (N•m)
Unit mounting screw	M3	0.3 to 0.5

### Mounting the I/F unit(UG02I-x)

- Route the insulated cable through the notch.
- Remove the seal for preventing dust attached on the back of the POD as shown in the figure on the right. Mount the I/F unit, then secure it using the 4 screws.



- Connect the insulated cable with the ground terminal on the POD.
- Route the communication cable. For details regarding how to lay and connect the communication cable, refer to the corresponding user's manual.



\* **Tightening screws for fixing a unit**

See the table below for how to tighten the screw for fixing a unit:

Type of screw	Screw size	Tightening torque (N•m)
Unit mounting screw	M3	0.3 to 0.5

# 6 Connecting the Dual Port Interface

- The UG00P-DI unit makes the connector for programmer of MELSEC-A, QnA or FX series CPU of Mitsubishi PLC into "two-port type".

It is used to connect POD and PLC loader at the same time for debugging PLC program or to connect two units of POD using the connector for programmer of the CPU of the PLC.

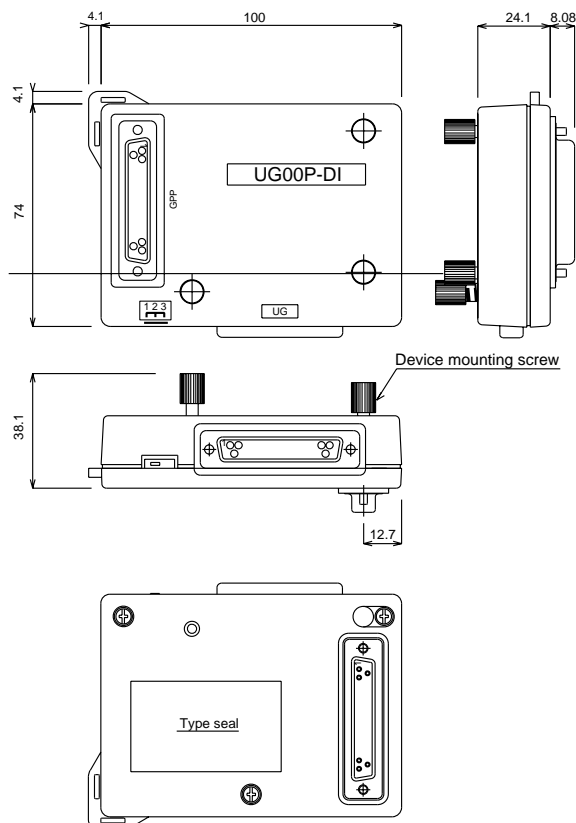
## Warning

- Turn OFF the power before mounting, dismounting, wiring, maintaining, or checking, otherwise, electric shock, erratic operation, or troubles might occur.

## Caution

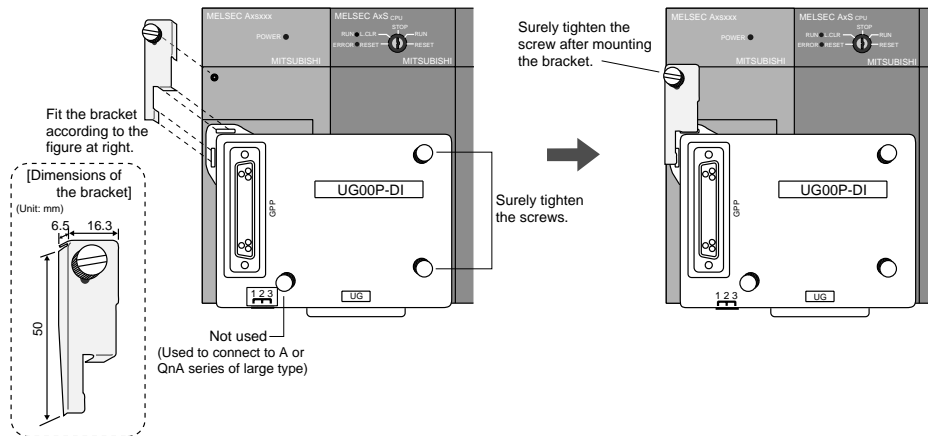
- Follow the directions of the operating instructions and the manual when mounting the product. If mounting is improper, the product might drop or develop problems or erratic operations.

## External Dimensions



## How to install UG00P-DI

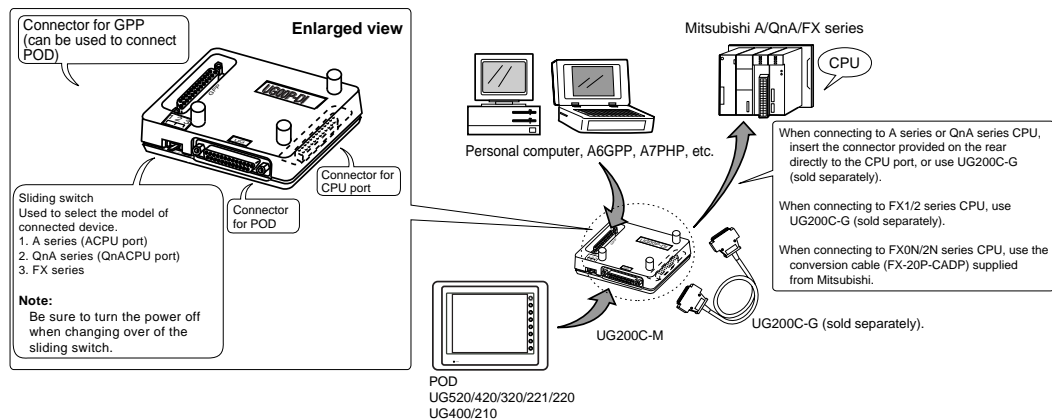
To connect the UG00P-DI to A series PLC of small type (A1S, A2US, etc.), it is necessary to mount the bracket that is supplied with the UG00P-DI.



## How to Use UG00P-DI

### 1) To use for debugging

Connect to POD or GPP (personal computer, A6GPP, etc.)



### 2) To use for connecting two units of POD

PODs can be connected on the GPP side as well as on the UG side (see the above figure).

For this, the cable used on the GPP side must be the same as that used on the UG side (UG200C-M).

## Precautions for Use

1. Be careful of the capacity of the 5V power supply of the CPU because the UG00P-DI is supplied power from the CPU (current consumption: max. 350 mA).
2. The wiring length between the CPU and the UG00P-DI shall be as short as possible (max. 1 to 1.5 m).

3. Attention shall be paid to noise problems when wiring the devices.
4. Note that there are the following restrictions when connecting between UG00P-DI and QnA series CPU port.
  - 1) Concerning communication time-out, select one of the following two methods:
    - Set [Continue] for [Communication error treatment] in the [Detail] menu under [Comm. Parameter.] under [System Setting].
    - Set such that [Time-out time] × [Retry count] becomes 20 seconds or more.
  - 2) Running-write operation
 

If the required time is 20 seconds or more when running-write operation is instructed from the GPP side, the UG00P-DI cannot be used. In such case, perform the writing after stopping the PLC.

The number of steps of the program that permits running-write operation within 20 seconds differs with the content of said program. The following calculation provides a guideline:

$$\text{Time} = (\text{Number of steps} \div 60) \times \text{Scan time (ms)}$$

This calculation provides only a guideline. This method is not applicable when constant scan is performed.
  - 3) If the power is turned on with the console connected to the UG00P-DI, communication time-out error occurs on the console before the initialization of UG00P-DI is completed.
 

In such case, disconnect once the cable from the console and then reconnect it, or reset the console, and the console will be restored to normal condition.

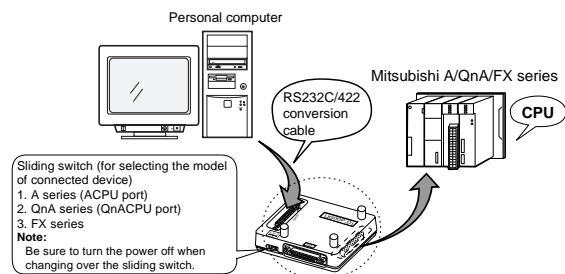
(The UG00P-DI starts normal operation 15 seconds after the power is turned on.)
5. When connecting the UG00P-DI to A or FX series CPU, set 1.5 seconds or greater value for [Time-out time] on the [Comm. Parameter~] dialog for the POD.
6. When using the UG00P-DI by directly connecting it to KZ-A500 CPU port of Keyence PLC, if program is written with the ladder software supplied from Keyence (Ladder Builder for KZ-A), time out occurs due to too slow response of the PLC, which may cause error to occur on the ladder software side. In such case, you can solve this problem by disconnecting the UG00P-DI and connecting the cable directly to the CPU port to write program.
7. UG00P-DI program can be upgraded (version up) with the transfer utility "U2DI.exe" that is included in UG00S-CW.

## Version Up of UG00P-DI

It is possible to upgrade (version up) the system program for UG00P-DI from the editor (UG00S-CW).

### ■ Connecting the personal computer to the UG00P-DI

1. Connect the UG00P-DI to the RS-422 connector of Mitsubishi A/QnA/FX series CPU.
2. Connect between the personal computer and the UG00P-DI (GPP port) using the RS232C/422 conversion cable (UG00C-X from Fuji Electric Co., Ltd.)
3. Turn on the power switch of the PLC, and power is supplied to the UG00P-DI.



## ■ How to use the UG00P-DI transfer utility

### 1. Start "U2DI.exe"

Double-click the [U2DI.exe] icon, and the [UG00P-DI transfer utility] dialog box will be displayed.

### 2. Select a port.

Select, in box ①, a port to be used.

### 3. UG00P-DI information

Click the [UG00P-DI information] button to confirm the program version and connectable model of UG00P-DI. (See the figure at right.)

### 4. Select a program to be transferred.

The path to the UG00P-DI program file that is to be transferred is displayed in text box ④.

As default, "the folder in which UG00S-CW is installed as explained above"/Tpa (folder)/dprrg.DI is displayed in this example.

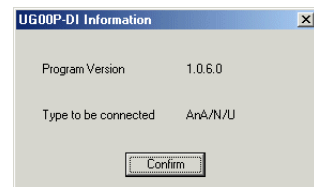
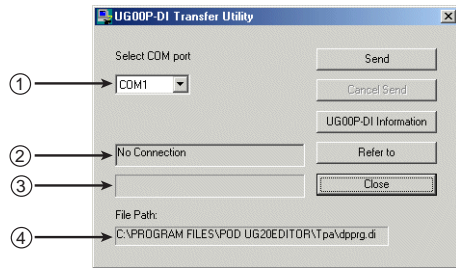
To select other program file for transfer, click the [Reference] button. Then the [Select program file] dialog box is displayed. In this dialog, set the program that you want to transfer.

### 5. Transfer the program file.

Turn on again the power switch of the PLC and click the [Transfer] button, and the program will begin to be transferred. When no program is selected for transfer, the [Select program file] dialog box is displayed. In this dialog, select a program that you want to transfer.

Comments related to communication condition are displayed in text box ②: "Connecting to UG00P-DI" or "Transferring data", for example.

A bar is displayed in box ③ while the program is being transferred, and the message "Transfer completed" is displayed when transfer ended successfully. To cancel the program transfer in the middle, click the [Cancel] button.



**\* If [UG00P-DI information] or [Transfer] instruction is executed after clicking the [UG00P-DI information] or [Transfer] button and communicating with UG00P-DI, the message "Receiving waiting time over" is displayed. Turn the power switch of the PLC on again and re-execute the instruction.**

## ■ Precautions

- Do not interrupt the communication by disconnecting and reconnecting the cable while the program is being transferred. If interrupted, normal communication becomes impossible. In such case, turn the power switch of the PLC on again and re-execute the instruction.
- The UG00P-DI transfer utility is adapted to Ver. 2.4.0.0 or newer UG00S-CW.



# 7 How to Replace the Backlight Unit

When the screen brightness becomes dim and cannot be adjusted to the optimum setting, the life of the backlight unit may be expiring.

For the UGx20 series PODs, it is possible for users to replace the back light, except UG221. Obtain a new backlight unit suitable for the POD type, and replace the backlight unit with the new one according to the procedure described below.

Body type	Backlight unit type	Replacement procedure	Life of backlight
UG520H-V (TFT color)	UG520P-BFA	3-20	50,000
UG420H-V (TFT color, 800 × 600 dots)	UG420P-BVA	3-34	50,000
UG420H-T (TFT color, 640 × 480 dots)	UG420P-BFA	3-34	50,000
UG420H-S (STN color)	UG420P-BC	3-40	25,000
UG320H-S (STN color)	UG320P-BC	3-45	40,000
UG320HD-S (STN color)			
UG220H-S (STN color)	UG220P-BCA	3-52	40,000
UG220H-L (Monochrome)	UG220P-BLA	3-52	40,000
UG221H (All Types)	Can not be replace		50,000

\* Figures for the life of backlight shows the time till the surface luminance becomes 50% the initial value at the ambient temperature of 25°C.

### Warning

- Turn off the power before replacement. You may get an electric shock, or the body or backlight unit may malfunction or become faulty.
- The liquid of the LCD (liquid crystal) is toxic. If the LCD panel is damaged and the liquid flows out of the panel, make certain that no liquid enters your mouth. If the liquid contacts your skin or clothes, wash it off using soap or detergent.
- Do not remove any parts other than those indicated in the manual. Otherwise, the body or unit may become faulty.

### Caution

- Replace the unit in an environment free from dust, foreign matter, or static electricity. Otherwise, the body or unit may malfunction or become faulty.
- Lightly wipe dust or liquids off the surface of the body or unit using a soft cloth.
- Do not push the front of the display unit using a sharp pointed device such as tweezers and engineering tools.
- Do not touch any parts other than those necessary (especially for the printed circuit boards). Otherwise, the body or unit may malfunction or become faulty.

# UG520H-V

## UG520H-V Backlight Unit Replacement

(Required Tool)

Screwdriver

Precision screwdriver



**Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.**



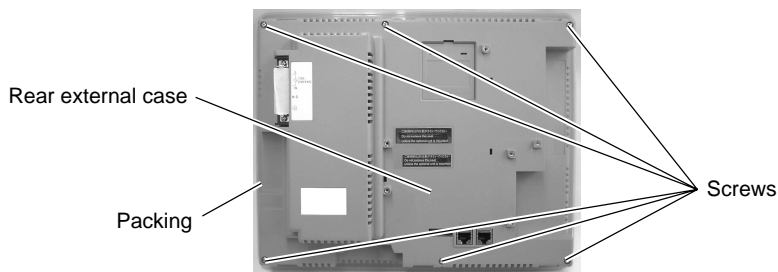
**When replacing the backlight, take appropriate preventive measures against static electricity.**

\* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over and remove the packing.
2. Remove the 6 screws from the rear external case.



**Place it on a cloth, etc. to protect the display panel from scratches.**

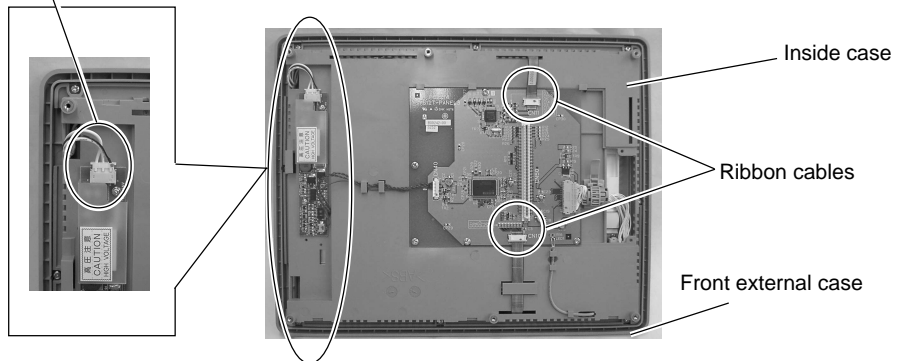


3. Remove the rear external case.
4. Disconnect the backlight unit (CFL unit) connector.



**Hold the connector and pull it out. Do not twist or yank on the cable then.**

Backlight unit (CFL unit) connector

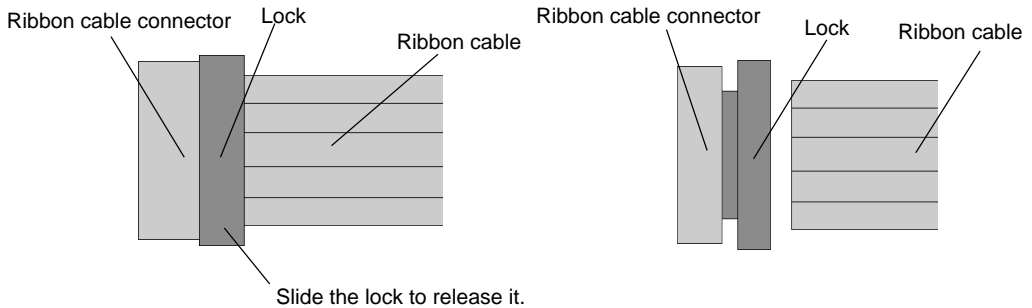


5. Remove the two ribbon cables.



**Slide the lock with the ribbon cable holding down with your fingers.**

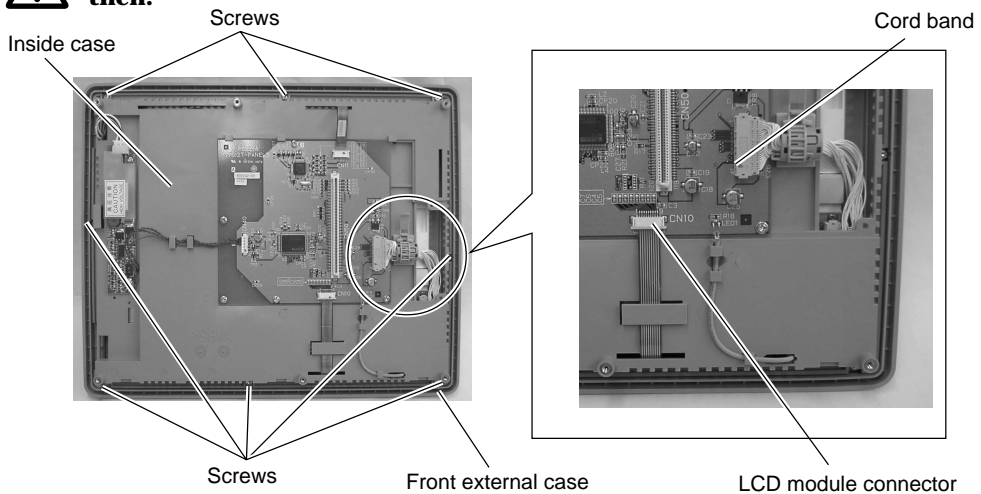
\* The connector is not removable.



6. Remove cord band and remove the LCD module connector by pulling it up.



**Hold the connector and pull it out. Do not twist or yank on the cable then.**



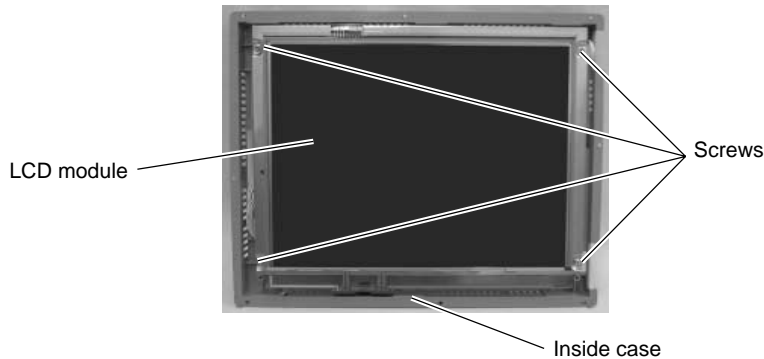
7. Remove the 8 screws fixing the inside case.  
8. Remove the inside case from the front external case.



**Take care not leave scratches, fingerprints, or dirt on the display panel.**

9. Place the inside case with the display panel side up.

10. Remove the 4 screws fixing the LCD module.
11. Remove the LCD module from the inside case.

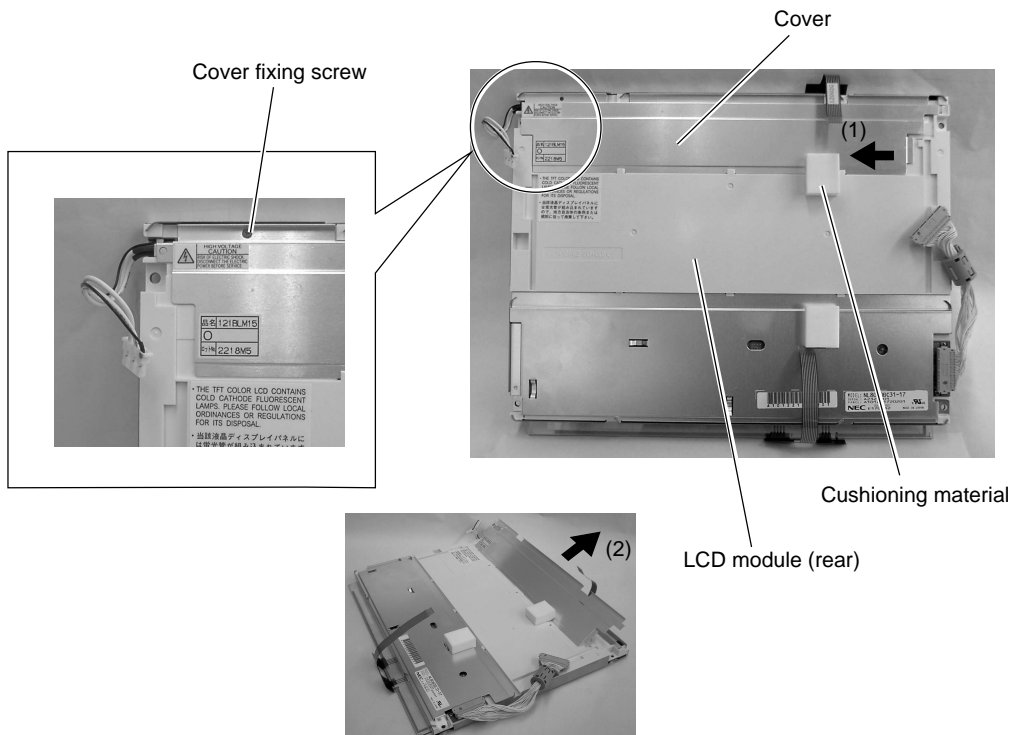


12. Place the LCD module with the display panel side down.

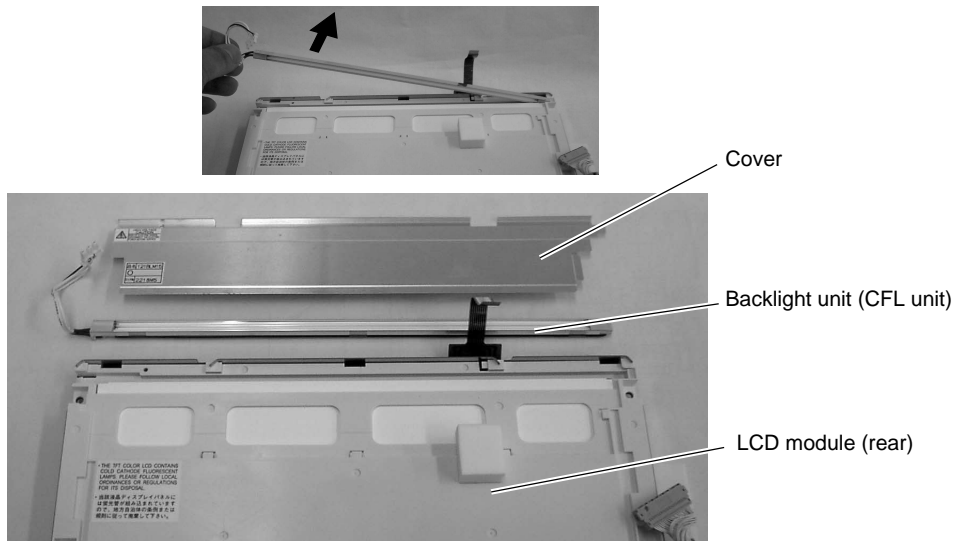


**Place it on a cloth, etc. to protect the display panel from scratches.**

13. Partly remove the cushioning material.
  - \* The cushioning material is cemented with an adhesive. Remove only the portion on the backlight unit (CFL unit) cover.
14. Remove the screw fixing the backlight unit (CFL unit) cover.
  - \* Since the screw is small, use a precision screwdriver to remove it.
15. Use a precision screwdriver, slide the cover in the direction of arrow (1), and remove the cover from the claws while pulling it up in a slanting direction (as shown with the arrow (2)).



16. Remove the backlight unit (CFL unit) by pulling it up.



17. Attach a new backlight unit (CFL unit).



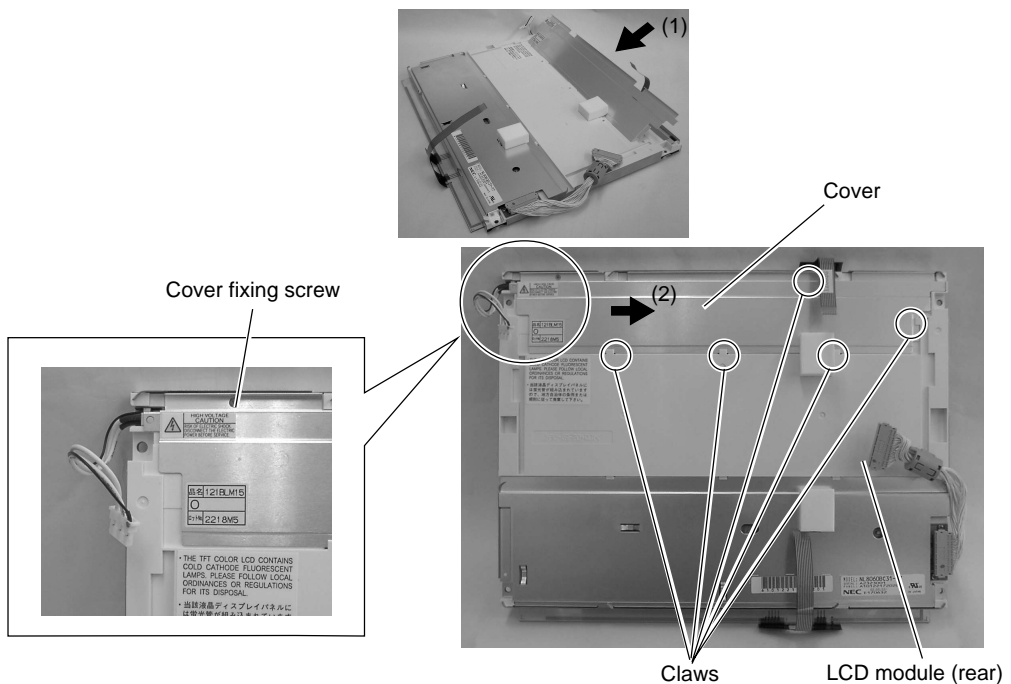
**When taking a new backlight unit out of the bag, do not twist or yank on the cable.**

18. Attach the cover.

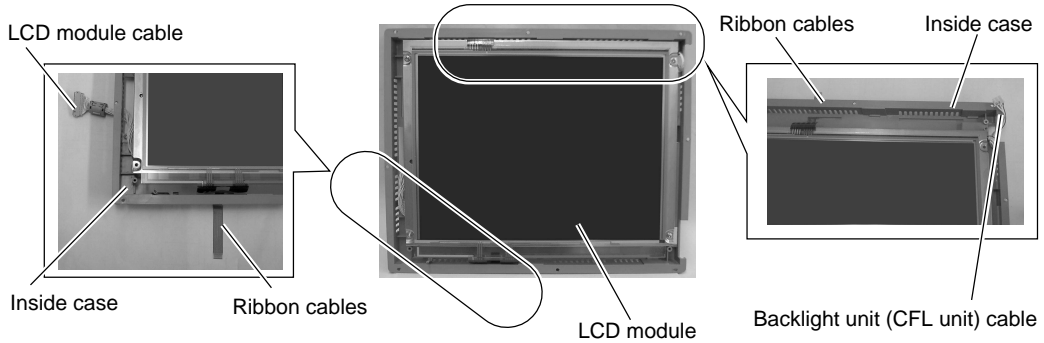
- \* Insert the cover in a slanting direction (as shown with arrow (1)), and slide it to the direction of arrow (2) until it is hooked on claws.

19. Attach the screw fixing the cover.

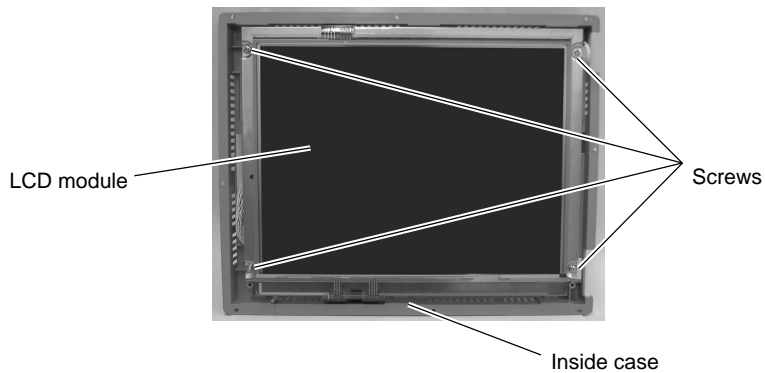
- \* Since the screw is small, use a precision screwdriver to attach it.



20. Place the LCD module with the display panel side up.
21. Attach the LCD module to the inside case.
  - \* Insert the cable and two ribbon cables into the inside case.



22. Attach the 4 screws to fix the LCD module.



23. After attaching the LCD module to the inside case, place it with the display panel side down.



**Place it on a cloth, etc. to protect the display panel from scratches.**

24. Attach the inside case to the front external case.



**Do not allow the entry of dust or particles to the area between the inside case and the front external case.**

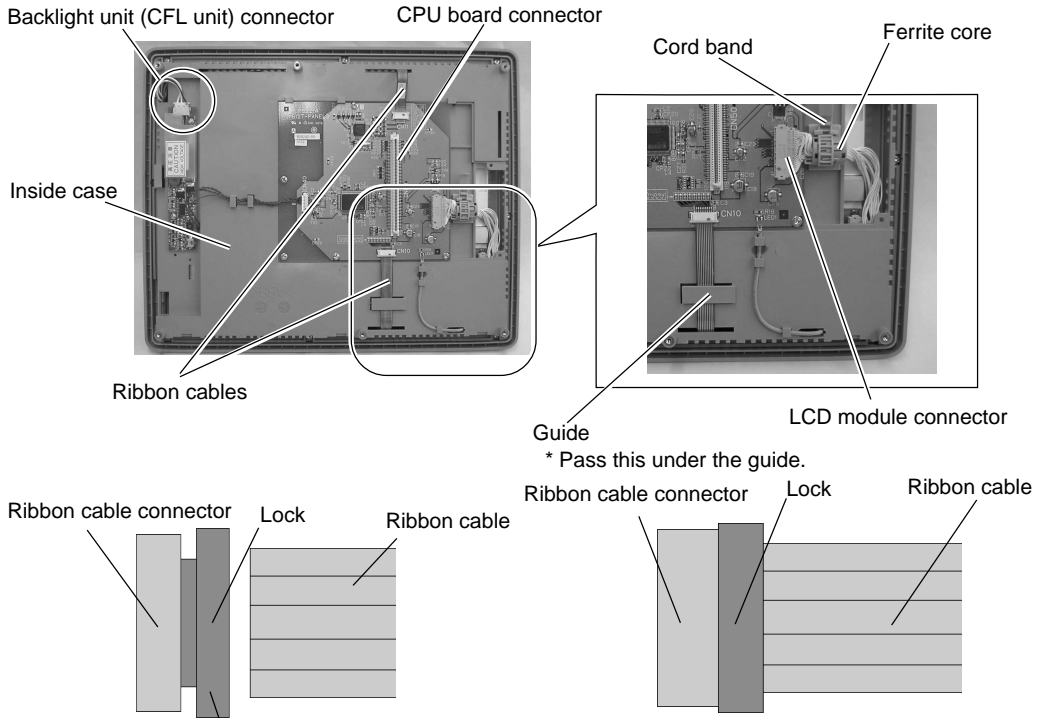
25. Attach the 8 screws.

26. Attach the 2 ribbon cables.  
 \* Pass one ribbon cable under the ribbon cable guide.

27. Attach the backlight unit (CFL unit) connector.



**Do not twist or yank on the cable of the backlight unit.**



Insert the ribbon cable into the connector and slide the lock to set it.

28. Attach the LCD module connector.  
 \* Secure the ferrite core using a cord band.



**Do not twist or yank on the cable of the LCD module.**

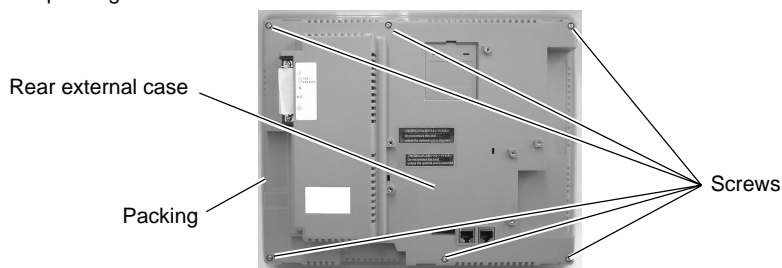


**Visually check that all connectors and ribbon cables are connected securely.**

29. Attach the rear external case to the front external case.  
 \* Fit the rear external case in position. Press the case entirely so as to fit the panel board connector with the CPU board connector inside.

30. Attach the external 6 screws.

31. Attach the packing.



# UG420H-V

## UG420H-V Backlight Unit Replacement

(Required Tool)

Screwdriver



**Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.**



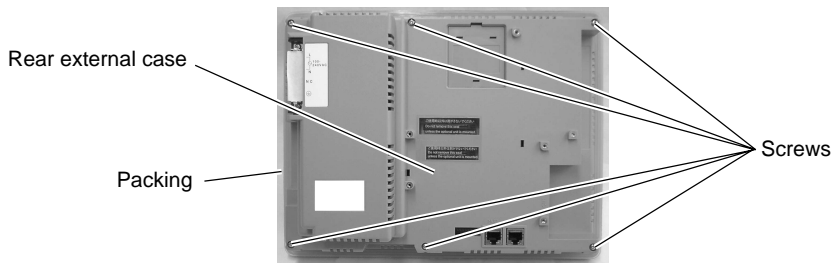
**When replacing the backlight, take appropriate preventive measures against static electricity.**

\* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over and remove the packing.
2. Remove the 6 screws from the rear external case.



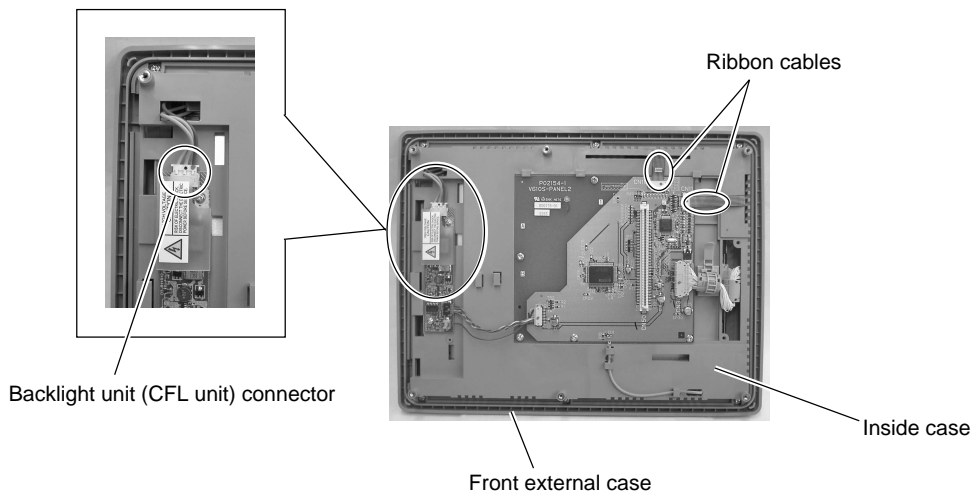
**Place it on a cloth, etc. to protect the display panel from scratches.**



3. Remove the rear external case.
4. Disconnect the backlight unit (CFL unit) connector.



**Hold the connector and pull it out. Do not twist or yank on the cable then.**



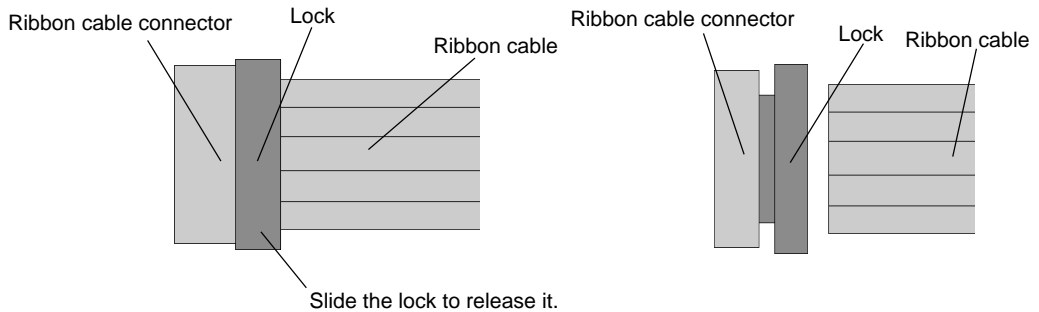


5. Remove the two ribbon cables.

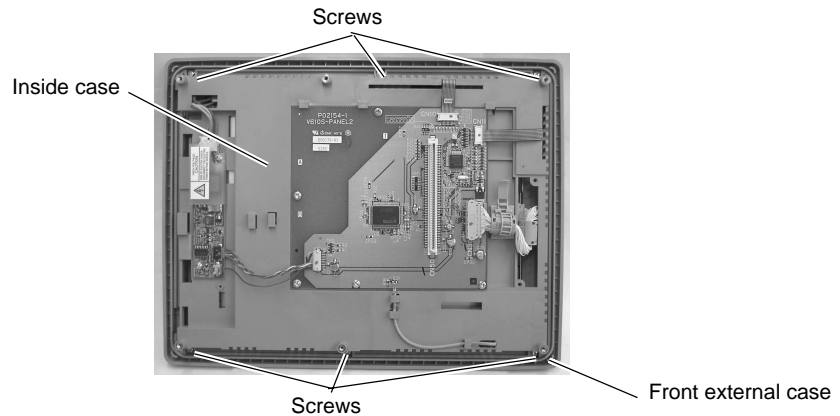


**Slide the lock with the ribbon cable holding down with your fingers.**

\* The connector is not removable.



6. Remove the 6 screws fixing the inside case.

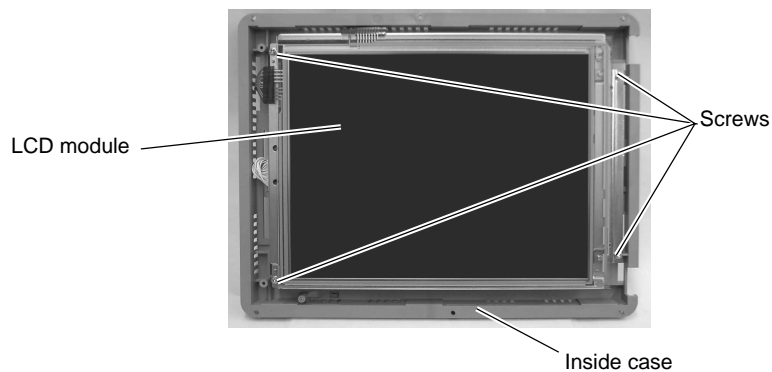


7. Remove the inside case from the front external case.



**Take care not leave scratches, fingerprints, or dirt on the display panel.**

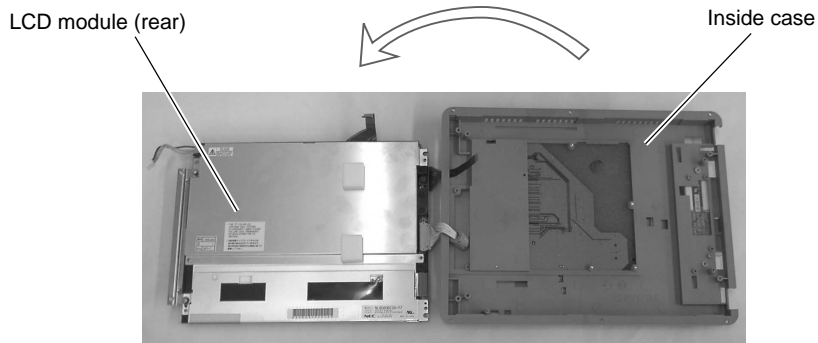
8. Place the inside case with the display panel side up.  
9. Remove the 4 screws fixing the LCD module.



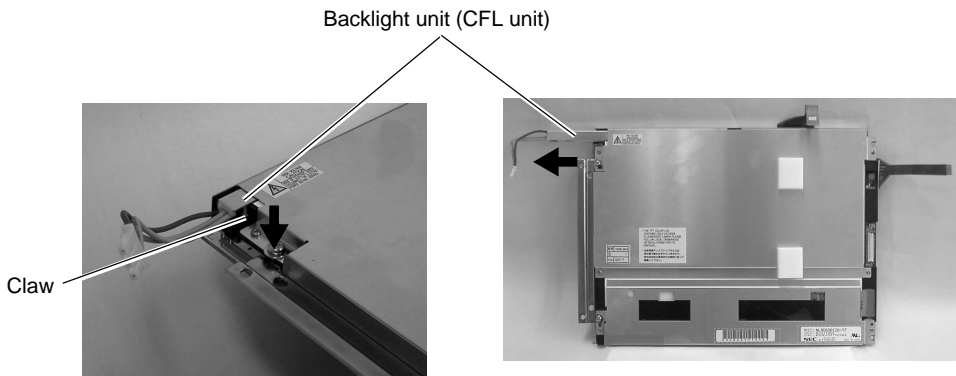
10. Open the LCD module by turning it to the left and remove it from the inside case. Place it with the display panel side down.



**Place it on a cloth, etc. to protect the display panel from scratches.**



11. Hold down the claw, and pull the backlight unit (CFL unit) out horizontally to the left.



12. Attach a new backlight unit (CFL unit).

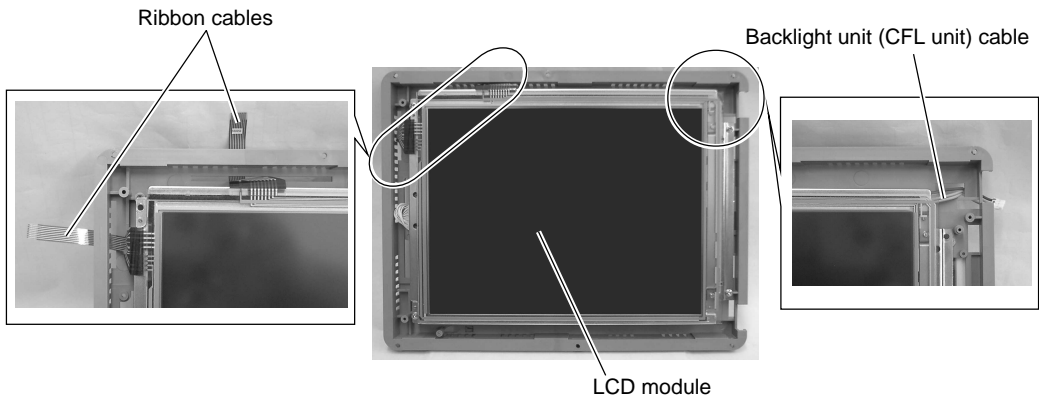
\* Hold down the claw, and insert the backlight unit (CFL unit) horizontally to the right.



**When taking a new backlight unit out of the bag, do not twist or yank on the cable.**

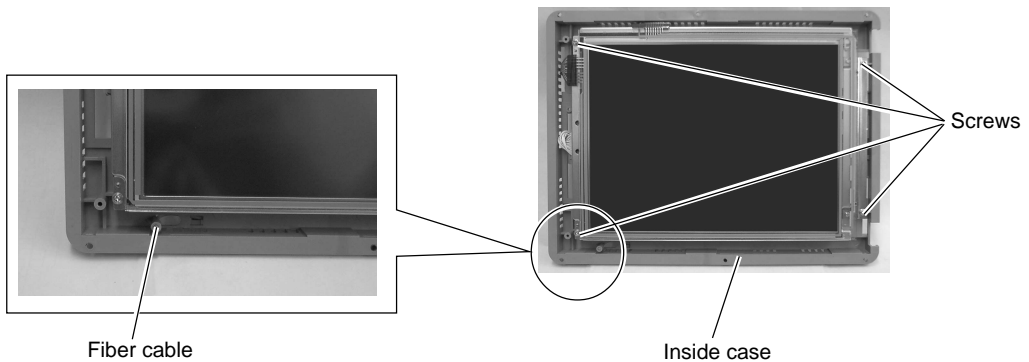
13. Close the LCD module by turning it to the right, and attach the LCD module to the inside case.

\* Insert the cable and two ribbon cables into the inside case.



14. Attach the 4 screws to fix the LCD module.

\* Be careful not to drop the fiber cable.



15. After attaching the LCD module to the inside case, place it with the display panel side down.



**Place it on a cloth, etc. to protect the display panel from scratches.**

16. Attach the inside case to the front external case.



**Do not allow the entry of dust or particles to the area between the inside case and the front external case.**

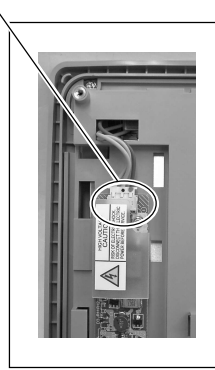
17. Attach the 6 screws.

18. Attach the 2 ribbon cables.
19. Attach the backlight unit (CFL unit) connector.



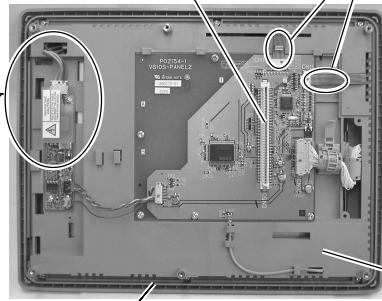
**Do not twist or yank on the cable of the backlight unit.**

Backlight unit (CFL unit) connector



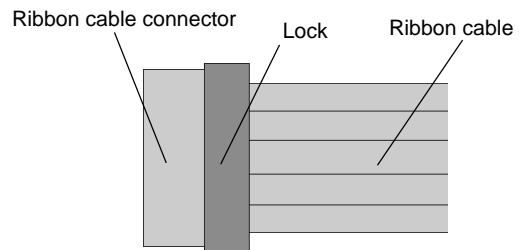
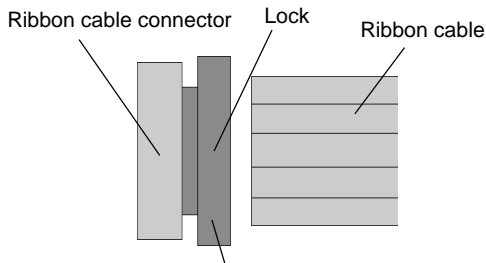
CPU board connector

Ribbon cables



Inside case

Front external case

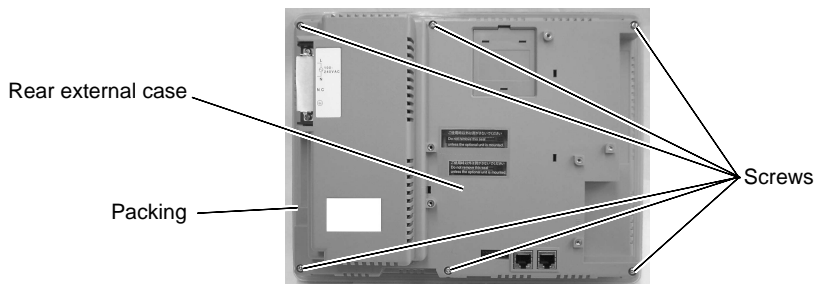


Insert the ribbon cable into the connector and slide the lock to set it.



**Visually check that all connectors and ribbon cables are connected securely.**

20. Attach the rear external case to the front external case.
  - \* Fit the rear external case in position. Press the case entirely so as to fit the panel board connector with the CPU board connector inside.
21. Attach the external 6 screws.
22. Attach the packing.



# UG420H-T

## UG420H-T Backlight Unit Replacement

(Required Tool)

Screwdriver



**Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.**



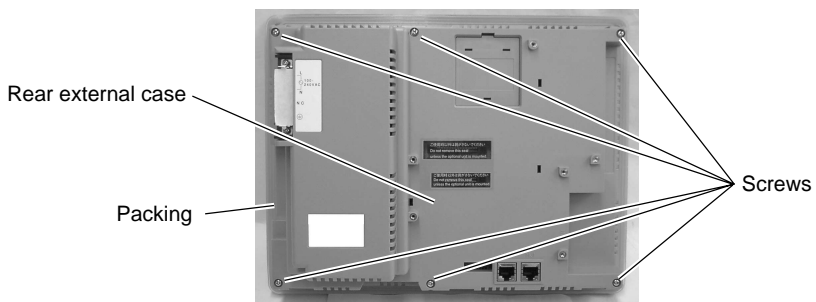
**When replacing the backlight, take appropriate preventive measures against static electricity.**

\* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over and remove the packing.
2. Remove the 6 screws from the rear external case.



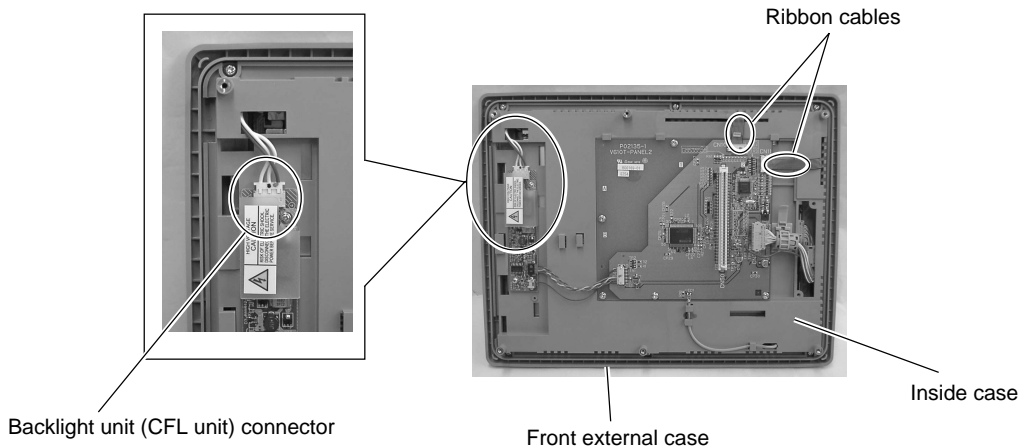
**Place it on a cloth, etc. to protect the display panel from scratches.**



3. Remove the rear external case.
4. Disconnect the backlight unit (CFL unit) connector.



**Hold the connector and pull it out. Do not twist or yank on the cable then.**

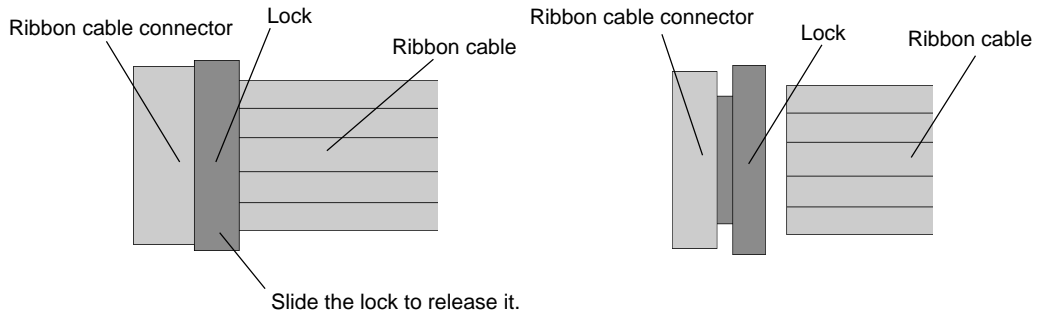


5. Remove the two ribbon cables.

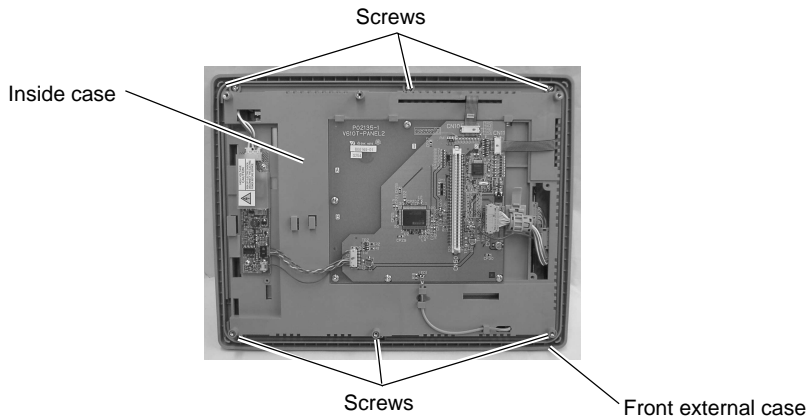


**Slide the lock with the ribbon cable holding down with your fingers.**

\* The connector is not removable.



6. Remove the 6 screws fixing the inside case.

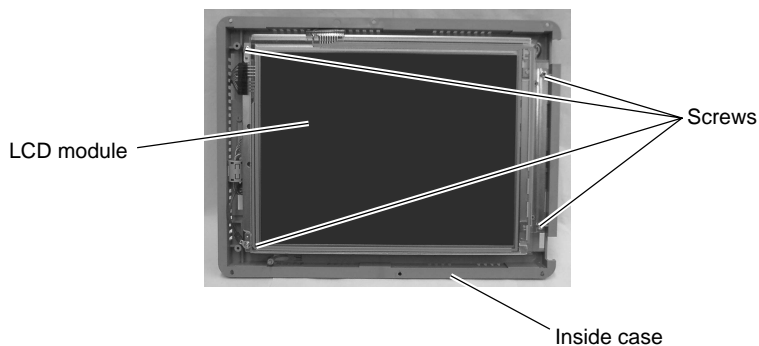


7. Remove the inside case from the front external case.



**Take care not leave scratches, fingerprints, or dirt on the display panel.**

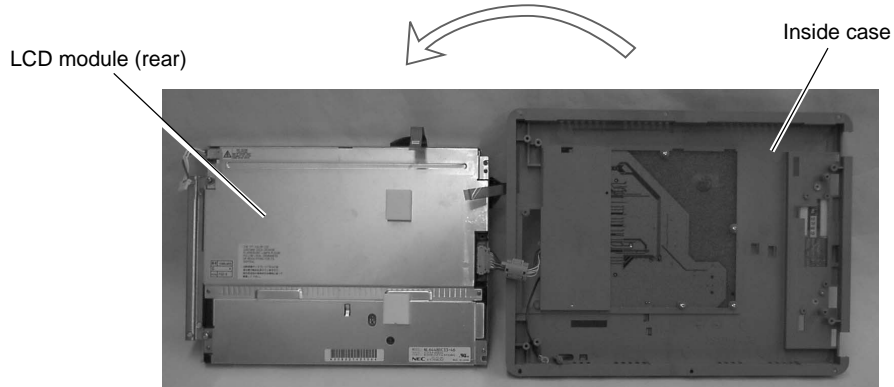
8. Place the inside case with the display panel side up.  
9. Remove the 4 screws fixing the LCD module.



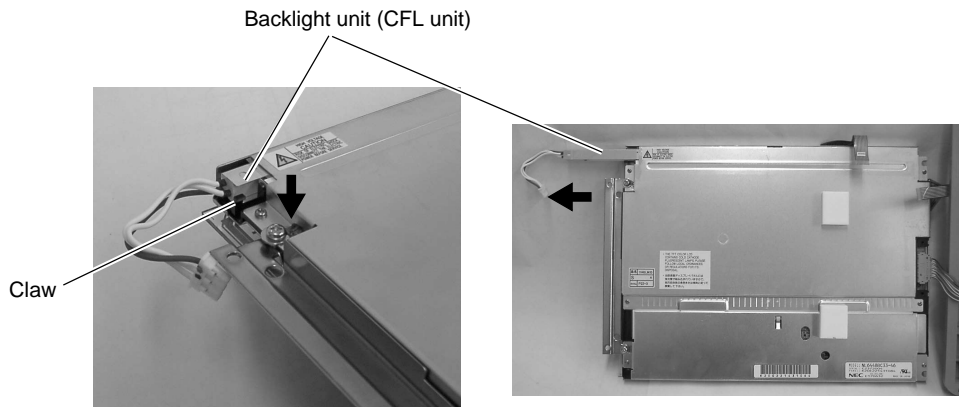
10. Open the LCD module by turning it to the left and remove it from the inside case. Place it with the display panel side down.



**Place it on a cloth, etc. to protect the display panel from scratches.**



11. Hold down the claw, and pull the backlight unit (CFL unit) out horizontally to the left.



12. Attach a new backlight unit (CFL unit).

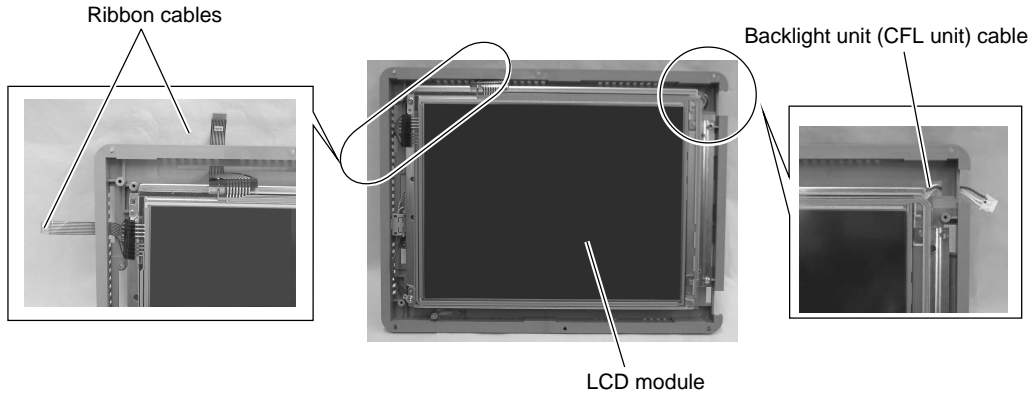
\* Hold down the claw, and insert the backlight unit (CFL unit) horizontally to the right.



**When taking a new backlight unit out of the bag, do not twist or yank on the cable.**

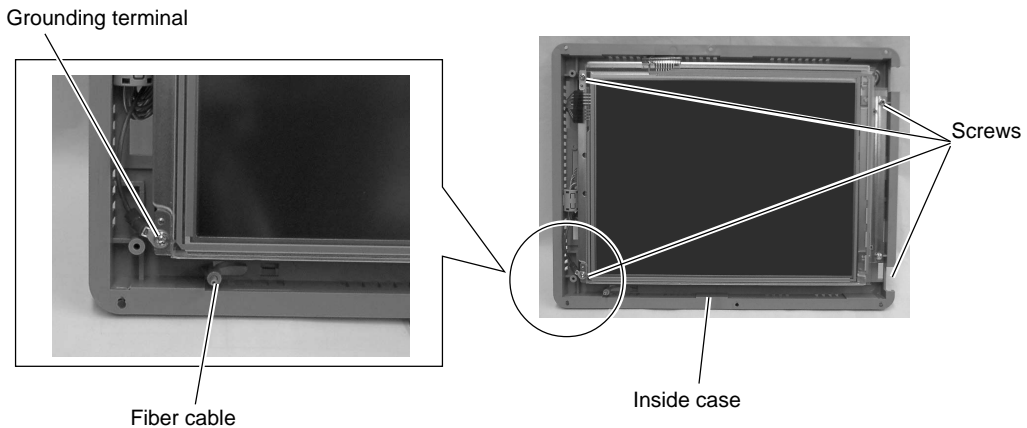
13. Close the LCD module by turning it to the right, and attach the LCD module to the inside case.

- \* Insert the cable and two ribbon cables into the inside case.



14. Attach the 4 screws to fix the LCD module.

- \* When attaching the screw, tighten the grounding terminal together.
- \* Be careful not to drop the fiber cable.



15. After attaching the LCD module to the inside case, place it with the display panel side down.



**Place it on a cloth, etc. to protect the display panel from scratches.**

16. Attach the inside case to the front external case.



**Do not allow the entry of dust or particles to the area between the inside case and the front external case.**

17. Attach the 6 screws.

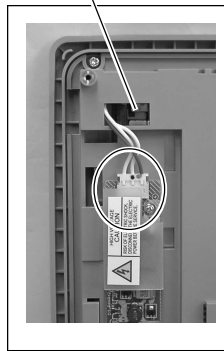


18. Attach the 2 ribbon cables.
19. Attach the backlight unit (CFL unit) connector.

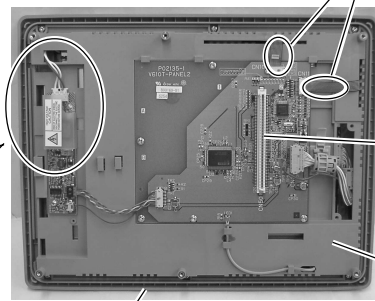


**Do not twist or yank on the cable of the backlight unit.**

Backlight unit (CFL unit) connector



Ribbon cables



CPU board connector

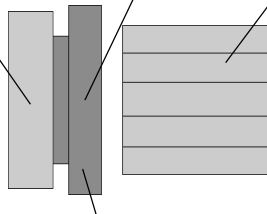
Inside case

Front external case

Ribbon cable connector

Lock

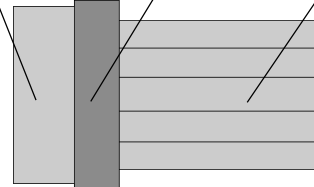
Ribbon cable



Ribbon cable connector

Lock

Ribbon cable



Insert the ribbon cable into the connector and slide the lock to set it.

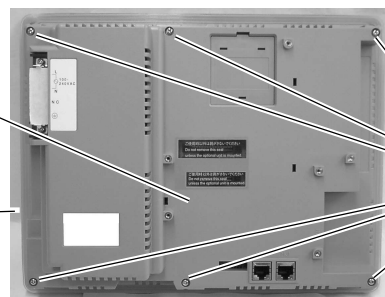


**Visually check that all connectors and ribbon cables are connected securely.**

20. Attach the rear external case to the front external case.
  - \* Fit the rear external case in position. Press the case entirely so as to fit the panel board connector with the CPU board connector inside.
21. Attach the external 6 screws.
22. Attach the packing.

Rear external case

Packing



Screws

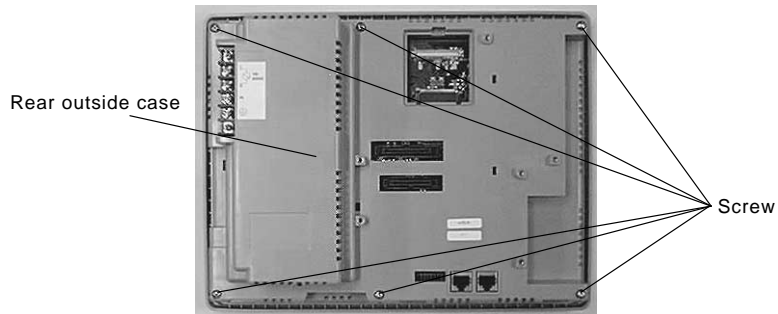
# UG420H-S

1. With the main body turned over, remove the 6 screws from the outside case.



**Put a cloth or other protective material under the product so as not to damage the display panel.**

2. Remove the rear outside case.

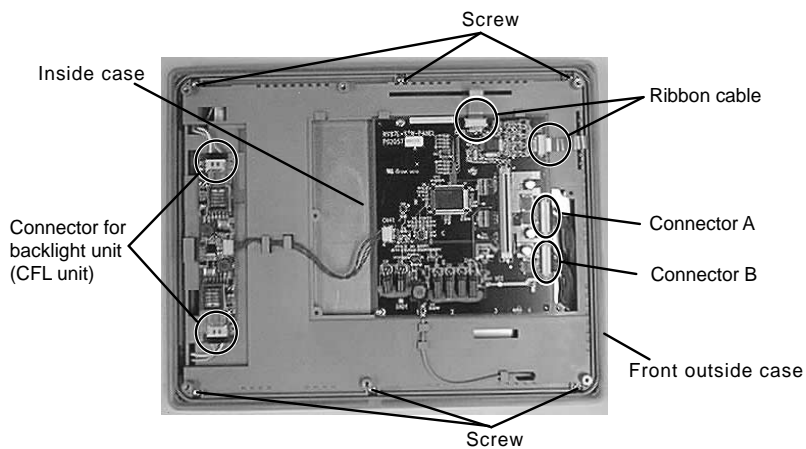


3. Remove the connector for the backlight unit (CFL unit).
4. Remove connector A.
5. Remove connector B.

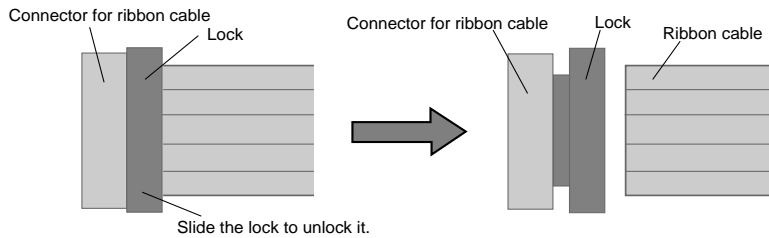


**Holding the connector, carefully remove it without pulling on the cable.**

\* Properly mark connectors B and C so that they can be correctly reinserted in the proper place.



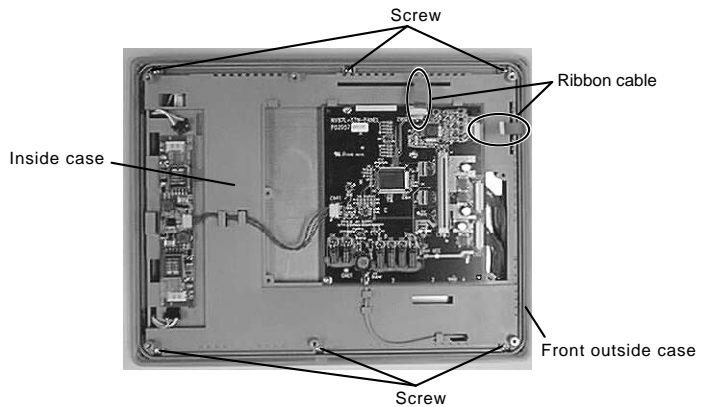
6. Remove the two ribbon cables.



\* The connector cannot be removed.

7. Remove the 6 screws that fix the inside case.

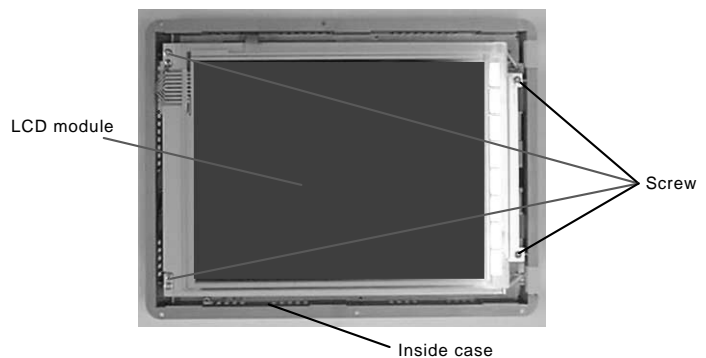
8. Remove the inside case from the front outside case.



9. Put the inside case on the table, with the display panel up.

10. Remove the 4 screws that fix the LCD module.

11. Remove the LCD module from the inside case.



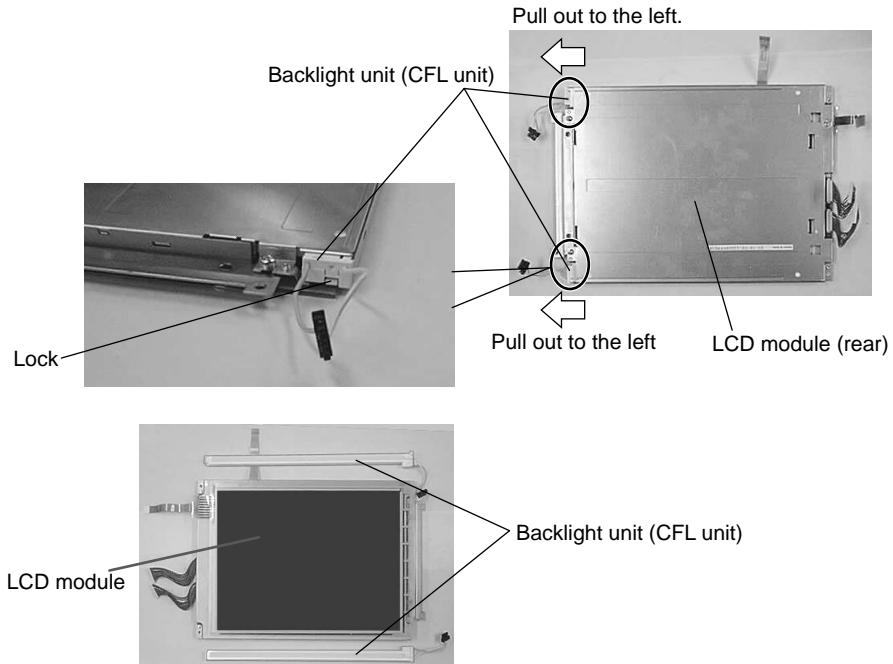
12. Put the LCD module on the table, with the display panel down.



**Put a cloth or other protective material under the product so as not to damage the display panel.**

13. Pull out the backlight unit (CFL unit) to the left as shown in the figure below.

\* Pull up the locks indicated in the figure below to unlock them.



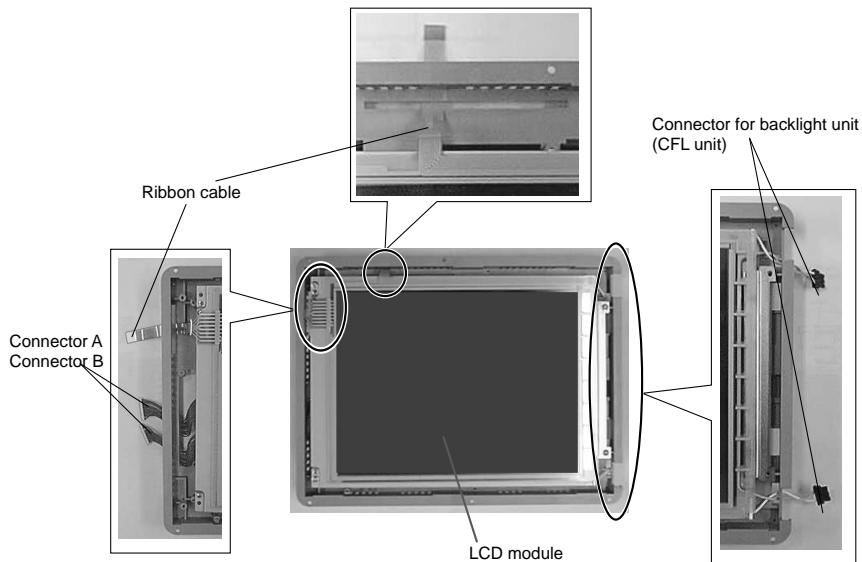
14. Insert the new backlight unit (CFL unit).

\* Insert the new backlight unit until it locks completely.

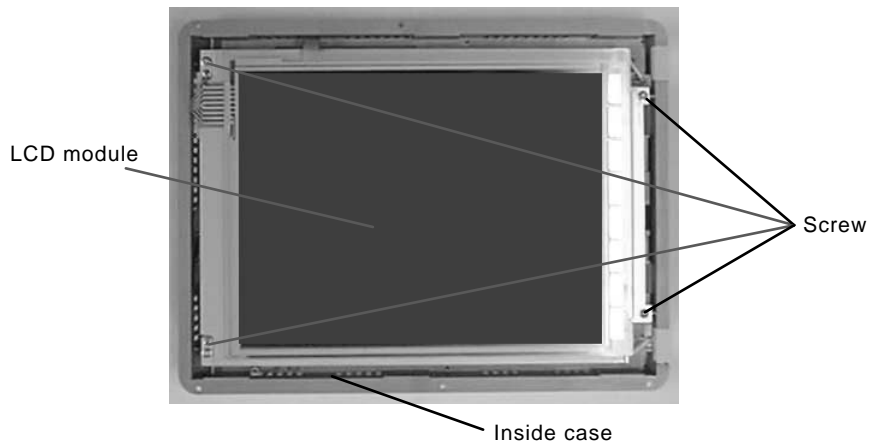
15. Put the LCD module on the table, with the display panel up.

16. Mount the LCD module on the inside case.

\* Pass the cables through the inside case.



17. Set and tighten the 4 screws for securing the LCD module.



18. Put the inside case that has the LCD module mounted on it on the table, with the display panel down.



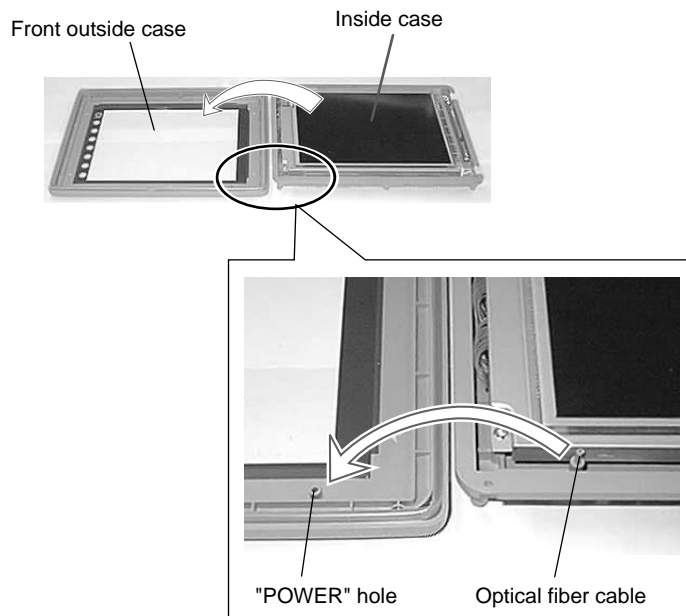
**Put a cloth or other protective material under the product so as not to damage the display panel.**

19. Mount the inside case on the front outside case.



**Be careful not to allow dust or other foreign matter to enter the gap between the inside case and the front outside case.**

\* Insert the optical fiber cable in the "POWER" hole on the front outside case.

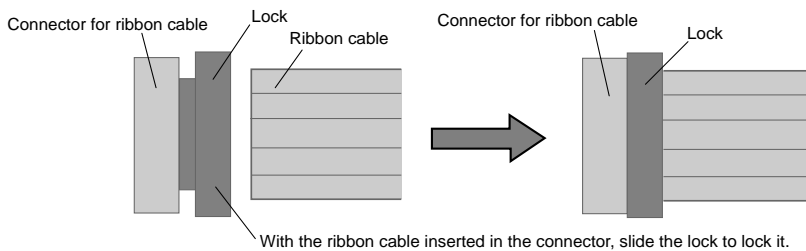
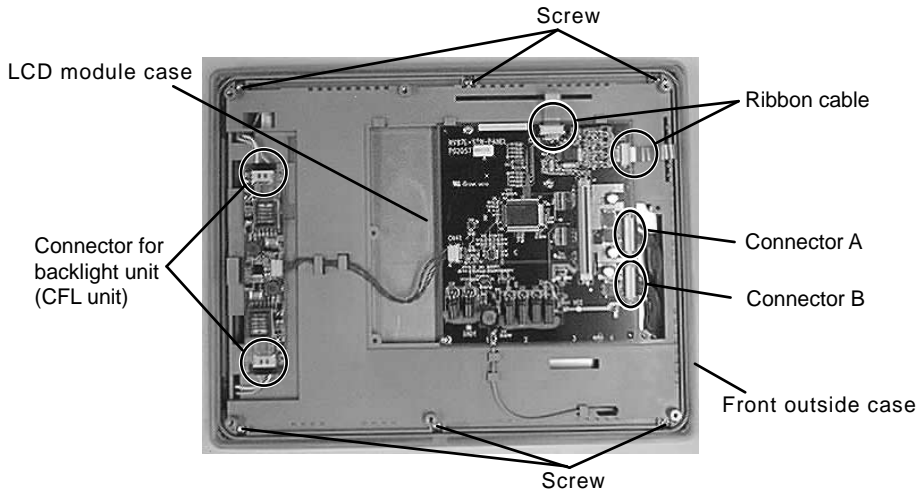


20. Mount the 6 screws.
21. Mount the connector for the backlight unit (CFL unit).
22. Mount connector B.
23. Mount connector A.



**Make sure that the connectors are correctly inserted in their original places by using the marks made before removal.**

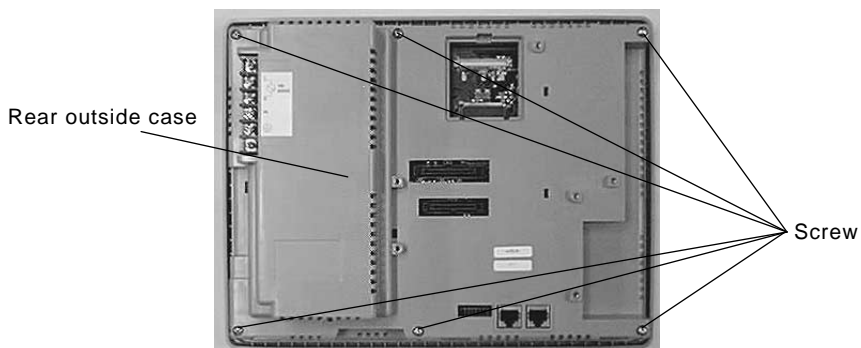
24. Mount the 2 ribbon cables.



25. Mount the rear outside case on the front outside case.

\*After fitting the rear outside case, firmly press the entire case body to fit the internal "POWER" board connector into the CPU board connector.

26. Mount the 6 screws on the rear outside panel.



# UG320

## UG320 Backlight Unit Replacement

(Required Tool)

Screwdriver



**Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.**



**When replacing the backlight, take appropriate preventive measures against static electricity.**

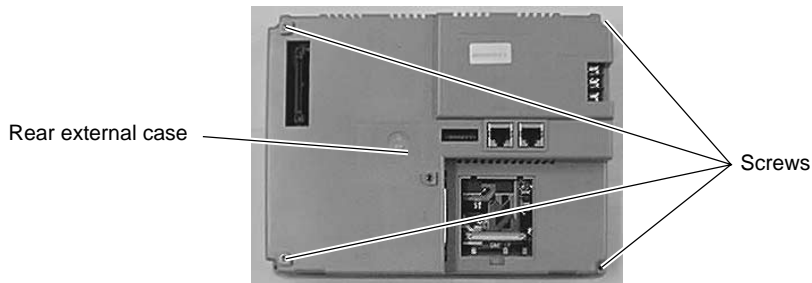
\* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over, and remove the 4 external screws.



**Place it on a cloth, etc. to protect the display panel from scratches.**

2. Remove the rear external case.

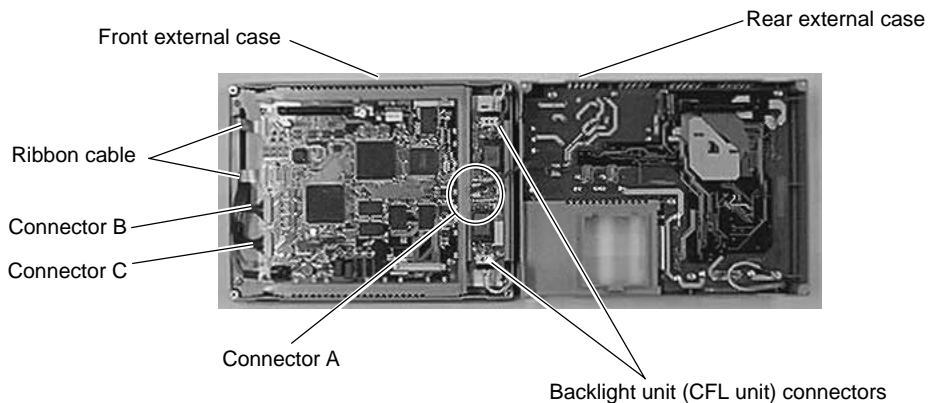


3. Remove the connector A.
4. Remove the connector B.
5. Remove the connector C.



**Hold the connector and pull it out. Do not twist or yank on the cable then.**

\* Leave position marks on the connectors B and C to check the positions when reattaching them.

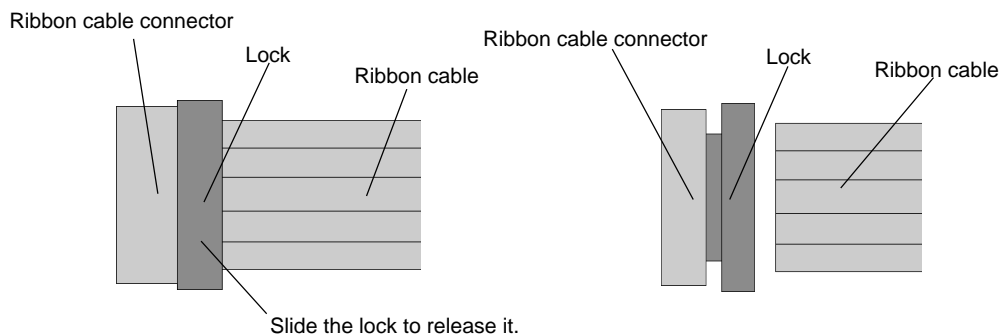
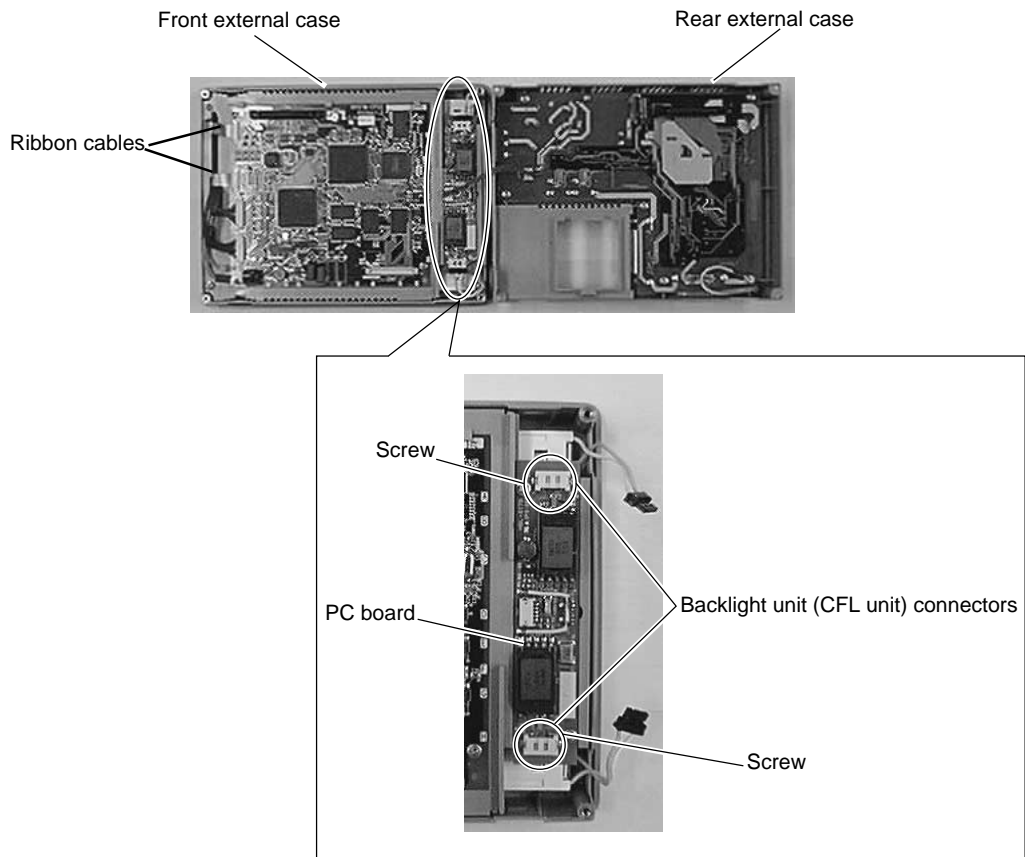


6. Disconnect the backlight unit (CFL unit) connector.



**Hold the connector and pull it out. Do not twist or yank on the cable then.**

7. Remove the 2 screws fixing the board equipped with the backlight unit (CFL unit) connectors.  
 8. Remove the board equipped with the backlight unit (CFL unit) connectors.  
 9. Remove the two ribbon cables.

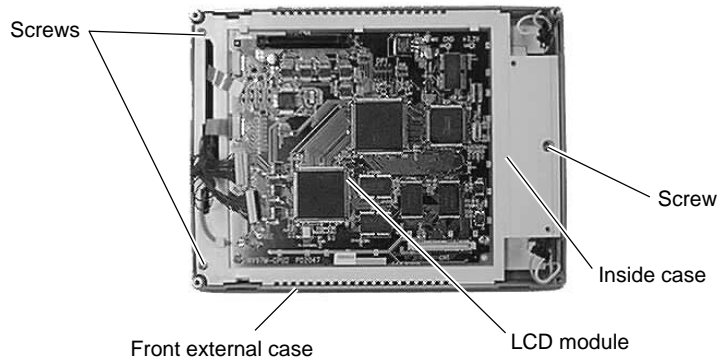


**Slide the lock with the ribbon cable holding down with your fingers.**

\* The connector and the lock are not removable.



10. Remove the 3 screws fixing the inside case.

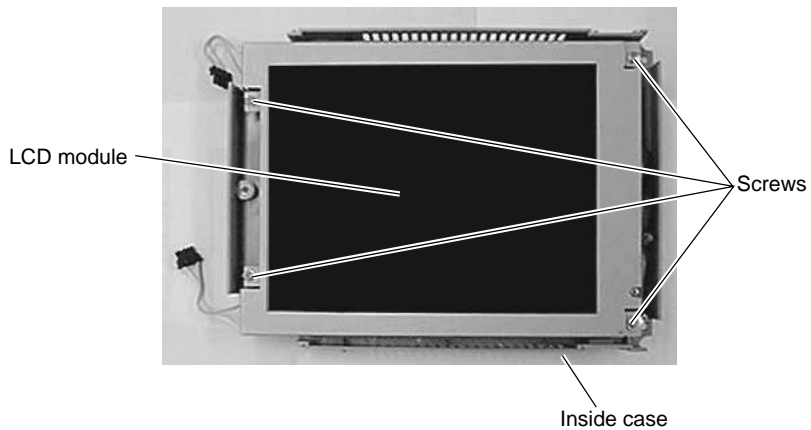


11. Remove the inside case from the front external case.
12. Place the inside case with the display panel side up.

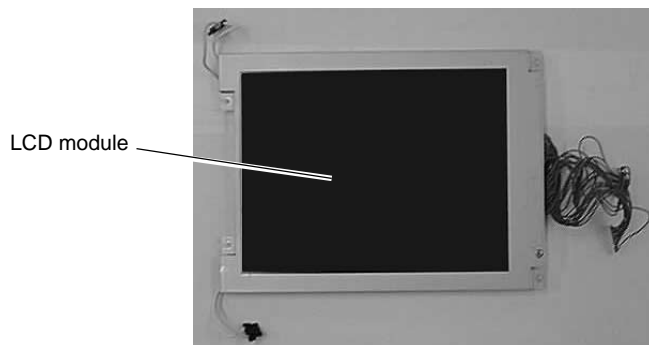


**Take care not leave scratches, fingerprints, or dirt on the display panel.**

13. Remove the 4 screws fixing the LCD module.



14. Remove the LCD module from the inside case.

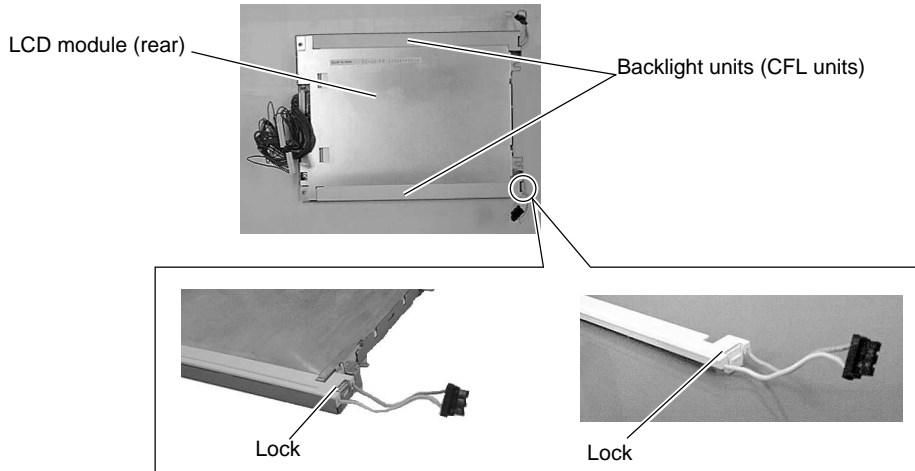


15. Place the LCD module with the display panel side down.



**Place it on a cloth, etc. to protect the display panel from scratches.**

16. Release the lock of the backlight unit (CFL unit). Remove the unit by pulling it up.

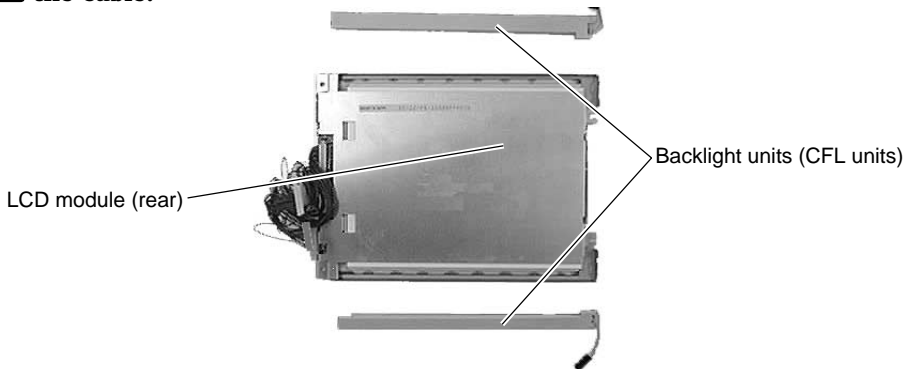


17. Attach a new backlight unit (CFL unit).

\* Make sure that the lock is secured.



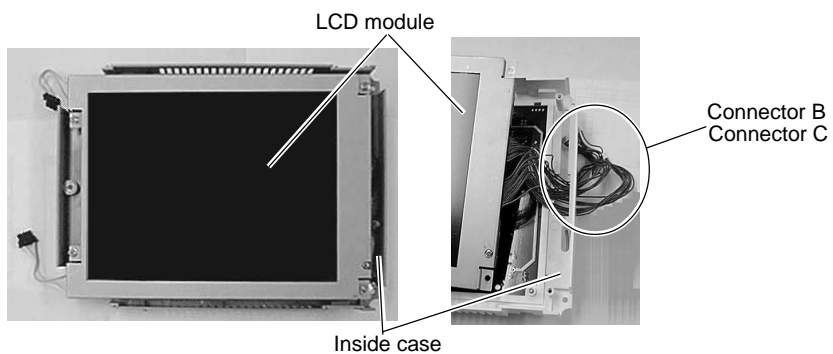
**When taking a new backlight unit out of the bag, do not twist or yank on the cable.**



18. Place the LCD module with the display panel side up.

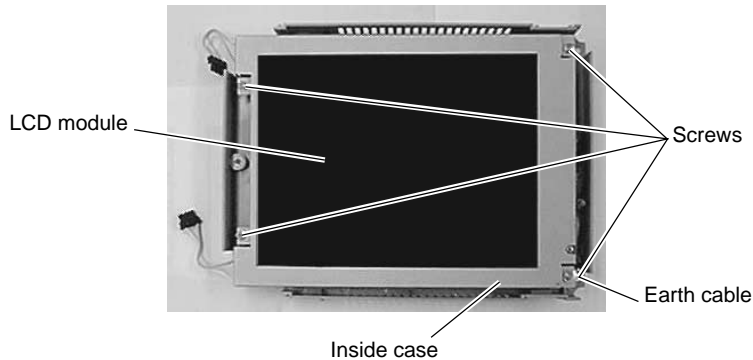
19. Attach the LCD module to the inside case.

\* Insert the connectors B and C into the inside case.



20. Attach the 4 screws to fix the LCD module.

\* Tighten one screw at the bottom right with an earth cable terminal.



21. After attaching the LCD module to the inside case, place it with the display panel side down.



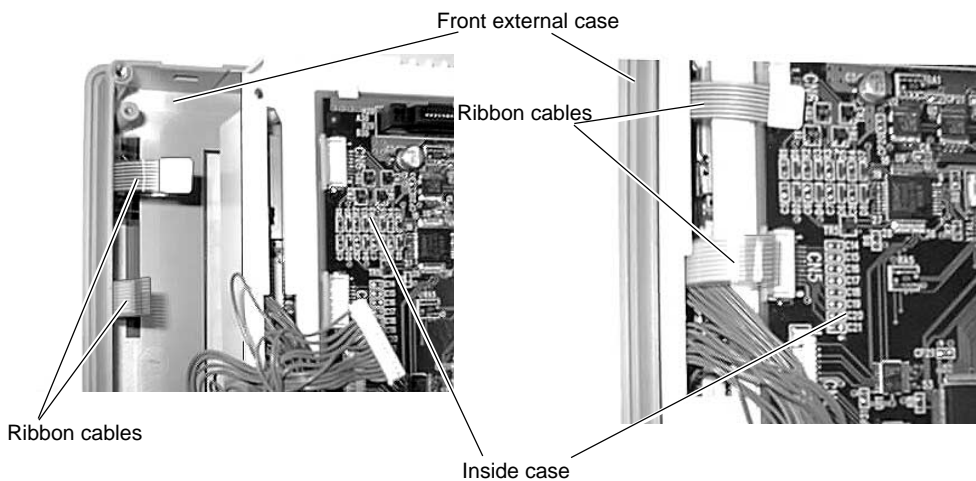
**Place it on a cloth, etc. to protect the display panel from scratches.**

22. Attach the inside case to the front external case.

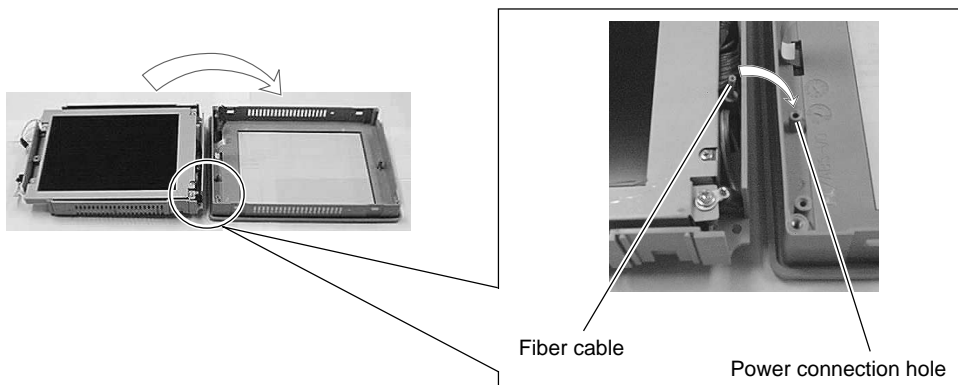


**Do not allow the entry of dust or particles to the area between the inside case and the front external case.**

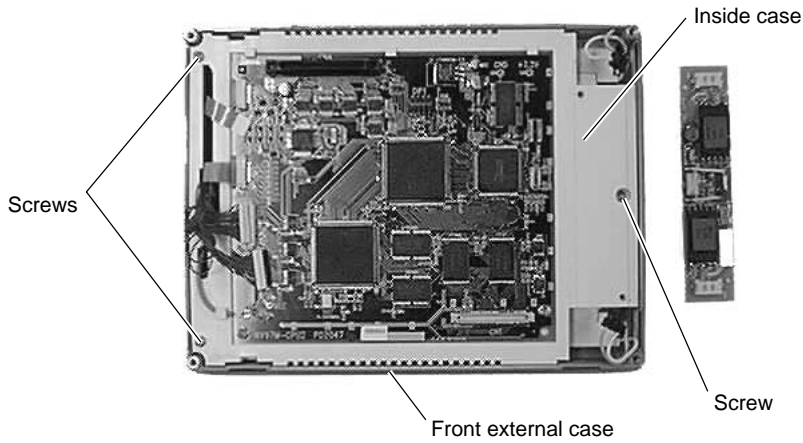
\* Insert the two ribbon cables into the inside case.



\* Insert the fiber cable into the power connection hole.



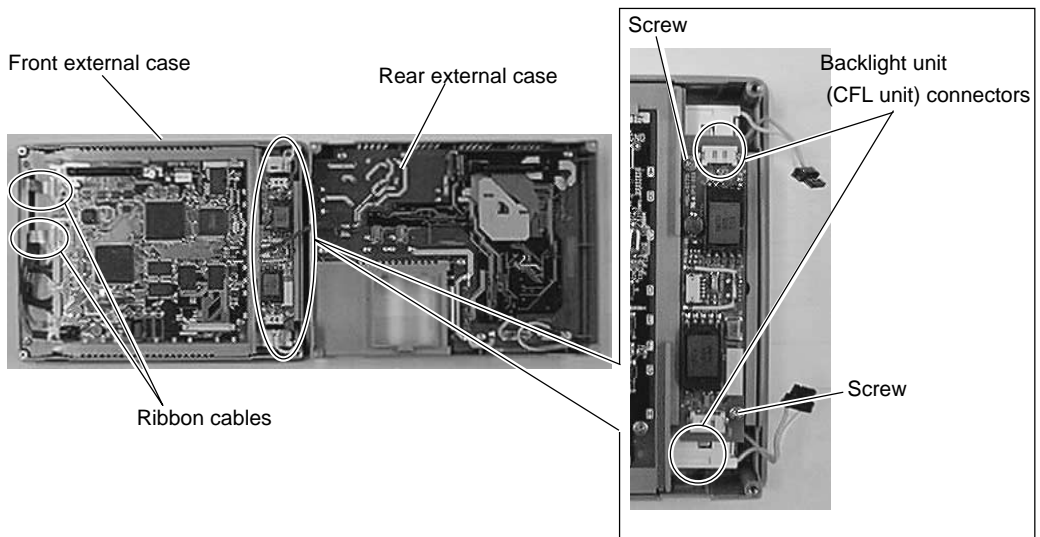
23. Attach the 3 screws.



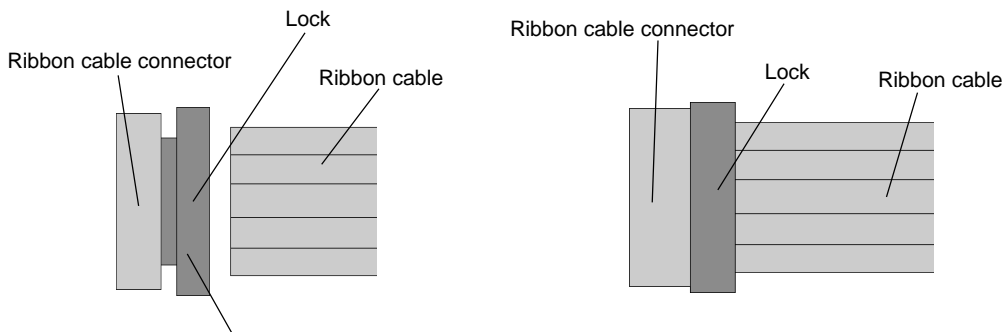
24. Attach the board equipped with the backlight unit (CFL unit) connectors.

25. Attach the 2 screws to fix the board equipped with the backlight unit (CFL unit) connectors.

26. Attach the backlight unit (CFL unit) connector.



27. Attach the 2 ribbon cables.



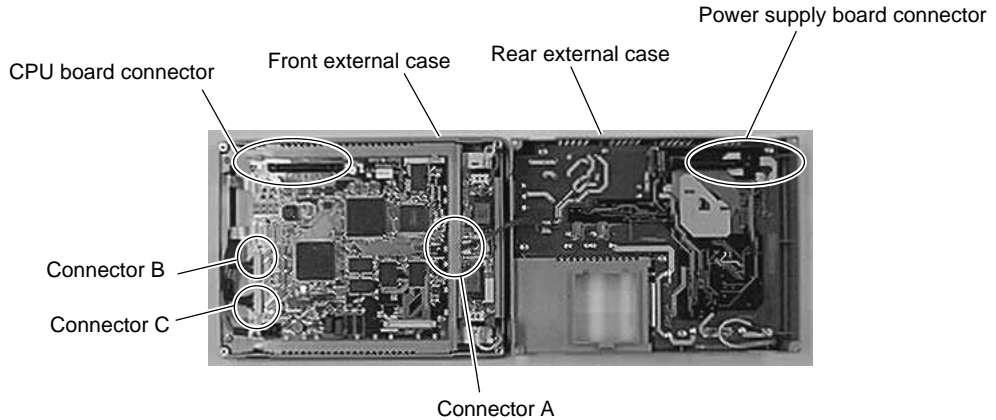
Insert the ribbon cable into the connector and slide the lock to set it.

28. Attach the connector C.
29. Attach the connector B.



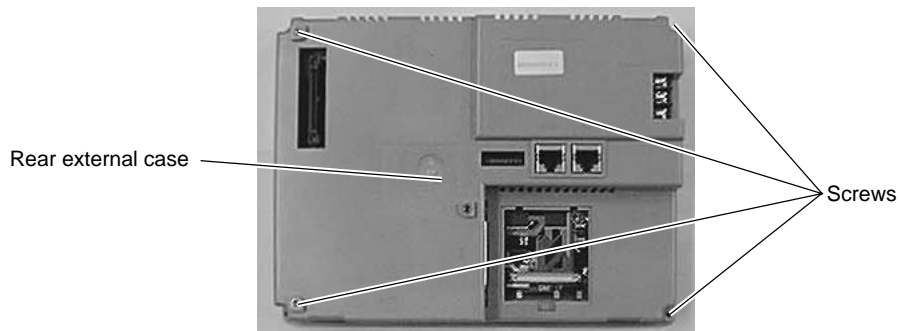
**Check the positions of the connectors with their marks.**

30. Attach the connector A.



**Visually check that all connectors and ribbon cables are connected securely.**

31. Attach the rear external case to the front external case.
  - \* Fit the rear external case in position. Press the case entirely so as to fit the power supply board connector with the CPU board connector inside.
32. Attach the external 4 screws.



# UG320HD

## UG320HD Backlight Unit Replacement

(Required Tool)

Screwdriver



**Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.**



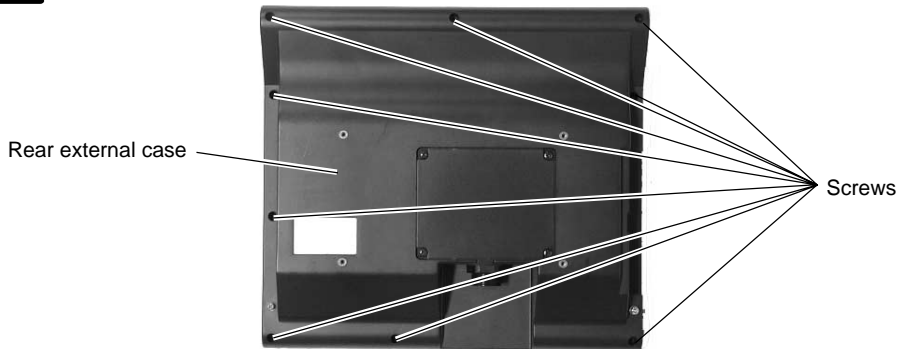
**When replacing the backlight, take appropriate preventive measures against static electricity.**

\* The point of measures against static electricity is to keep the entire workplace including humans at the same electric potential. Use an anti-static wristband or mat to prevent static electricity.

1. Turn the POD over, and remove the 9 external screws.



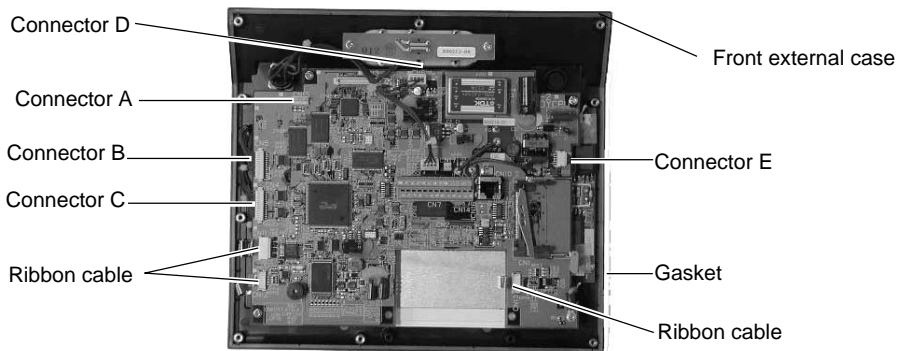
**Place it on a cloth, etc. to protect the display panel from scratches.**



2. Remove the rear external case.



**Do not remove the gasket.**



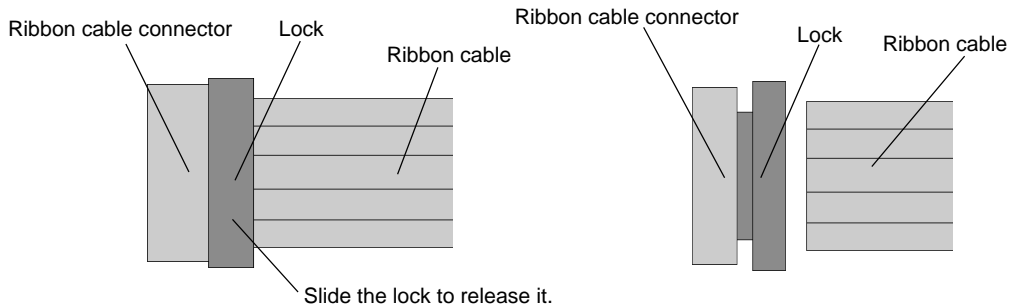
3. Remove the connectors A to E.



**Hold the connector and pull it out. Do not twist or yank on the cable then.**

\* Leave position marks on the connectors B and C, A and D to check the positions when reattaching them.

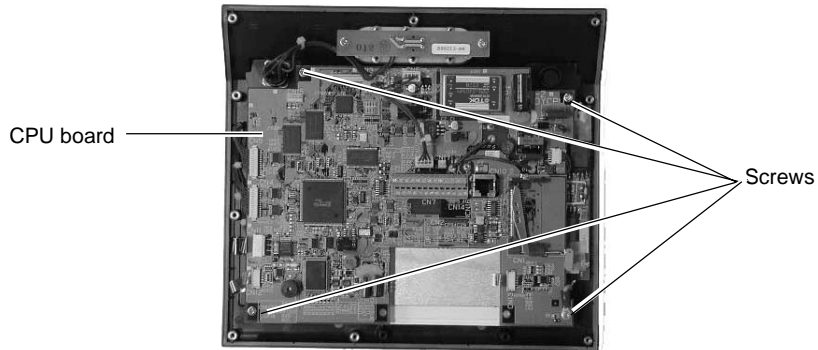
4. Remove the three ribbon cables.



**Slide the lock with the ribbon cable holding down with your fingers.**

\* The connector and the lock are not removable.

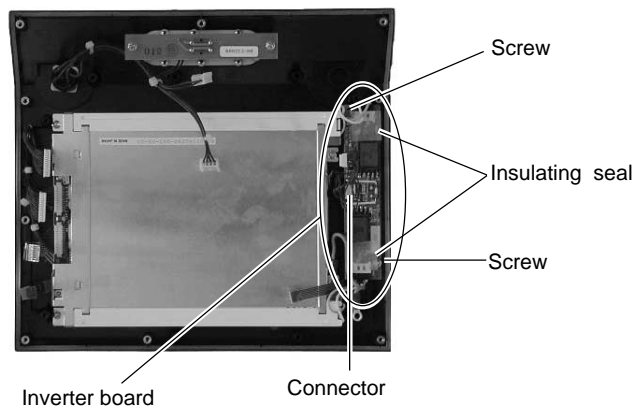
5. Remove the 4 screws fixing the CPU board.



6. Raise the CPU board vertically until it is removed.

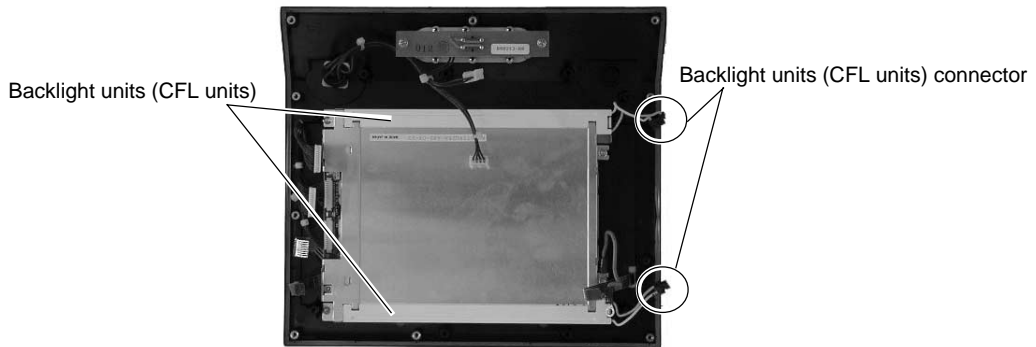


**Take necessary measures to protect the CPU board from static electricity.**

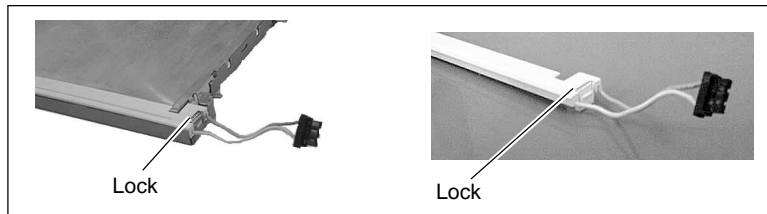


7. Remove the 2 insulating seals from the inverter board.  
8. Remove the connector from the inverter board.

9. Remove the 2 screws fixing the inverter board.
10. Remove the inverter board and detach two connectors from the backlight unit.



11. Release the lock of the backlight unit (CFL unit). Remove the unit by pulling it up.

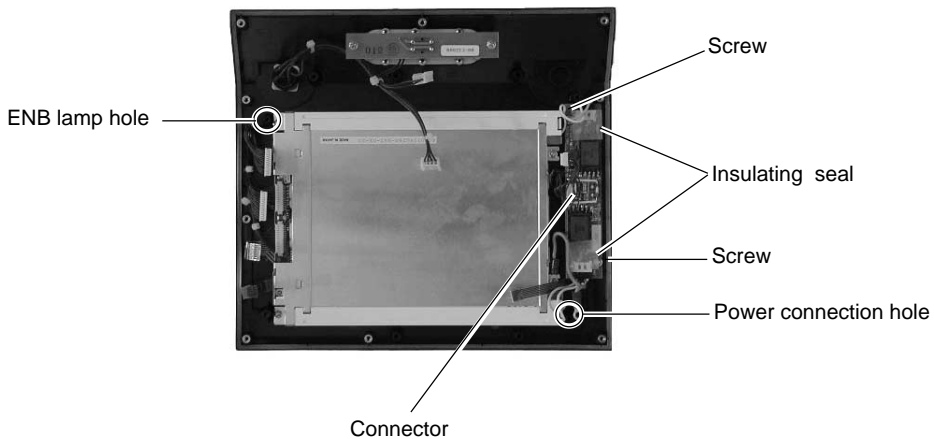


12. Attach a new backlight unit (CFL unit).
  - \* Make sure that the lock is secured.



**When taking a new backlight unit out of the bag, do not twist or yank on the cable.**

13. Attach the backlight unit (CFL unit) connector to the inverter board.
14. Attach the 2 screws to fix the inverter board.



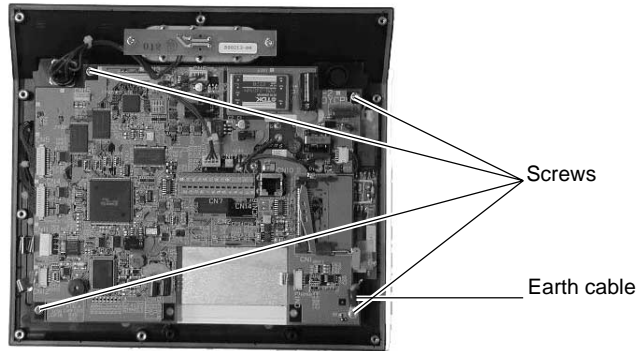


15. Attach the connector to the inverter board.
16. Attach the 2 insulating seals to places above the resistors between the coil and the connector on the inverter board.
17. Attach the CPU board.

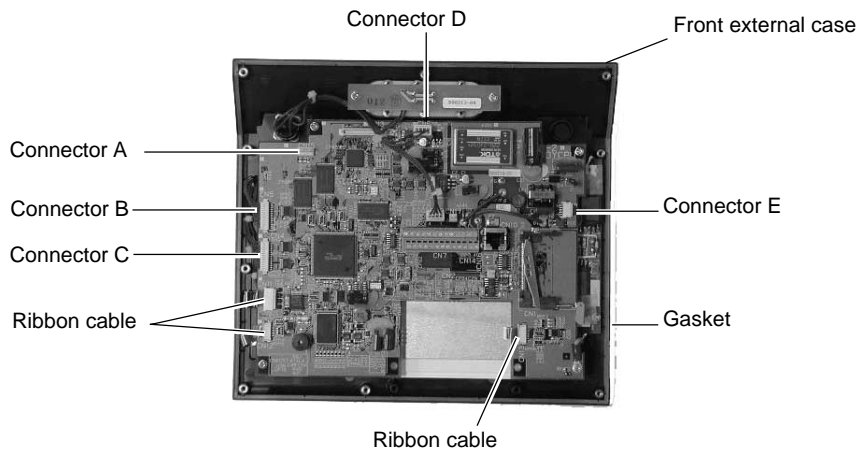
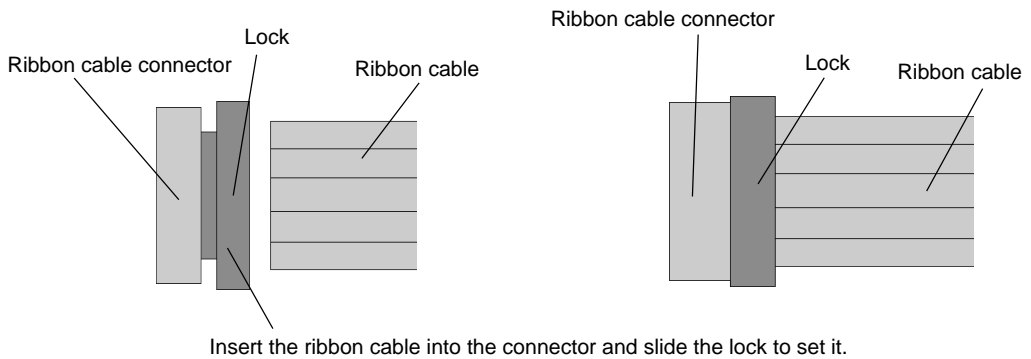


**Insert the LEDs into each hole of the POWER lamp and the ENB lamp.**

18. Attach the 4 screws to fix the CPU board.
  - \* Tighten one screw at the bottom right with an earth cable terminal.



19. Attach the 3 ribbon cables.



20. Attach the connector A to E.

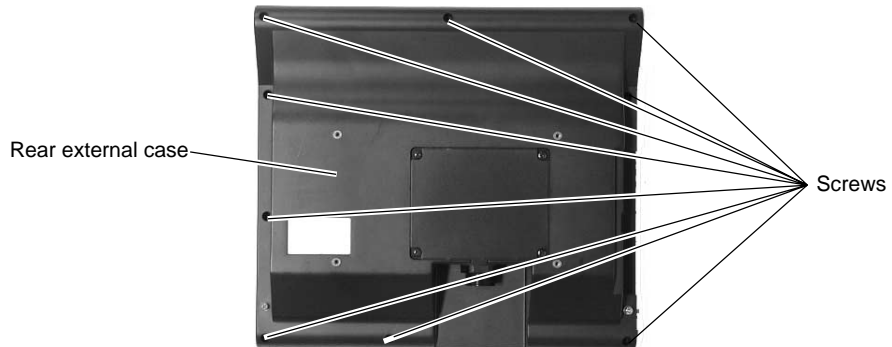


**Check the positions of the connectors with their marks.**

21. Visually check that all connectors and ribbon cables are connected securely.

22. Attach the rear external case to the front external case.

23. Attach the external 9 screws.



# UG220

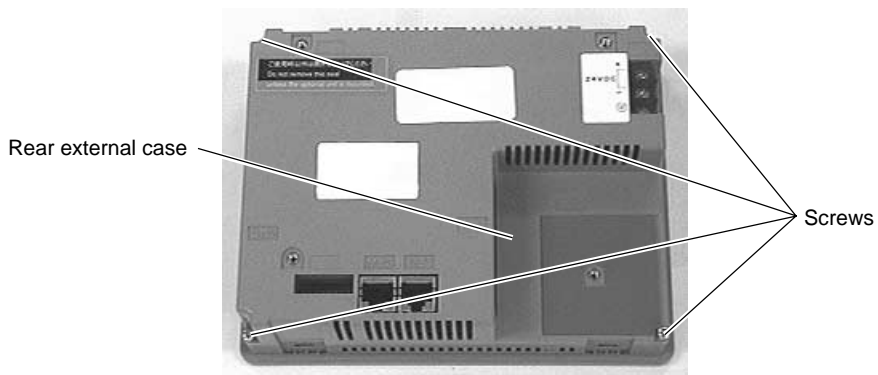
UG220 backlight unit replacement.

**⚠ Do not touch cables and boards that are not associated with backlight unit replacement. Doing so may result in failure.**

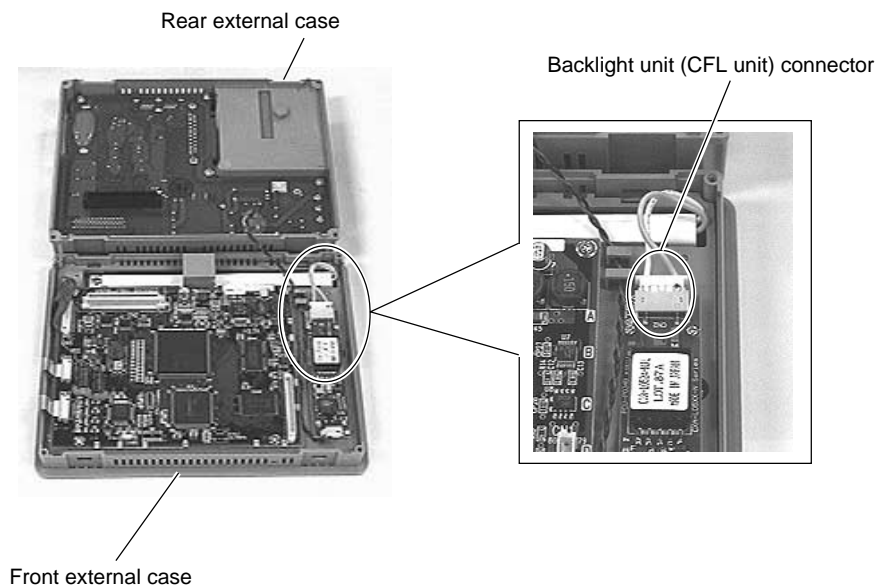
1. Turn the backlight unit upside down. Remove the 4 external screws.

**⚠ Place it on a cloth, etc. to protect the display panel from scratches.**

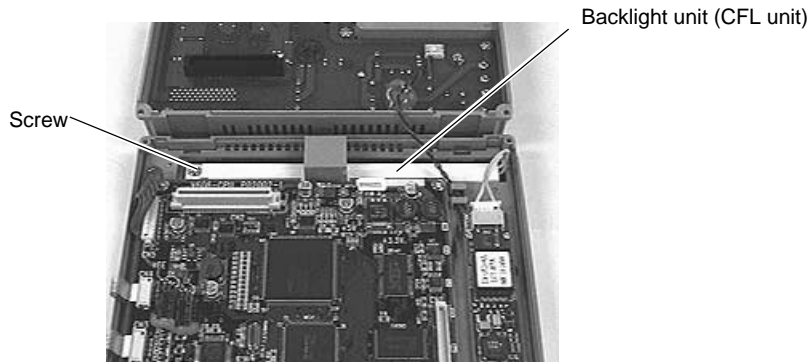
2. Remove the rear external case.
3. Disconnect the backlight unit (CFL unit) connector.



**⚠ Hold the connector and pull it out. Do not twist or yank on the cable then**



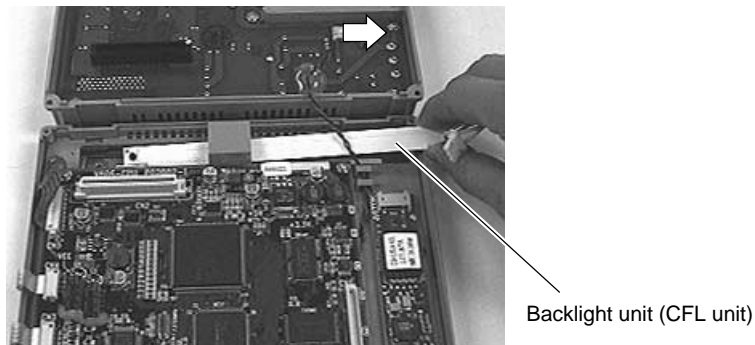
4. Remove the screw fixing the backlight unit (CFL unit).



5. Raise the backlight unit (CFL unit) once and remove the unit by sliding it horizontally.



**While raising the backlight unit, do not twist or yank on the cable.**

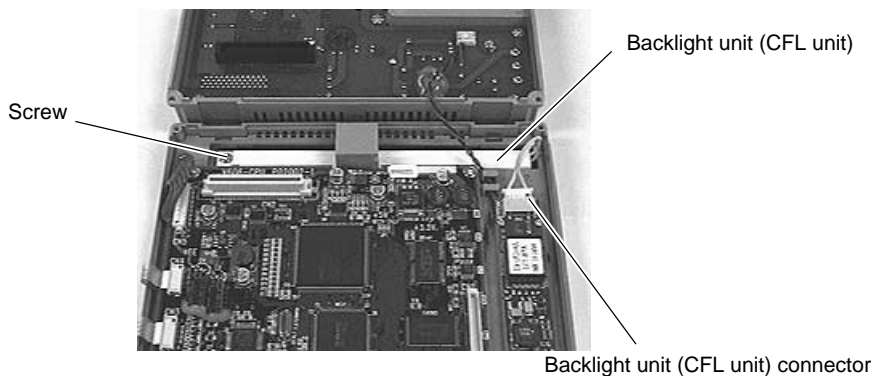


6. Attach a new backlight unit (CFL unit).



**When taking a new backlight unit out of the bag, do not twist or yank on the cable.**

7. Attach the screw to fix the backlight unit (CFL unit).
8. Connect the backlight unit (CFL unit) connector.





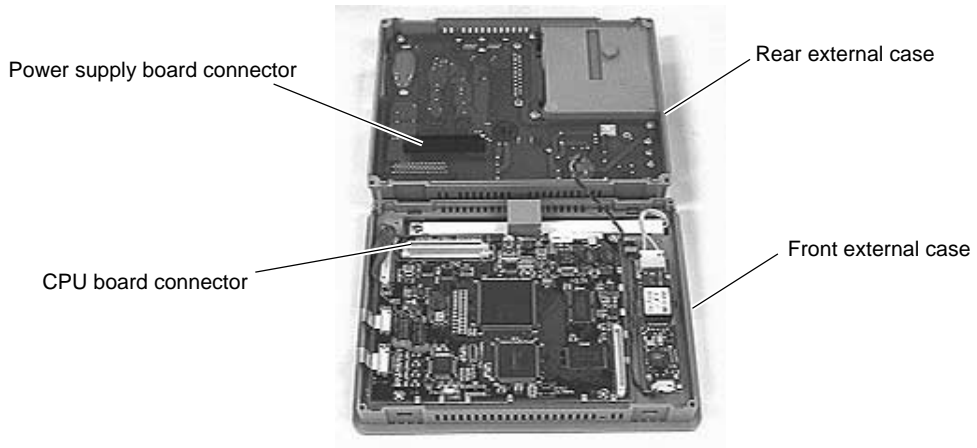
**Visually check that all connectors and ribbon cables are connected securely.**

9. Attach the rear external case to the front external case.

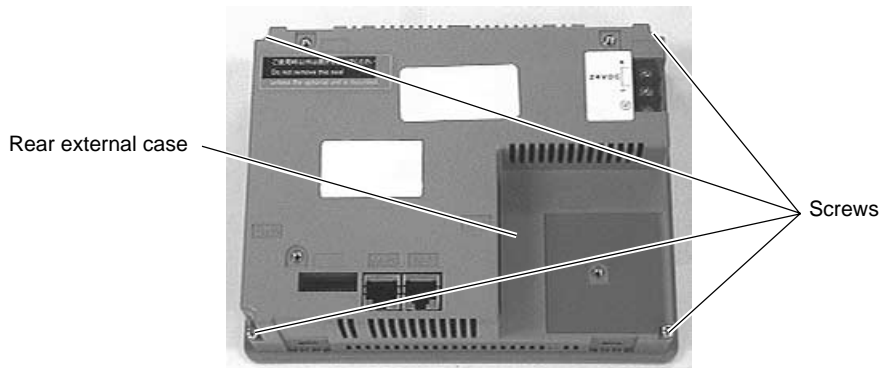
- \* Fit the rear external case in position. Press the case entirely so as to fit the power supply board connector with the CPU board connector inside.



**Do not allow the cable to be caught in the area between the cases.**



10. Attach the external 4 screws.



# Appendix

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Ladder Transfer Function

# Ladder Transfer Function

(Transparent Mode)

Up until now it was necessary to debug the data by removing and mounting "connection cable between PC and PLC" and "connection cable between POD and PLC." When using the ladder transfer function, it is possible to write ladder programs or monitor the PLC memory via POD connected to PC without removing and mounting each cable.

## Applicable PLC

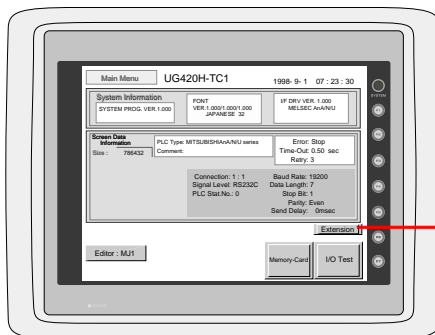
Select PLC Type	CPU	Ladder comm. prg	I/F DRV
QnH(Q) series CPU	Q02(H), Q06H	MelQHCpQ.lcm	MelQHCpQ.tpb (1.240)
QnH(Q) series link	Q00, Q01	MelQnA.lcm	MelQnA.tpb (1.300)
FX series CPU	FX1/2, FX0N	MelFx.lcm	MelFx.tpb (1.300)
FX2N series CPU	FX2N/1N , FX2NC		
FX1S series CPU	FX1S		

## Applicable Types

- UG221, UG320, UG420, UG520, UG420H-E
  - \* This function cannot be supported with 1:n communication (multi-drop), multi-link and multi-link2 communication.
- The following types are unavailable for this function.  
UG220, UG320HD

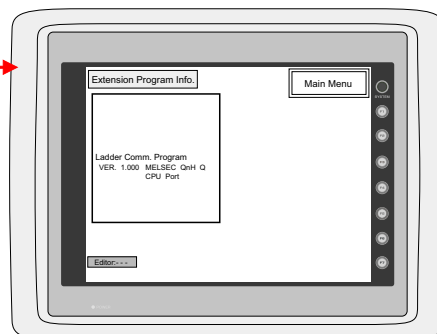
## Version and Main Menu Screen

Available versions are as follows. The information can be shown on the [Main Menu] screen.



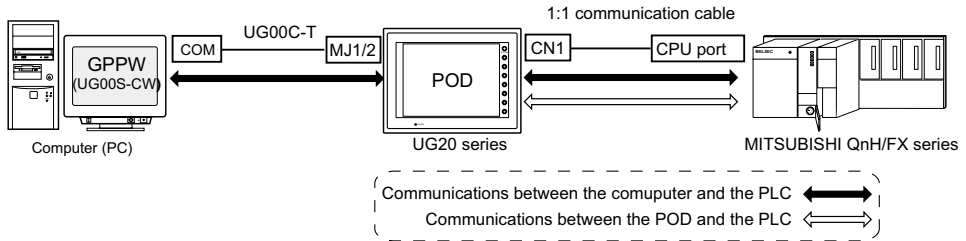
Pressing the [Extension] switch brings to the [Extension Program Info.] screen.

ITEM	Version
SYSTEM PROG.	VER.1.280 or later
FONT	VER.1.210/1.130/1.000 or later



## Connection

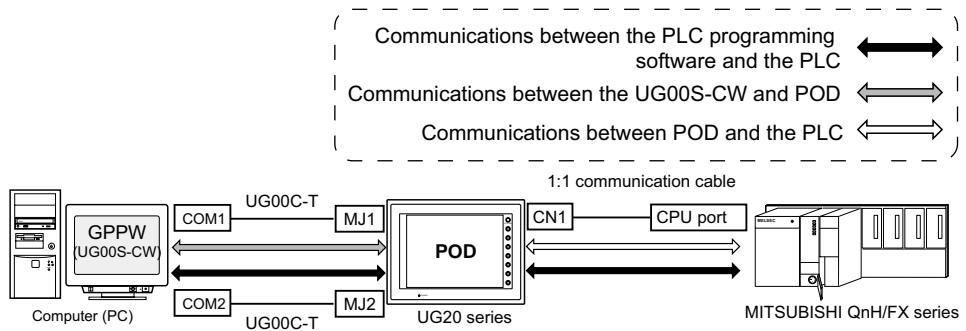
- Use each 1:1 communication cable when connecting the POD (CN1) to the PLC (CPU port).
- Use FUJI Electric's UG00C-T cable when connecting the computer (PLC programming software) and the POD(MJ1/2).



- When using the UG00S-CW editor and the PLC programming software:

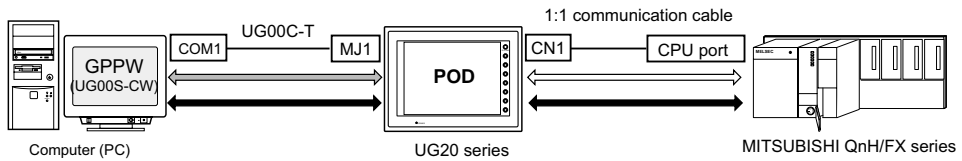
When using two UG00C-T cables:

When the computer has two COM ports, use one port for the UG00S-CW editor and the other port for the PLC programming software. Use the UG00C-T cables. (It is not possible to transfer the UG00S-CW editor and the PLC programming software at the same time.)



When using one UG00C-T cable:

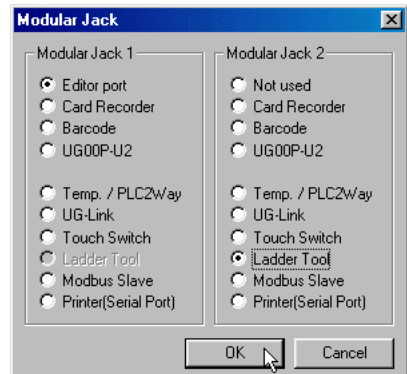
When using the UG00S-CW editor and the PLC programming software, it is not possible to use one COM port for both purposes at the same time. Stop using both software for communications.





## Settings and Communications

1. PLC type setting  
Select [PLC Type] from the [System Setting] menu. Select a plc type available for the ladder transfer function in the [Select PLC Type] dialog.
2. PLC programming software port setting  
Select [Modular Jack] from the [System Setting] menu.  
Select [Ladder Tool] for [Modular Jack 1] or [Modular Jack 2] in the [Modular Jack] dialog.



### Communications with UG00S-CW editor (for screen data transfer)

**On-line editing between the UG00S-CW editor and the POD is not possible. If attempted, communications between the PLC programming software and the PLC will not be performed correctly.**

- With [Ladder Tool] selected for [Modular Jack 2], MJ1 will be [Editor Port] when the Main Menu screen is displayed on the POD, and communications with the UG00S-CW editor become possible.
- With [Ladder Tool] selected for [Modular Jack 1], even when the Main Menu screen is displayed on the POD, communications with the PLC programming software continue so that communications with the UG00S-CW editor are not available.

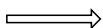
When communicating with the UG00S-CW editor, refer to the following two ways.

\* **When UG420H-E is used, selected the way of Automatic switching after upgrading system prg. of U420E.**

- Automatic switching (UG00S-CW ver.3.0.9.0 or later, sys. prg. ver.1.350 or later)  
Check [Ladder communication is not used in Local mode.] on the [Environment Setting] tab menu of the [Unit Setting] dialog in the [System Setting].
- Manual switching  
Hold down the F2 switch for three seconds. [Editor: ...] changes to [Editor: MJ1] and communications with the UG00S-CW editor become possible.

Communications with the PLC programming software possible

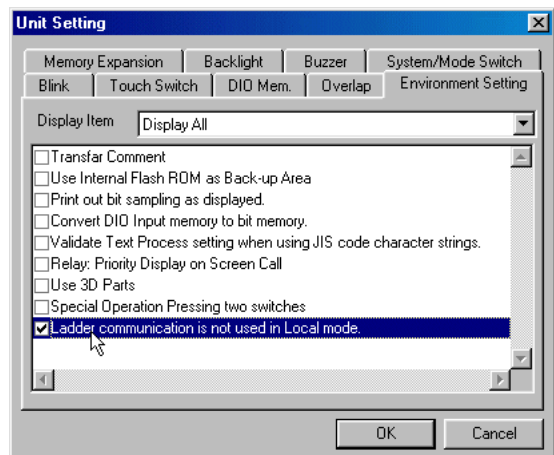
Editor: --



Communications with the UG00S-CW editor possible

Editor: MJ1

When the F2 switch is held down for three seconds, [Editor: MJ1] changes to [Editor: ...] and communications with the PLC programming software become possible.



- Communicating statuses with the PLC programming software and the PLC during communications between the UG00S-CW editor and the POD

UG00S-CW	PLC programming software
Writing to POD	Communications disconnected (normal communications on completion of writing)
Reading from POD	Normal communications
Comparing with POD	Normal communications

### 3. PLC programming software communication setting

For communication specifications between the PLC programming software and the PLC, the communication parameter settings for the POD and the PLC can be used. Select [Comm. Parameter] from the [System Setting] menu and check the settings in the [Comm. Parameter] dialog.

<Baud rate setting>

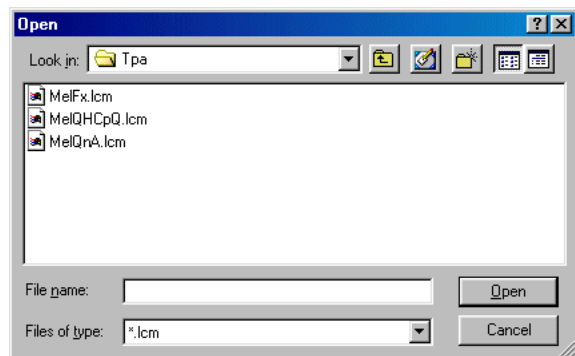
There will be no problem if the setting for [Baud Rate] in the [Comm. Parameter] dialog of the UG00S-CW editor is not consistent with the baud rate setting on the PLC programming software. The baud rate set on the PLC programming software is automatically selected when communications (monitoring, etc.) are performed. When the POD is turned off and back on, the setting for [Baud Rate] in the [Comm. Parameter] dialog becomes valid again.

**\* Setting the same baud rate of both PLC and POD makes the performance of POD faster.**

### 4. Transferring the ladder communication program

When transferring screen data, the ladder communication program is also transferred. To transfer the ladder communication program only, follow the procedure described below.

- Select [Ladder com. prg.] in the [Transfer] dialog, and click [PC->].
- The dialog shown on the right is displayed. Select the ladder com. program for the selected plc type and click [Open]. The program is transferred to the POD.



## Notes on Ladder Transfer Function

1. When [Ladder Tool] is selected for a modular jack, monitor registration on the PLC is prohibited so that the screen display speed becomes slower than usual during communications between the POD and the PLC even if the PLC programming software is not started.
2. Also, when the ladder program is transferred in the RUN mode of the POD, communications are synchronized; therefore, the performance of both the POD and the PLC programming software decreases.

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