

Device/PLC Connection Manuals



About the Device/PLC Connection Manuals

Prior to reading these manuals and setting up your device, be sure to read the "Important: Prior to reading the Device/PLC Connection manual" information. Also, be sure to download the "Preface for Trademark Rights, List of Units Supported, How to Read Manuals and Documentation Conventions" PDF file. Furthermore, be sure to keep all manual-related data in a safe, easy-to-find location.

2.2 Omron

2.2.1 System Structure

The following describes the system structure for connecting the GP to Omron PLCs.




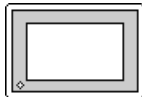
Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "2.2.2 Cable Diagrams".



Important

If the PLC is used in RUN mode, "PLC COM. ERROR (02: 01)" may briefly display. The GP subsequently forces the PLC to enter the MONITOR mode (data can be written to the PLC, while it is in RUN mode); data communication will not be affected.

■ SYSMAC C Series (using Link I/F)

| CPU | Link I/F | Cable Diagram | Cables | GP |
|--|--|---|--|--|
|  |  Upper Link Unit |  | |  |
| C200H | C200H-LK201 ^{*1} C120-LK201-V1 ^{*2} | RS-232C (Cable Diagram 1) | Digital's GP410-IS00-O (5m) | GP Series |
| | C200H-LK202 ^{*1} C120-LK202-V1 ^{*2} | RS-422 (Cable Diagram 2) | | |
| C200HS | C200H-LK201 ^{*1} C120-LK201-V1 ^{*2} | RS-232C (Cable Diagram 1) | Digital's GP410-IS00-O (5m) | |
| | C200H-LK202 ^{*1} | RS-422 (Cable Diagram 2) | | |
| | CPU unit Link I/F ^{*3} | RS-232C (Cable Diagram 3) | Digital's GP000-IS03-MS (3m) | |
| C500, C500F, C1000H, C2000, C2000H | C120-LK201-V1 ^{*2} C120-LK202-V1 ^{*2} | RS-232C (Cable Diagram 1) RS-422 (Cable Diagram 2) | RS-232C Digital's GP410-IS00-O (5m) | |
| | C500-LK201-V1 ^{*1} | RS-232C (Cable Diagram 1) RS-422 (Cable Diagram 2) | | |
| | C500-LK203 ^{*1} | RS-232C (Cable Diagram 1) | | |
| C1000HF | C500-LK203 ^{*1} | RS-422(Cable Diagram 4) | | |
| C20H, C28H, C40H | CPU unit Link I/F ^{*3} | RS-232C (Cable Diagram 5) | | |
| C120, C120F | C120-LK201-V1 ^{*2} C120-LK202-V1 ^{*2} | RS-232C (Cable Diagram 1) RS-422 (Cable Diagram 2) | Digital's GP410-IS00-O (5m) | |

* 1 Base installation type.

* 2 CPU installation type.

* 3 Connect to the RS-232C port.

| CPU | Link I/F | Cable Diagram | Cables | GP |
|----------------------------|-------------------------------|--|---|--------------|
| CQM1-CPU42 | RS-232C Port on CPU unit | RS-232C (Cable Diagram 3) | Omron's RS-232C cable XW2Z-200S (2m) XW2Z-500S (5m) Digital's GP000-IS03-MS (3m) | GP Series |
| SRM1-C02 CPM2A | CPM1-CIF01 | RS-232C (Cable Diagram 3) | Omron's RS-232C cable XW2Z-200S (2m) XW2Z-500S (5m) Digital's GP000-IS03-MS (3m) | |
| | RS-232C Port on CPU unit | | | |
| | CPM1-CIF11 | RS-422 (Cable Diagram 9) | | |
| CPM1-20CDR-A | CPM1-CIF01 | RS-232C (Cable Diagram 3) | Omron's RS-232C cable XW2Z-200S (2m) XW2Z-500S (5m) Digital's GP000-IS03-MS (3m) | |
| | CPM1-CIF11 | RS-422 (Cable Diagram 9) | | |
| CQM1H-CPU21 | RS-232C Port on CPU unit | RS-232C (Cable Diagram 3) | Omron's RS-232C cable XW2Z-200S (2m) XW2Z-500S (5m) Digital's GP000-IS03-MS (3m) | |
| CPM2C | Peripheral port on CP2C-CIF01 | RS-232C | Omron's cable CS1W-CN114 and CQM1-CIF01 are required. | |
| | RS-232C port on CPM2C-CIF01 | RS-232C (Cable Diagram 3) | Omron's RS-232C cable XW2Z-200S (2m) XW2Z-500S (5m) Digital's GP000-IS03-MS (3m) | |
| CQM1H-CPU51 CQM1H-CPU61 | CQM1H-SCB41 *1 | RS-422 (1:n communication) *2 (Cable Diagram 12) | OMRON's B500-AL001 link adaptor *3 | GP Series *4 |
| | | RS-422 (1:n communication) *2 (Cable Diagram 13) | | |

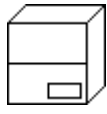

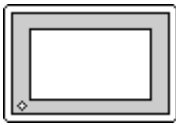
*1 Use the RS-422A/485 port, which is port 2 of the COM1H-SCB41 series communication board.

*2 When "n" COM1H-CPU51/CCM1H-CPU61 units are connected to one GP unit for communication, the maximum for "n" is 8.

*3 The RS-422 communication port on the PLC is a D-sub. For 1:n connections, use OMRON's link adaptor or terminal block.

*4 Within the GP70 series units, this applies only to the GP377 series.

■ SYSMAC C Series (CPU Direct Connection)

| CPU ^{*1} | Cables | GP |
|--|---|--|
|  |  |  |
| C200HS, SRM1-C02, CQM1-CPU11, CQM1-CPU42, CPM1-20CDR-A, CQM1H-CPU21 ^{*2} CPM2C ^{*2} | Omron Isolation Cable CQM1-CIF01 | GP Series |

*1 Connect to a peripheral port.

*2 Omron's cable (CSIW-CN114) is required.







The CQM1-CPU11 has only one peripheral port, so a programming console cannot be used at the same time with the GP.

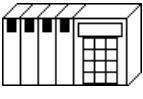


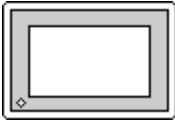


If power to CQM1 is turned OFF while it is connected to the GP, "RUN" (operation) will stop. To change CQM1 to RUN mode when the power is turned back ON, change the CQM1's [Power ON Operation Mode Setting] to [RUN].

■ SYSMAC-α Series (using Link I/F)

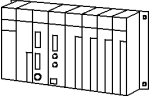
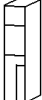

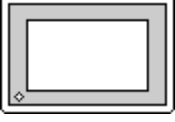
| CPU | Link I/F | Cable Diagram | Cables | GP |
|--|--|--|--|---|
|  | Communication board  |  | |  |
| C200HX-CPU85-Z C200HE-CPU64 C200HG-CPU44 C200HG-CPU42 C200HG-CPU63 C200HG-CPU43 | C200HW-COM06 | RS-232C (Cable Diagram 3) RS422 (Cable Diagram 6) | Omron's RS232C cable XW2Z-200S (2m) XW2Z-500S (5m) Digital's RS232C cable GP000-IS03-MS (3m) | GP Series |
| C200HE-CPU42-Z | RS-232C Port on CPU unit | RS-232C (Cable Diagram 3) | Omron's RS232C cable XW2Z-200S (2m) XW2Z-500S (5m) Digital's RS232C cable GP000-IS03-MS (3m) | |
| C200HX-CPU64-Z | C200H-LK202-V1 | RS-422 (Cable Diagram 2) | | |
| | C200H-LK201-V1 | RS-232C (Cable Diagram 1) | Digital's RS232C cable GP410-IS00-0 (5m) | |

■ SYSMAC CV Series (using Link I/F)

| CPU | Link I/F | Cable Diagram | Cables | GP |
|---|---|---|---|---|
|  |  Upper Link Unit |  | |  |
| CV500, CV1000, CVM1 | CV500-LK201 | RS-232C <SIO port 1 connection> (Cable Diagram 1) RS-232C <SIO port 2 connection> (Cable Diagram 7) RS422 <SIO port 2 connection> (Cable Diagram 8) | RS232C (SIO port 1 connection) Digital's GP410-IS00-O (5m) | GP Series |
| | CPU unit Link I/F *1 | RS-232C (Cable Diagram 7) RS422 (Cable Diagram 8) | | |

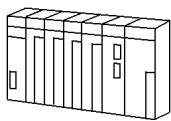

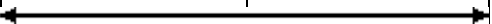
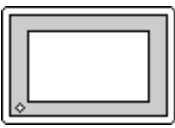
*1 Connect to the Host Link Port

■ SYSMAC CS1 Series (1:1)

| CPU | Link I/F | Cable Diagrams | Cables | GP |
|--|---|--|---|---|
|  |  |  | |  |
| CS1H-CPU67 CS1H-CPU66 CS1H-CPU65 CS1H-CPU64 CS1H-CPU63 CS1G-CPU45 CS1G-CPU44 | RS-232C port for CPU unit | RS-232C (Cable Diagram 3) | Digital's GP000-IS03-MS(3m) Omron's XW2Z-200S(2m) XW2Z-500S(5m) | GP Series |
| CS1G-CPU43 CS1G-CPU42 CS1H-CPU67H | Peripheral Port for CPU unit | RS-232C *1 (Cable Diagram 11) | Omron's CS1W-CN225 *1 CS1W-CN625 *1 | |
| CS1H-CPU66H CS1H-CPU65H | CS1W-SCU21 | RS-232C (Port 1,2) (Cable Diagram 3) | Digital's GP000-IS03-MS(3m) | |
| CS1H-CPU64H CS1H-CPU63H | CS1W-SCB21 | RS-232C (Port 1,2) (Cable Diagram 3) | Omron's XW2Z-200S(2m) XW2Z-500S(5m) | |
| CS1G-CPU45H CS1G-CPU44H | CS1W-SCB41 | RS-232C (Port 1) (Cable Diagram 3) | | |
| CS1G-CPU43H CS1G-CPU42H | | RS-422 (Port 2) (Cable Diagram 10) | | |

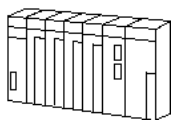


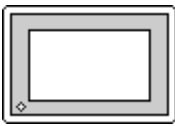
*1 When connecting to the peripheral port, a particular cable is needed between GP and the CS1W-CN*25 cable, refer to this section's Cable Diagram 11 for the required cable.

■ SYSMAC CJ Series

| CPU | Link I/F | Cable Diagrams | Cables | GP |
|--|---|--|--|---|
|  |  |  | |  |
| CJ1G-CPU44 CJ1G-CPU45 CJ1G-CPU42H CJ1G-CPU43H CJ1G-CPU44H CJ1G-CPU45H | Peripheral port on CPU unit | RS-232C (Cable Diagram 11) | Digital's CS1W-CN225 ^{*1} CS1W-CN625 ^{*1} | GP Series |
| | RS-232C port on CPU unit | RS-232C (Cable Diagram 3) | Digital's GP000-IS03-MS (3m) Omron's XW2Z-200S (2m) XW28-500S (5m) | |
| | CJ1W-SCU41 | RS-232C (Port 2) (Cable Diagram 3) | Digital's GP000-IS03-MS (3m) Omron's XW2Z-200S (2m) XW28-500S (5m) | |
| | CJ1W-SCU41 | RS-422 (Port 1) (Cable Diagram 10) | | |

**1 When connecting to the peripheral port, another cable is required between the GP and the CS1W-CN*25 cable. For details, refer to this section's Cable Diagram 11.*

■ SYSMAC CJ1MSeries

| CPU | Link I/F | Cable Diagrams | Cables | GP |
|---|---|--|--|---|
|  |  |  | |  |
| CJ1M-CPU12 CJ1M-CPU13 JP1M-CPU22 JP1M-CPU23 | Peripheral port on CPU unit | RS-232C (Cable Diagram 11) | Digital's CS1W-CN225 ^{*1} CS1W-CN625 ^{*1} | GP Series |
| | RS-232C port on CPU unit | RS-232C (Cable Diagram 3) | Digital's GP000-IS03-MS (3m) Omron's XW2Z-200S (2m) XW28-500S (5m) | |
| | CJ1W-SCU41 | RS-232C (Port 2) (Cable Diagram 3) | Digital's GP000-IS03-MS (3m) Omron's XW2Z-200S (2m) XW28-500S (5m) | |
| | CJ1W-SCU41 | RS-422 (Port 1) (Cable Diagram 10) | | |

**1 When connecting to the peripheral port, another cable is required between the GP and the CS1W-CN*25 cable. For details, refer to this section's Cable Diagram 11.*

2.2.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Omron Corp. may differ; in any case, using these cables for your PLC operations will not cause any problems.

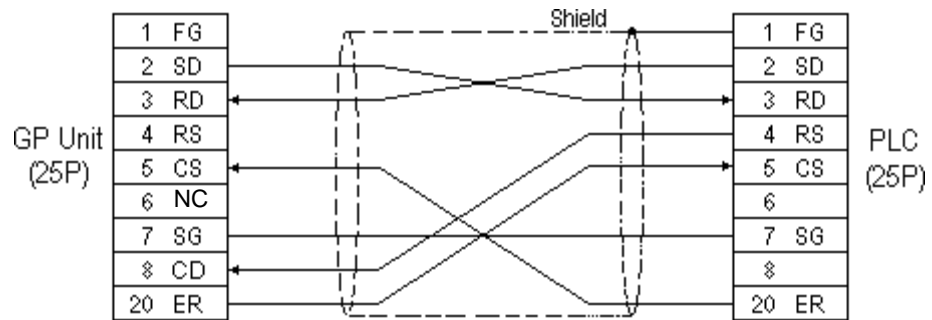


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



- **Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.**
- **For the RS-232C connection, use a cable length less than 15m.**

Cable Diagram 1 (RS-232C)

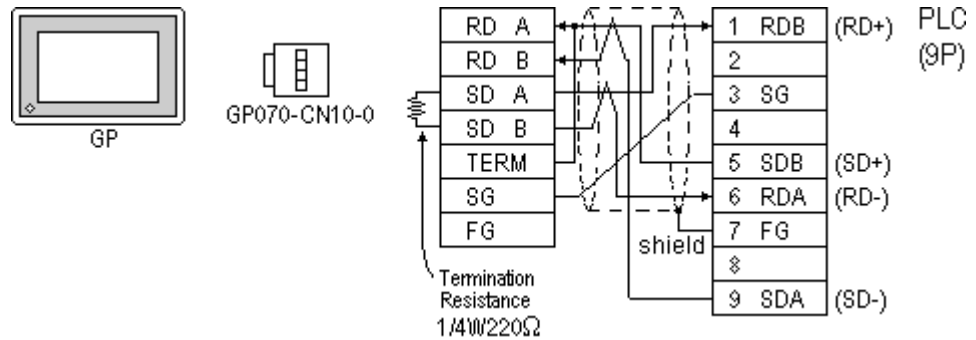


Cable Diagram 2 (RS-422)

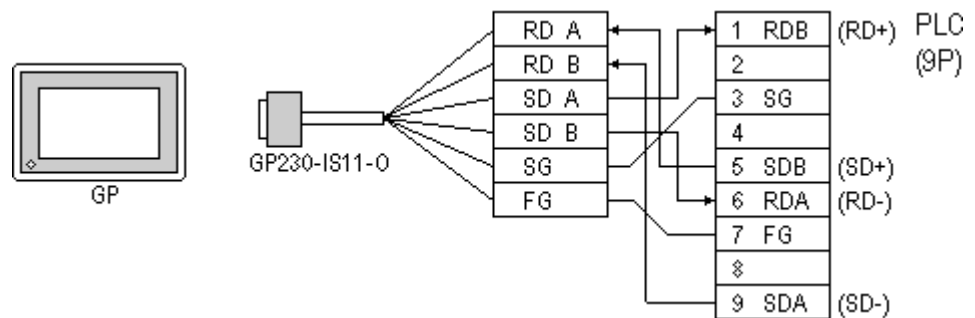


- Turn on the Termination Resistor switch, on the PLC.
- Signals A and B are opposite on the GP and PLC.

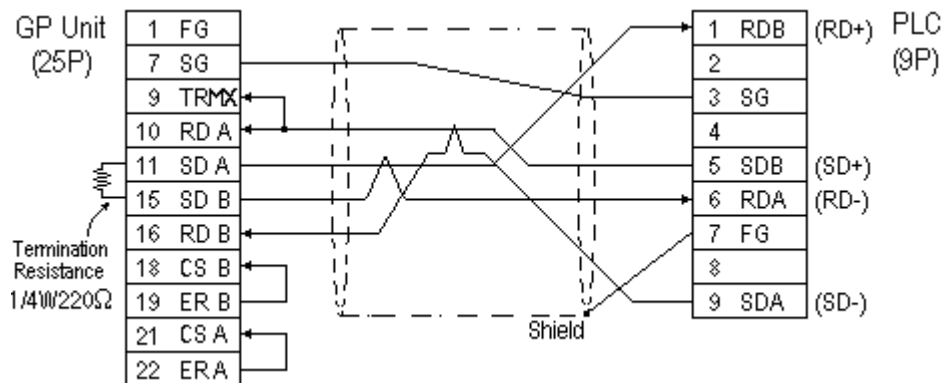
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



- When using Digital's RS-422 Cable, GP230-IS11-0



- When making your own cable connections



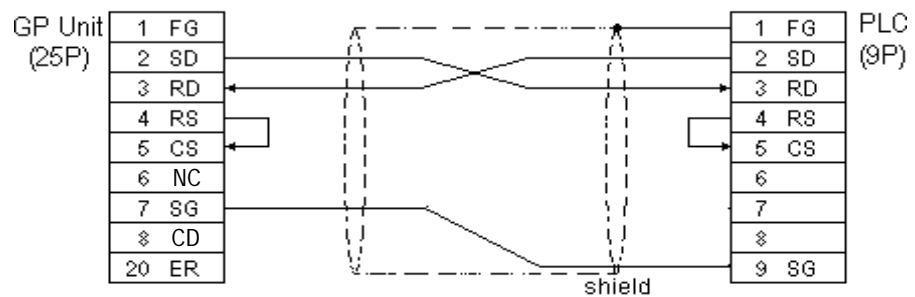


When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable.



- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- If a shielded cable is connected to the RS-422 port, it must be no longer than 500 meters.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 3 (RS-232C)



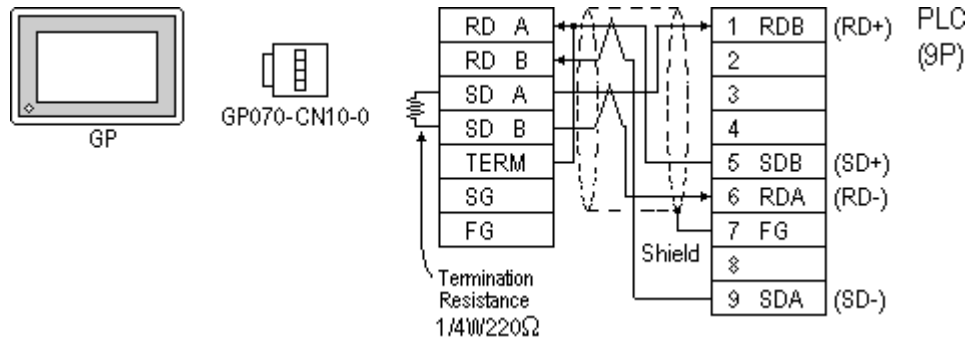
While the above connection diagram will differ slightly from the Omron XW2Z-200S (2m) and XW2Z-500S (5m) RS-232C cables, the system will operate smoothly using this design.

Cable Diagram 4 (RS-422)

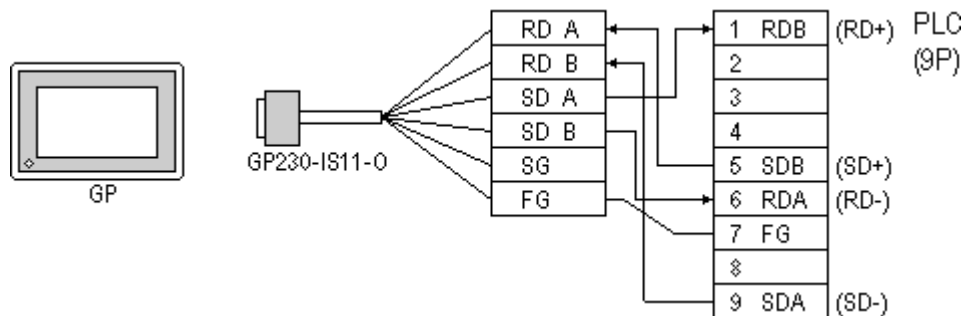


- Turn the PLC's Termination Resistor switch ON.
- Signals A and B are opposite on the GP and PLC.

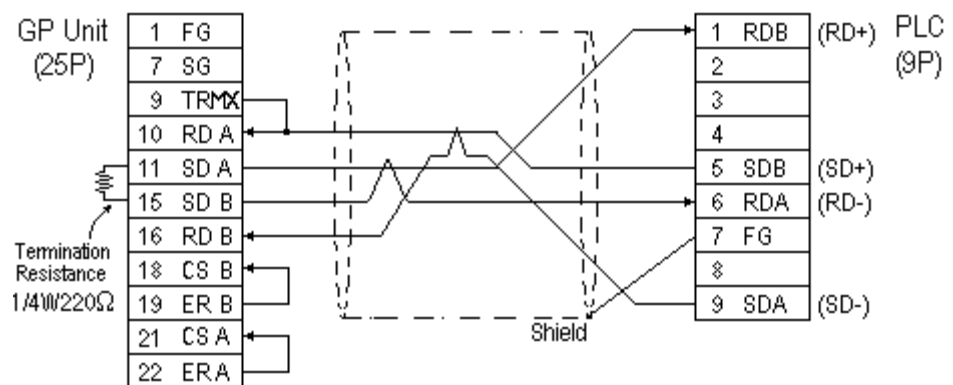
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



- When using Digital's RS-422 Cable, GP230-IS11-0

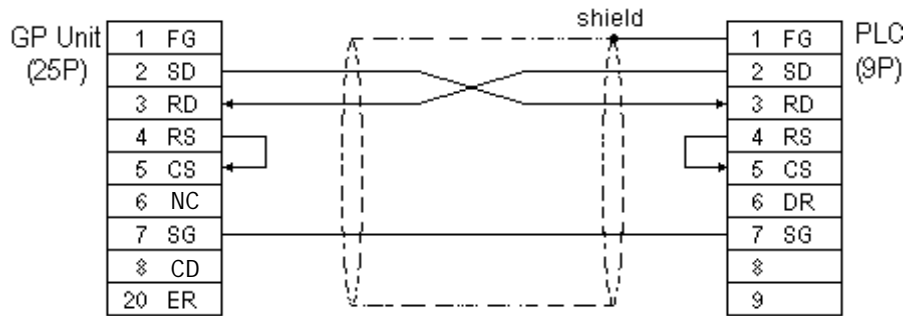


- When making your own cable connections



- When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable.
- When connecting the #9 and #10 pins in the GP Serial I/E, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 5 (RS-232C)



Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable is recommended as the connection cable.

Cable Diagram 6 (RS-422)

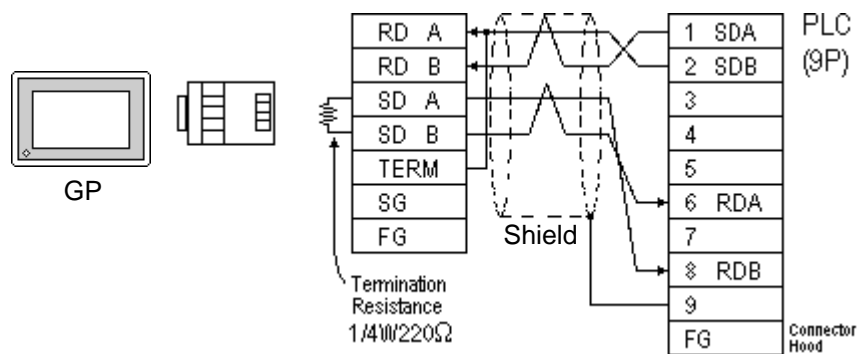


- **Turn on the Termination Resistor switch, on the PLC side.**
- **Signals A and B are opposite on the GP and PLC.**
- **The connector and the connector hood, listed below, are included with the Communication board.**

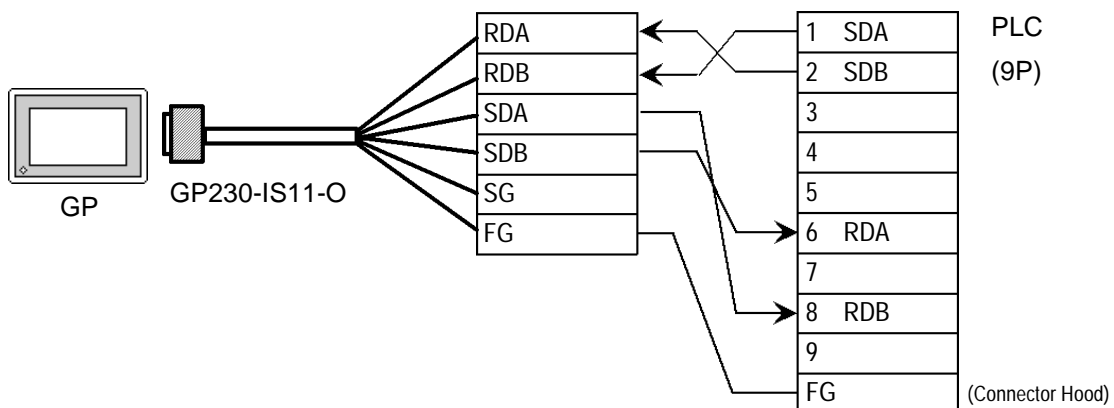
Connector XW2A-0901

Connector Hood XW2S-0901

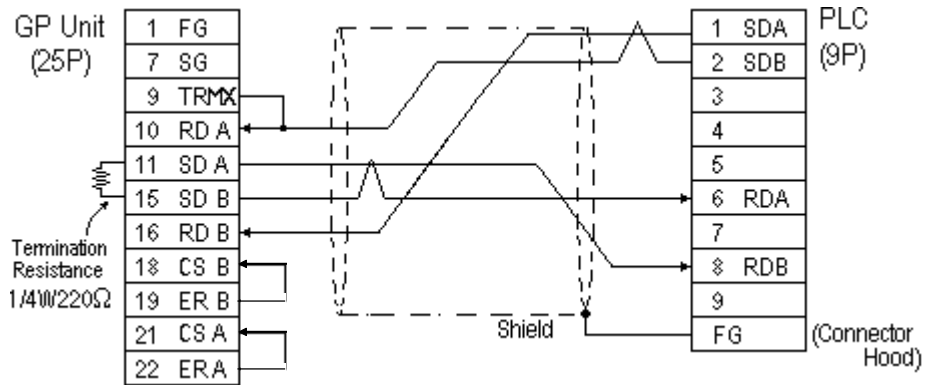
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



- When using Digital's RS-422 connector terminal adapter GP230-IS11-0



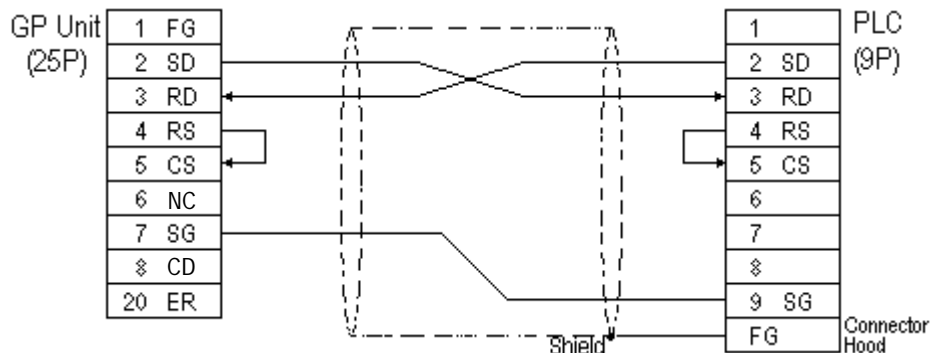
- When making your own cable connections



Note:

- When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable.
- When connecting the #9 and #10 pins in the GP Serial I/E, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 7 (RS-232C)



Note:

- One each of the connector and connector hood, listed below, are included with the CV500/CV1000 CPU unit. Only these connectors listed below can be used.

Connector XM2A-0901

Connector Hood XM2S-0911

- Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable is recommended as the connection cable.

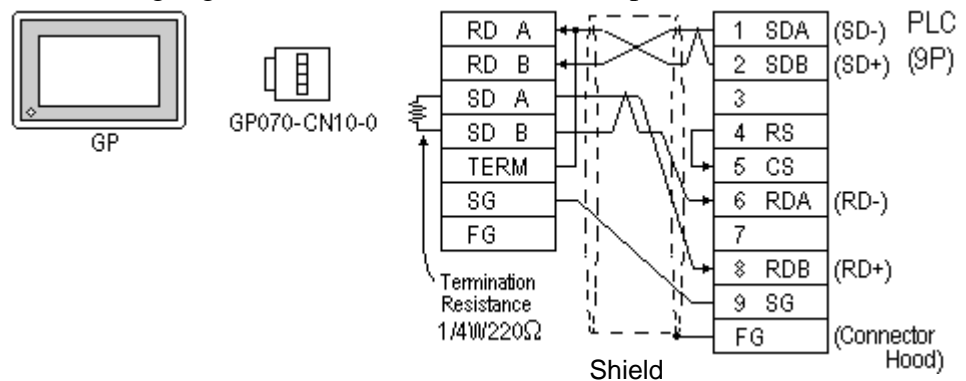
Cable Diagram 8 (RS-422)



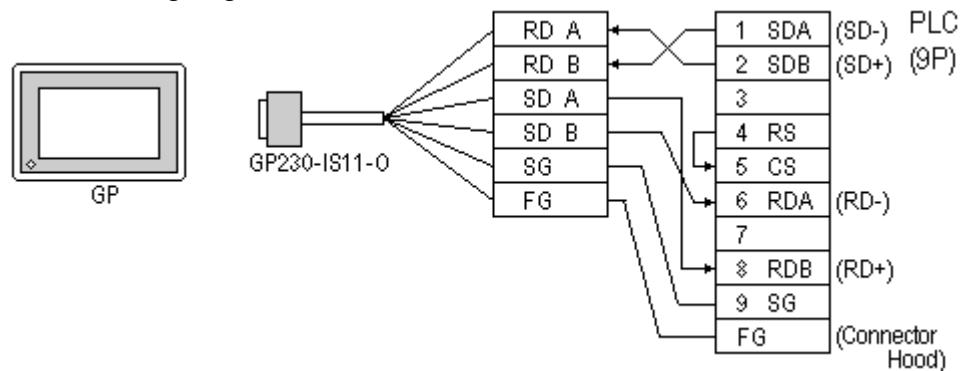
- Setup the PLC's RS-232C/RS-422 toggle switch to RS-422.
- Turn on the Termination Resistor switch, on the PLC side.
- Signals A and B are opposite on the GP and PLC
- The connector and connector hood, listed below, are included with the CV500/CV1000 CPU unit. Only these connectors can be used.

1 Connector XM2A-0901
 1 Connector Hood XM2S-0911

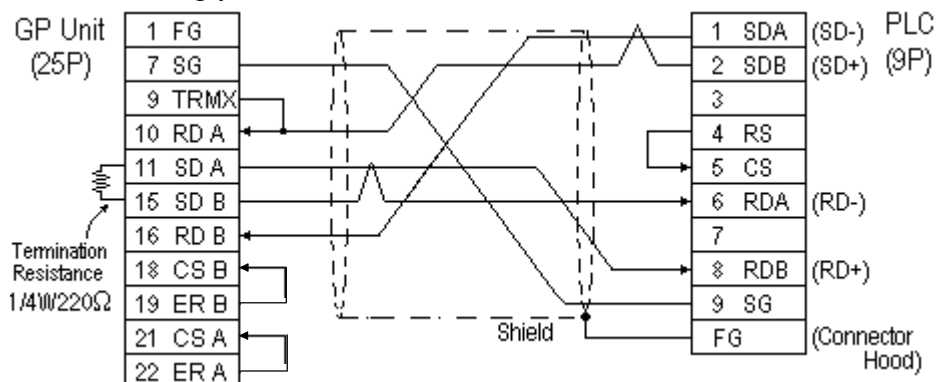
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



- When using Digital's RS-422 Cable, GP230-IS11-0



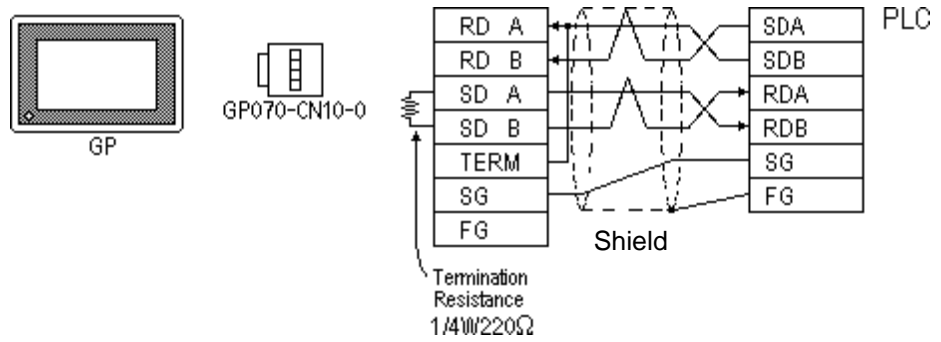
- When making your own cable connections



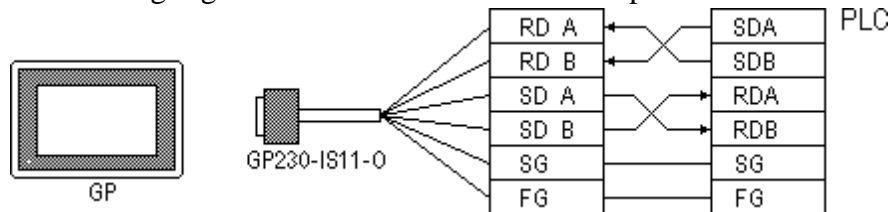


- When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable.
- When connecting the #9 and #10 pins in the GP Serial I/E, a termination resistance of 100Ω is added between RDA and RDB.

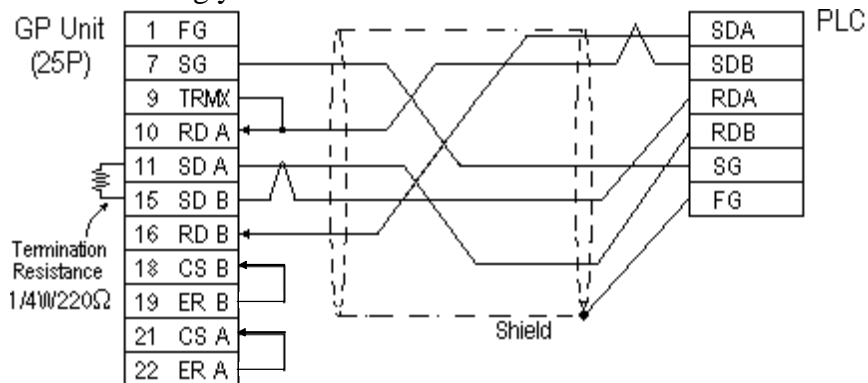
Cable Diagram 9 (RS-422)



- When using Digital's RS-422 connector terminal adapter GP230-IS11-0

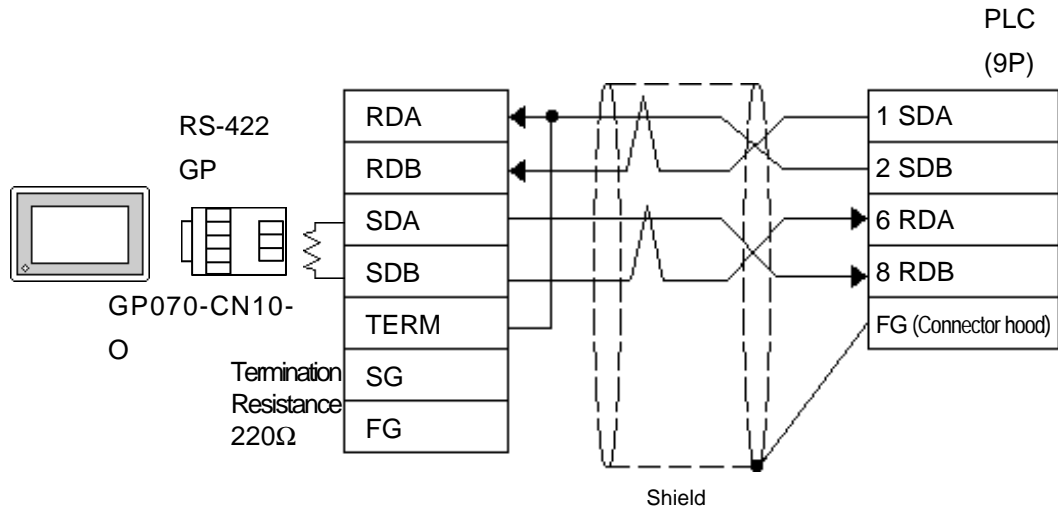


- When making your own cable connections

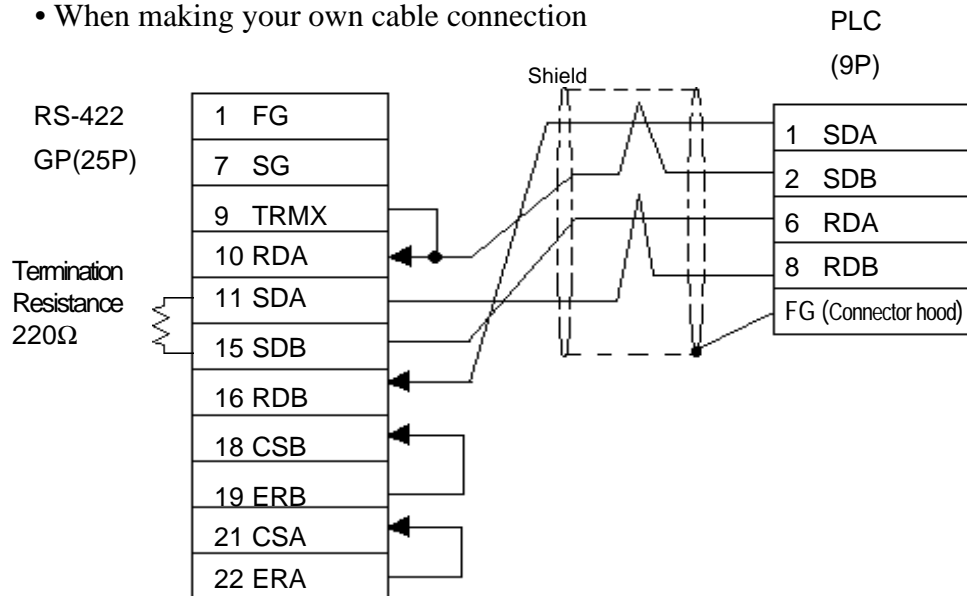


Cable Diagram 10 (RS-422)

- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



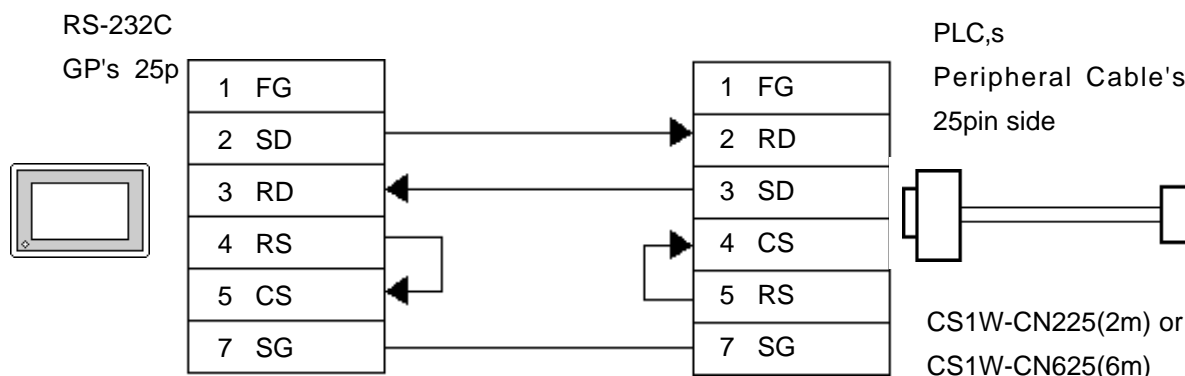
- When making your own cable connection



Note:

- Turn ON the PLC's termination resistance switch.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- The cable length must be 500 meters or less.
- The Hiraga Hutech's CO-HC-ESV-3PX7/0.2 cable is recommended for this connection.

Cable Diagram 11 (RS-232C)

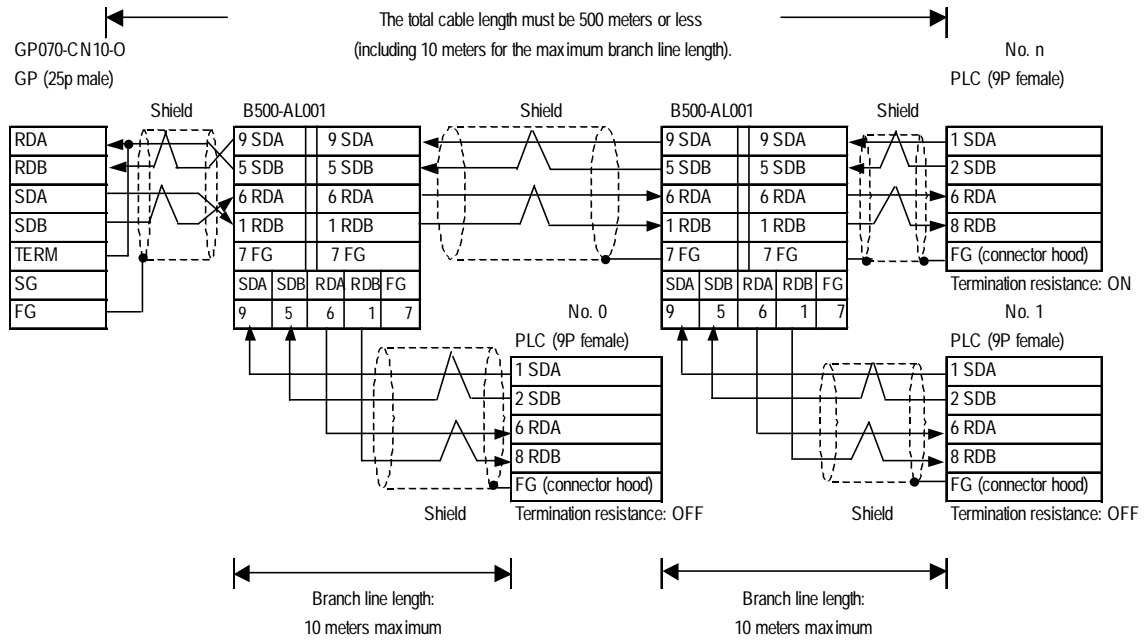


Cable Diagram 12 (RS-422, 4-wire type)

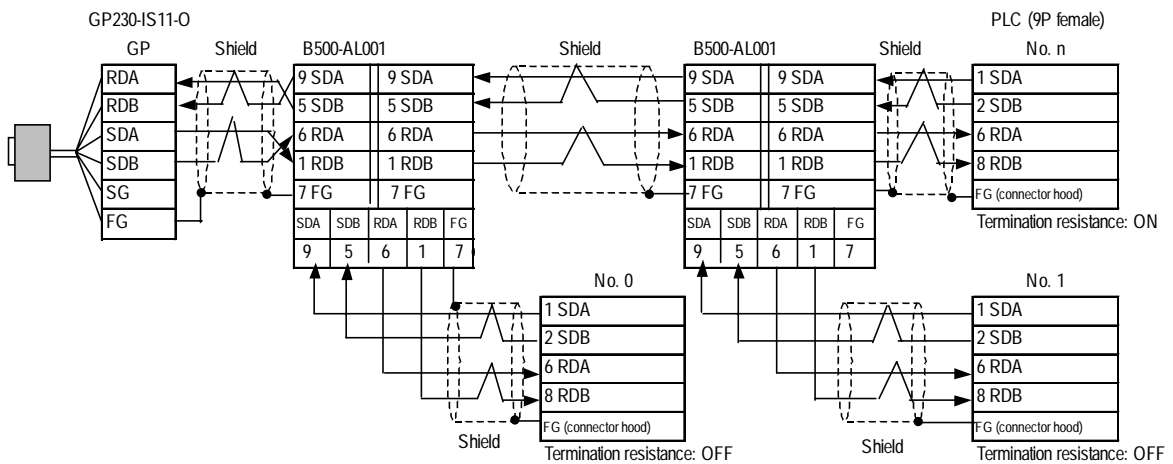


- **Hiraga Hutech's CO-HC-ESV-3P*7/0.2 cable is recommended for this connection.**
- **Ground one end of the communication cable to either the RS-422A/RS-485 connector hood on the serial communication board, or to the GP.**
- **The PLC has no SG connector, but its internal signal line is electrically insulated. Therefore, the SG connector on the GP/GLC requires no connection.**
- **Set the termination resistance selector switch, [TERM] on the terminating SYSMAC-COM1H, to the "ON" position. If two units of PLCs are connected to the GP/GLC, the one having the longer distance for communication becomes the terminating station.**
- **Set the 2-wire/4-wire selector switch, [WIRE] on the PLC to the "4" position.**
- **The maximum cable length for RS-422/RS-485 communication is 500 meters. The total branch line length for T-branching is 10 meters. In the following cable diagram, the communication distance between the GP and No. n unit is covered by the total length of the cable i.e. main cable and branches. In cable diagram 1, No. 0 and No. 1 units are connected by a branch line.**
- **To connect the PLC, use OMRON's B500-AL001 link adaptor or a terminal block.**

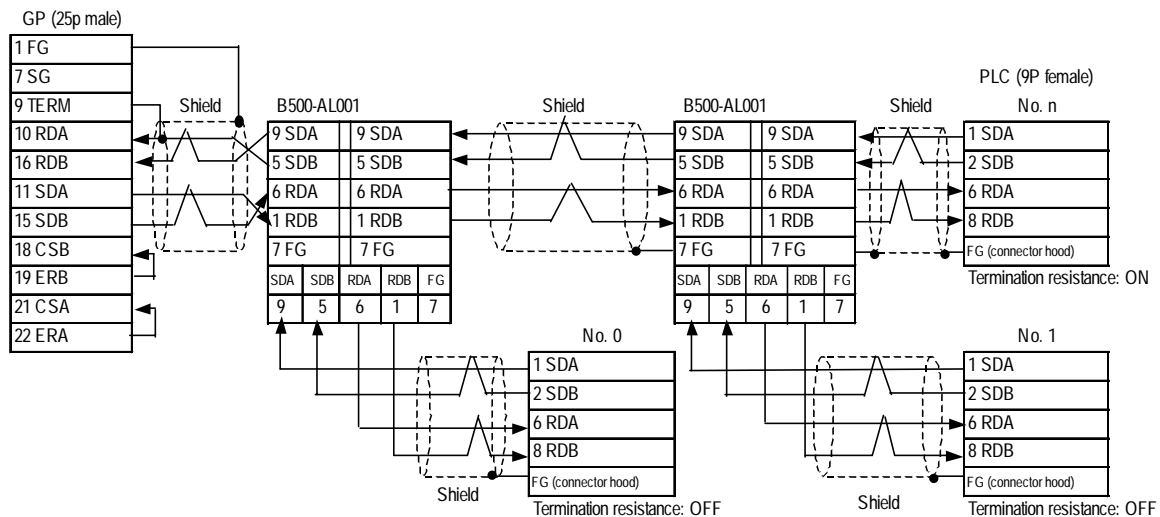
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



- When using Digital's RS-422 cable GP230-IS11-0



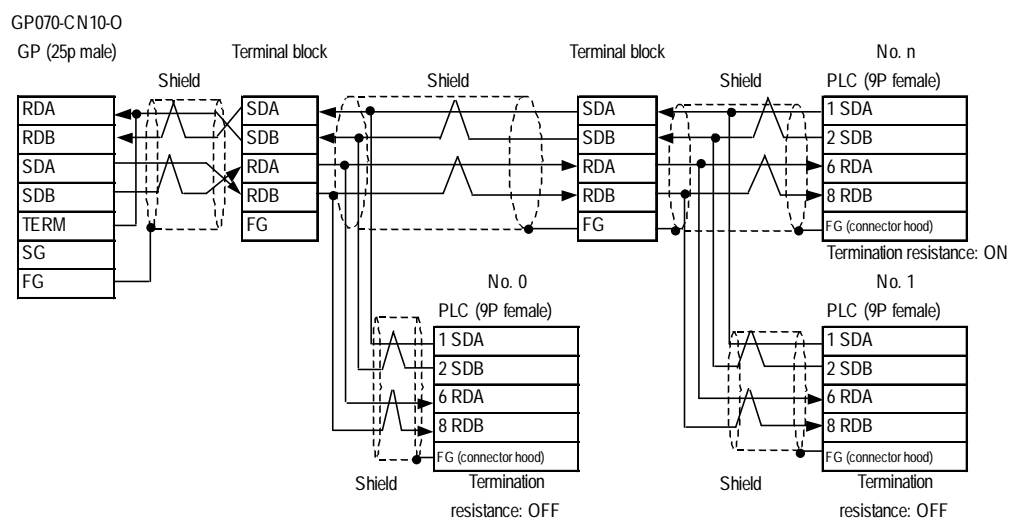
- When making your own cable connection



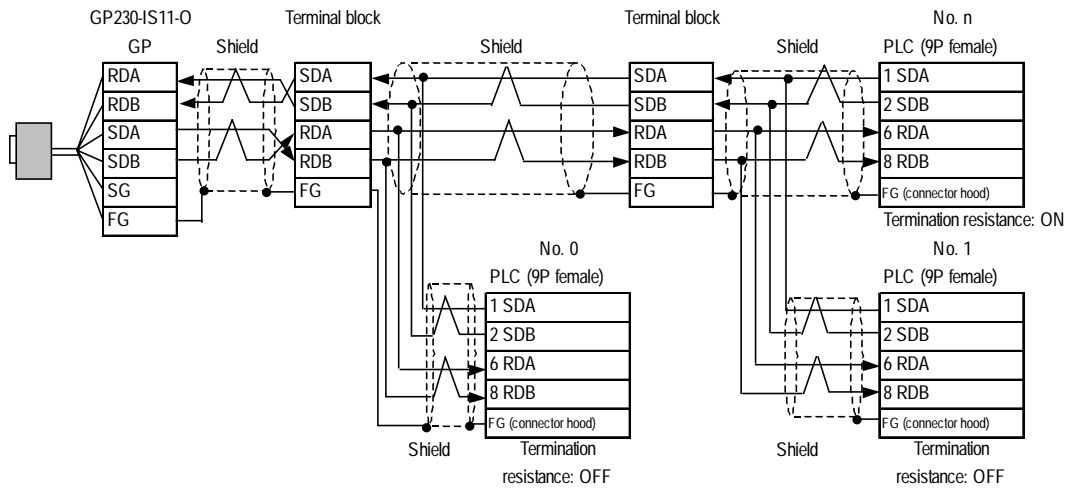
Cable Diagram 13 (RS-422, 4-wire type)



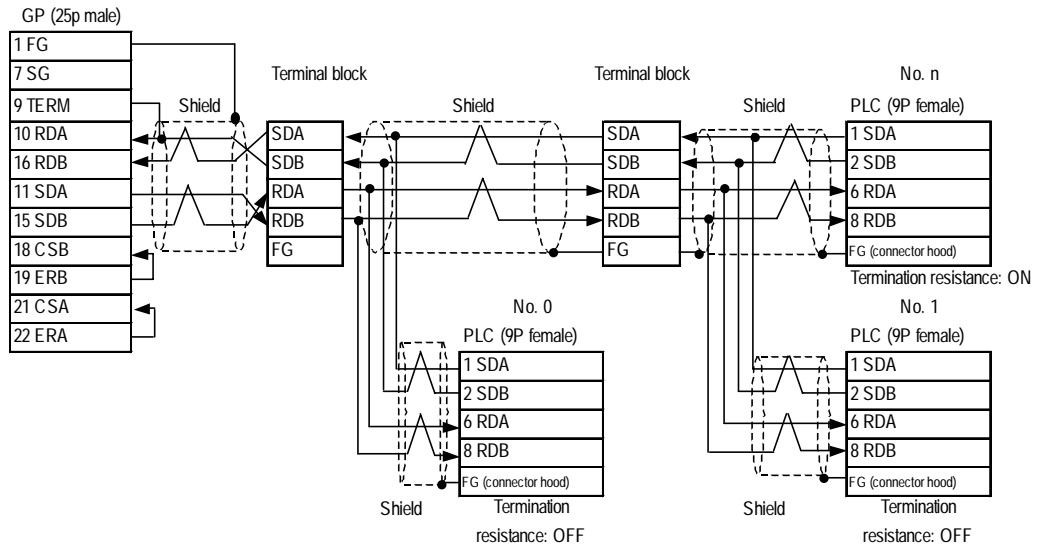
- **Hiraga Hutech's CO-HC-ESV-3P*7/0.2 cable is recommended for this connection.**
- **Ground one end of the communication cable to either the RS-422A/RS-485 connector hood on the serial communication board, or to the GP.**
- **The PLC has no SG connector, but its internal signal line is electrically insulated. Therefore, the SG connector on the GP/GLC requires no connection.**
- **Set the termination resistance selector switch, [TERM] on the terminating SYSMAC-COM1H, to the "ON" position. If two units of PLCs are connected to the GP/GLC, the one having the longer distance for communication becomes the terminating station.**
- **Set the 2-wire/4-wire selector switch, [WIRE] on the PLC to the "4" position.**
- **The maximum cable length for RS-422/RS-485 communication is 500 meters. The total branch line length for T-branching is 10 meters. In the following cable diagram, the communication distance between the GP and No. n unit is covered by the total length of the cable i.e. main cable and branches. In cable diagram 1, No. 0 and No. 1 units are connected by a branch line.**
- **To connect the PLC, use OMRON's B500-AL001 link adaptor or a terminal block.**
- **When using Digital's RS-422 connector terminal adapter GP070-CN10-0**



• When using Digital's RS-422 cable GP230-IS11-0



• When making your own cable connection



2.2.3 Supported Devices

The following describes the range of devices supported by the GP.

■ SYSMAC C Series Setup System Area here.

| Device | Bit Address | Word Address | Particulars | |
|---------------------------------|-----------------|-----------------|-------------|---|
| I/O Relay | 00000 ~ 51115 | 000 ~ 511 | *1 | |
| Internal Hold Relay | | | | |
| Special Hold Relay | | | | |
| Analog Setup Value Storage Area | 22000 ~ 22315 | 220 ~ 223 | *2 | |
| Data Link Relay | LR0000 ~ LR6315 | LR00 ~ LR63 | L/H | |
| Auxiliary Memory Relay | AR0000 ~ AR2715 | AR00 ~ AR27 | | |
| Latch Relay | HR0000 ~ HR9915 | HR00 ~ HR99 | | |
| Timer (contact) | TIM000 ~ TIM511 | --- | | |
| Counter (contact) | CNT000 ~ CNT511 | --- | | |
| Timer (current value) | --- | TIM000 ~ TIM511 | | |
| Counter (current value) | --- | CNT000 ~ CNT511 | | |
| Data Memory | --- | DM0000 ~ DM9999 | | Bit 5 |

* 1 Depending on the CPU, differ the range of each supported device and the possibility of Data write. Before using, refer to each CPU User Manual.

* 2 Can only be used by CQM1-CPU42.



- The method of writing bits will differ depending on the GP series.

<GP-*30 series>

When the bit write operation (other than *Reverse*) is performed, the corresponding word address will set the bits to 0 (except the designated bits).



<Except GP-*30 series>

When the bit write operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

- When running a GP-*30 Series ladder program, be aware of the above points.

■ SYSMAC Series (COM1H-CPU51/COM1H-CPU61)

 Setup System Area here.

| Device | Bit Address | Word Address | Particulars |
|------------------------|-----------------|------------------|---|
| Input Relay | 00000 ~ 24315 | 000 ~ 243 | *1 |
| Internal Hold Relay | | | *2 |
| Special Hold Relay | 24400 ~ 25507 | 244 ~ 255 | |
| Link Relay | LR0000 ~ LR6315 | LR00 ~ LR63 | |
| Latch Relay | HR0000 ~ HR9915 | HR00 ~ HR99 | |
| Auxiliary Memory Relay | AR0000 ~ AR2715 | AR00 ~ AR27 | |
| Timer (contact) | TIM000 ~ TIM511 | --- | |
| Counter (contact) | CNT000 ~ CNT511 | --- | |
| Timer | --- | TIM000 ~ TIM511 | |
| Counter | --- | CNT0100 ~ CNT511 | |
| Data Memory | --- | DM0000 ~ DM6655 |  *3 *5 |
| Extended Data Memory | --- | EM0000 ~ EM6143 |  *4 |

*1 Some addresses do not exist in the I/O relay/internal hold relay's address range. For further information, refer to OMRON's Users' manual for SYSMAC-COM1H.

*2 The bit addresses for the special hold relay are 24400 to 25415 and 25500 to 25507. Bit addresses 25508 to 25515 are not available.

*3 Designation of first address in system

Each station number is attached to the device name, DM. Select the device name for the station number you want to specify in the [GP SYSTEM SETUP] MODE SETUP and the SET UP OPERATION SURROUNDINGS menu on the offline GP/GLC.

*4 The extended data memory EM is only supported by the COM1H-CPU61.

*5 Do not write any data to the error storage area DM6569 to DM6599 and the PC system setup area DM6600 to DM6655 in the data memory DM. For further information, refer to OMRON's related manual.

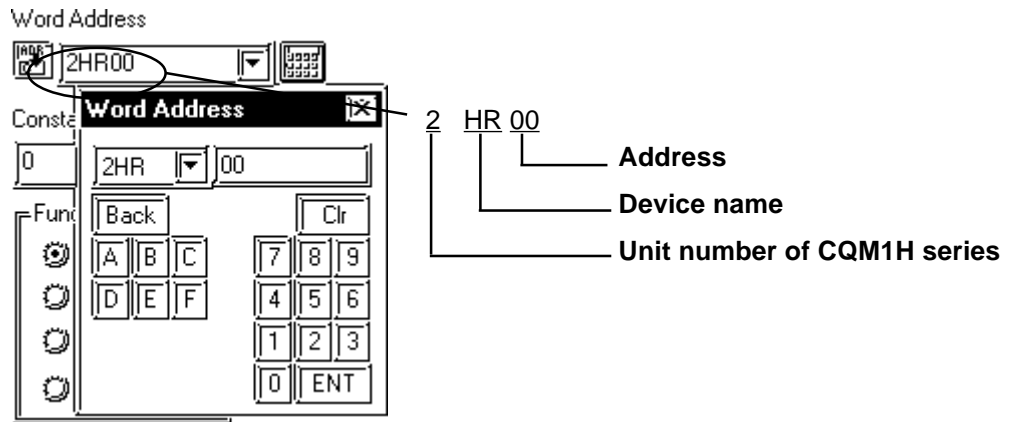


- When bit write is selected, the GP reads a word of data from the PLC's corresponding word address, turns a single bit ON, and then sends the entire word of data back to the PLC.

When the GP reads data from the PLC and writes it to the PLC, the data may not be written correctly if data is written to the same word address using the ladder program.



- When parts and tags are created in GP-PRO/PBIII, the PLC station number is attached to each device. The station numbers range from 0 to 7. This means that eight options are available for each device. See the following illustration:



■ SYSMAC-α Series

Setup System Area here.

| Device | Bit Address | Word Address | Particulars |
|-------------------------|-----------------|-----------------|-------------|
| I/O Relay I | 00000 ~ 02915 | 000 ~ 029 | L/H |
| I/O Relay II | 30000 ~ 30915 | 300 ~ 309 | |
| Internal Hold Relay I | 03000 ~ 23515 | 030 ~ 235 | |
| Internal Hold Relay II | 31000 ~ 51115 | 310 ~ 511 | |
| Special Hold Relay I | 23600 ~ 25507 | 236 ~ 255 | |
| Special Hold Relay II | 25600 ~ 29915 | 256 ~ 299 | |
| Latch Relay | HR0000 ~ HR9915 | HR00 ~ HR99 | |
| Auxiliary Memory Relay | AR0000 ~ AR2715 | AR00 ~ AR27 | |
| Link Relay | LR0000 ~ LR6315 | LR00 ~ LR63 | |
| Timer (contact) | TIM000 ~ TIM511 | --- | |
| Counter (contact) | CNT000 ~ CNT511 | --- | |
| Timer (current value) | --- | TIM000 ~ TIM511 | |
| Counter (current value) | --- | CNT000 ~ CNT511 | |
| Data Memory | --- | DM0000 ~ DM6655 | |



- The method of writing bits will differ depending on the GP series.

<GP-*30 series>

When the bit write operation (other than *Reverse*) is performed, the corresponding word address will set the bits to 0 (except the designated bits).

<Except GP-*30 series>

When the bit write operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

- When running a GP-*30 Series ladder program, be aware of the above points.

◆ SYSMAC C or α series communications mode selection

When using the SYSMAC C or α series with the GP in OFFLINE mode, either mode 2 or mode 1 can be selected during the entry of the initial settings. Be aware you cannot designate this settings from GP-PRO/PBIII for Windows.

- Mode 2: This is a newly added communications mode. This mode is enabled when less than 64 devices have been designated by a single screen's tags. The communications speed has been improved. Select this mode when using less than 64 devices.
- Mode 1: A communications mode equivalent to the old one. This mode is valid for 64 or more devices have been specified by a single screen's tags. The communications speed has been improved. Select this mode when using 64 or more devices.



- ***If the on-screen data memory area in the GP is initialized or if the on-screen data is transferred from the drawing software, the GP returns to mode 1 (its initial setting). Use the offline settings area to select mode 2.***
- ***In mode 2, the communications speed may not always be improved depending on which tags and system area are used, as well as how the read areas are allocated.***

■ SYSMAC-CV Series

 Setup System Area here.

| Device | Bit Address | Word Address | Particulars |
|-------------------------------|-----------------|---------------|-------------|
| I/O Relay I | 00000 ~ 19915 | 000 ~ 199 | L/H |
| Internal Hold Relay | | | |
| Sysmac BUS/2 Remote I/O Relay | 020000 ~ 099915 | 0200 ~ 0999 | |
| Data Link Relay | 100000 ~ 119915 | 1000 ~ 1199 | |
| Special Hold Relay | A00000 ~ A51115 | A000 ~ A511 | |
| Latch Relay | 120000 ~ 149915 | 1200 ~ 1499 | |
| Internal Aux. Relay | 190000 ~ 229915 | 1900 ~ 2299 | |
| SYSBUS Remote I/O Relay | 230000 ~ 255515 | 2300 ~ 2555 | |
| Timer (contact) | T0000 ~ T1023 | --- | |
| Counter (contact) | C0000 ~ C1023 | --- | |
| Timer (current value) | --- | T0000 ~ T1023 | |
| Counter (current value) | --- | C0000 ~ C1023 | |
| Data Memory | --- | D0000 ~ D9999 | Bit 5 |



- Write operations cannot be performed on the *Timer* and *Counter* bit devices.
- The method of writing bits will differ depending on the GP series.

<GP-*30 series>

When the bit write operation (other than *Reverse*) is performed, the corresponding word address will set the bits to 0 (except the designated bits).

<Except GP-*30 series>

When the bit write operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

- When running a GP-*30 Series ladder program, be aware of the above points.

■ SYSMAC CS1/CJ /CJ1MSeries

In this list, "Exp." means "Expansion".

 Setup system area here.

| Device | Bit Address | Word Address | Particulars | |
|---------------------------------|-----------------------|-------------------|---|-----|
| Channel I/O | C1000000 ~ C10614315 | C100000 ~ C106143 | | L/H |
| Internal Auxiliary Relay | W00000 ~ W51115 | W000 ~ W511 | | |
| Hold Relay | H00000 ~ H51115 | H000 ~ H511 | | |
| Special Auxiliary Relay | A00000 ~ A95915 | A000 ~ A959 | *1 | |
| Timer(Contact) | T0000 ~ T4095 | ---- | *3 | |
| Counter(Contact) | C0000 ~ C4095 | ---- | *3 | |
| Task Flag (Bit) | TKB00 ~ TKB31 | ---- | *6 | |
| Timer(Current) | ---- | T0000 ~ T4095 | | |
| Counter(Current) | ---- | C0000 ~ C4095 | | |
| Data Memory | D0000000 ~ D3276715 | D00000 ~ D32767 | *2 | |
| Exp. Data Memory (E0 ~ EC) | E00000000 ~ EC3276715 | E000000 ~ EC32767 | Bit 15 *4 | |
| Exp. Data Memory (Current Bank) | ---- | EM00000 ~ EM32767 | ÷ 2 Bit 15 *5 | |
| Task Flag | ---- | TK0 ~ TK30 | Bit 31 *3 | |
| Index Register | ---- | IR0 ~ IR15 | Bit 15 *3 | |
| Data Register | ---- | DR0 ~ DR15 | *3 | |

*1 Addresses A000 to A477 cannot be written to.

*2 When using the Communication Unit (CS1W-SCU21/CJ1W-SCU41), addresses D30000 to D31599, since they are used for PLC system settings, should not be written to from the GP.

When using the Communication Board (CS1W-SCB21/41), addresses D32000 to D32767 are used for PLC settings, should not be written to from the GP.

*3 Cannot be written to while running.

*4 The range of Expansion Data Memory varies depending on the CPU type.

Reference For details about each device, refer to Omron's SYSMAC CS/CJ Series Communication Board CS1W-SCB21-/41 Communication CS1W-SCU21/CJ1W-SCU41 Users Manual.

*5 Expansion Data Memory (Current Bank) does not exist on SYSMAC CJ/CJ1M Series.

*6 Cannot be written to.

2.2.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ SYSMAC C Series

| GP Setup | | Upper Link Unit Setup | |
|--------------------------------|-------------|--|----------------------|
| Baud Rate | 19200 bps | Baud Rate | 19200 bps |
| Data Length | 7 bits | Data Bit | 7 bits |
| Stop Bit | 2 bits | Stop Bit | 2 bits |
| Parity Bit | Even | Parity Bit | Even |
| Data Flow Control | ER Control | --- | |
| Communication Format (RS-232C) | RS-232C | Communication Format ^{*1} (RS-232C) | RS-232C |
| Communication Format (RS-422) | 4-wire type | Communication Format ^{*1} (RS422) | RS-422 |
| --- | | Command Level ^{*1} | Level 1,2,3 is valid |
| --- | | Relation ^{*1} | 1:N |
| --- | | DC +5V power supply ^{*1} | No |
| --- | | CTS Setup ^{*1} | Normally On |
| --- | | Mode Setup ^{*2} | Host Link |
| --- | | Communication Conditions Setting Switch ^{*3} | OFF |
| --- | | Communication Port Function Setting Switch ^{*4} | SW1:OFF SW2:ON |
| Unit No. | 0 | Station Number | 0 |

**1 This setup is unavailable for the RS-232C port of C200HS, CQM1 and CPH2A.*

**2 This setup is available only for the RS-232C port of C200HS and CQM1.*

**3 This setup is available only for CPM2A.*

**4 This setup is available only for CPM2C.*

■ SYSMAC C Series (CQM1H-CPU51/CQM1H-CPU61)
(1:n Communication)

| GP/GLC Settings | | PLC Settings | |
|----------------------|-------------|---|--|
| Baud Rate | 9600 bps | Baud Rate | 9600 bps |
| Data Length | 7 bits | Data Length | 7 bits |
| Stop Bit | 2 bit | Stop Bit | 2 bit |
| Parity Bit | Even | Parity Bit | Even |
| Data Flow control | ER | _____ | _____ |
| Communication Format | 4 wire type | 2 wire/4 wire [WIRE] | 4 wire |
| Unit No. | 0 | Station No. ^{*1} | 0 |
| _____ | | Communication Conditions Format Setting ^{*2} | 0 |
| | | Serial Communication Mode Setting ^{*3} | Host Link |
| _____ | | Terminator Switch [TERM] | Terminal station: ON Intermediate station: OFF |

**1 Although Nos. 00 to 31 can be used for PLC station Nos., the maximum number of PLCs that can communicate with the GP on the 1:n communication basis is eight. Therefore, set up PLC station Nos. within the range of 00 to 07.*

**2 Communication Conditions Format Settings: DM6550 (Bits 0 to 3)*

| DM6550 (Bit 0 to 3) | Communication Settings | | | |
|----------------------------------|------------------------|-------------|----------|--------|
| Default: 0 (Standard Setting) | Baud Rate | Data Length | Stop Bit | Parity |
| | 9600bps | 7 bits | 2 bits | Even |

**3 Leave the serial communication mode setting DM6550 (bits 12 to 15) set to the default setting, 0.*

■ SYSMAC-α Series (using Communication board)

| GP Setup | | Communication board Setup | |
|--------------------------------|-------------|--|-----------|
| Baud Rate | 19200 bps | Baud Rate | 19200 bps |
| Data Length | 7 bits | Data Bit | 7 bits |
| Stop Bit | 2 bits | Stop Bit | 2 bits |
| Parity Bit | Even | Parity Bit | Even |
| Data Flow Control | ER Control | --- | |
| Communication Format (RS-232C) | RS-232C | --- | |
| Communication Format (RS-422) | 4-wire type | RS-422/485 cable (2-wire/4-wire type) switching setting (dip switch 1) | 4 |
| Unit No. | 0 | Station Number | 0 |



When using the above list's recommended settings, please perform the following.
Port A: Store "0001" in DM6555, and store "0304"<HEX> in DM6556.
Port B: Store "0001" in DM6550, and store "0304"<HEX> in DM6551.

■ **SYSMAC-α Series** (when using the CPU’s RS-232C port)

| GP Setup | | RS-232C port Setup | |
|----------------------|------------|--------------------|-----------------|
| Baud Rate | 19200 bps | Baud Rate | 19200 bps |
| Data Length | 7 bits | Data Bit | 7 bits |
| Stop Bit | 2 bits | Stop Bit | 2 bits |
| Parity Bit | Even | Parity Bit | Even |
| Data Flow Control | ER Control | --- | |
| Communication Format | RS-232C | Using Mode | Host (PLC) Link |
| Unit No. | 0 | Station Number | 0 |



When using the above list’s recommended settings, please follow the instructions given here.
CPU 232C Port: Store “0001” in DM6645, and store “0304” <HEX> in DM6646.

■ **SYSMAC CV Series**

| GP Setup | | Upper Link Unit Setup | |
|--------------------------------|-----------------|--------------------------------|-----------------|
| Baud Rate | 19200 bps | Baud Rate | 19200 bps |
| Data Length | 7 bits | Data Bit | 7 bits |
| Stop Bit | 2 bits | Stop Bit | 2 bits |
| Parity Bit | Even | Parity Bit | Even |
| Data Flow Control | ER Control | --- | |
| Communication Format (RS-232C) | RS-232C | Communication Format (RS-232C) | RS-232C |
| Communication Format (RS-422) | 4-wire type | Communication Format (RS-422) | RS-422 |
| Unit No. | 0 ^{*1} | Station Number | 0 ^{*1} |

**1 When GP is connected to the Port 1 on the Upper Link Unit CV500-LK201, the station number must be fixed as "0". (The station number cannot be set on the PLC.)*

■ SYSMAC CS1/CJ/CJ1M Series<CPU unit's RS-232C Port>

| GP Setup | | PLC Setup | |
|----------------------|---------|-------------|--|
| Baud Rate | 19200 | Baud Rate | 19200 |
| Data Length | 7 | Data Length | 7 |
| Stop Bit | 2 | Stop Bit | 2 |
| Parity Bit | Even | Parity Bit | Even |
| Data Flow Control | ER | _____ | _____ |
| Communication Format | RS-232C | _____ | _____ |
| Unit No. | 0 | Station No. | 0 |
| _____ | _____ | Dip Switch | SW1: OFF SW5: OFF SW7: OFF SW8: OFF |
| _____ | _____ | Mode Setup | Host Link |

■ SYSMAC CS1/CJ/CJ1M Series<CPU unit's Peripheral Port>

| GP Setup | | PLC Setup | |
|----------------------|---------|-------------|---|
| Baud Rate | 19200 | Baud Rate | 19200 |
| Data Length | 7 | Data Length | 7 |
| Stop Bit | 2 | Stop Bit | 2 |
| Parity Bit | Even | Parity Bit | Even |
| Data Flow Control | ER | _____ | _____ |
| Communication Format | RS-232C | _____ | _____ |
| Unit No. | 0 | Station No. | 0 |
| _____ | _____ | Dip Switch | SW1: OFF SW4: ON SW7: OFF SW8: OFF |
| _____ | _____ | Mode Setup | Host Link |

■ SYSMAC CS1/CJ/CJ1M Series

< When using the Communication Board /Unit>

| GP Setup | | PLC Setup | |
|--------------------------------------|-------------|--------------------------------------|---------------------------|
| Baud Rate | 19200 | Baud Rate | 19200 |
| Data Length | 7 | Data Length | 7 |
| Stop Bit | 2 | Stop Bit | 2 |
| Parity Bit | Even | Parity Bit | Even |
| Data Flow Control | ER | _____ | _____ |
| Communication Format (using RS-232C) | RS-232C | _____ | _____ |
| Communication Format (using RS-422) | 4-wire type | WIRE (2-wire/4-wire type Switch) | 4-wire type |
| | | TERM (Termination Resistance Switch) | Termination Resistance ON |
| Unit.No | 0 | Host Link Station No. | 0 |
| _____ | _____ | Serial Communication mode | Host Link |
| _____ | _____ | Communication Delay Time | 0 |
| _____ | _____ | CTS Control | None |