

Device/PLC Connection Manuals



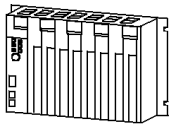



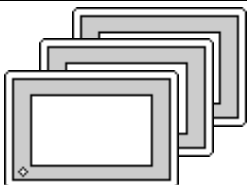
About the Device/PLC Connection Manuals

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.

10.2 Slave I/O

10.2.1 System Structure

The following table shows the system structure for connecting the GP to PLCs supporting Device Net.

CPU	Link I/F	Cable Diagram	Link I/F	GP
				
PLC units compatible with Device Net	Device Net Master Unit	Cable Diagram 1	Device Net I/F Unit (GP070-DN41)	GP Series ^{*1}

*1 The following table lists the GPs units that can be connected and used with DeviceNet.

Series Name	Product Name	Unit
GP70 Series	GP-470 Series	GP-470E
	GP-570 Series	GP-570S
		GP-570T
		GP-57JS
		GP-570VM
	GP-571 Series	GP-571T
	GP-675 Series	GP-675S
GP-675T		
GP-870 Series	GP-870VM	
GP77R Series	GP-477R Series	GP-477RE
	GP-577R Series	GP-577RS
		GP-577RT
GP2000 Series	GP-2500 Series	GP-2500L
		GP-2500S
		GP-2500T
	GP-2501 Series	GP-2501L
		GP-2501S
		GP-2501T
	GP-2600 Series	GP-2600T
GP-2601 Series	GP-2601T	
GLC2000 Series	GLC2600 Series	GLC2600T

DeviceNet Unit (GP070-DN41) ^{*1}

*1 When using GP2000/GLC2000 series units, a bus conversion unit (PSL-CONV00) is required.



- For the cable used, refer to <10.2.2 Cable Diagram> ◆ List of Cables Dedicated to DeviceNet.

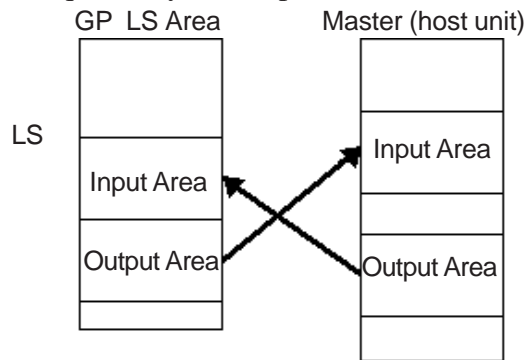
■ **Slave I/O**

Slave I/O is the feature that converts I/O data automatically between the PLC installed with the master unit and GP unit.

Slave I/O uses a special link method that does not allow a user to access a PLC directly.

When using Device Net Connection the GP series unit performs like an I/O terminal (Remote terminal). The GP's LS area will be used as a device which inputs/outputs data with the host (PLC).

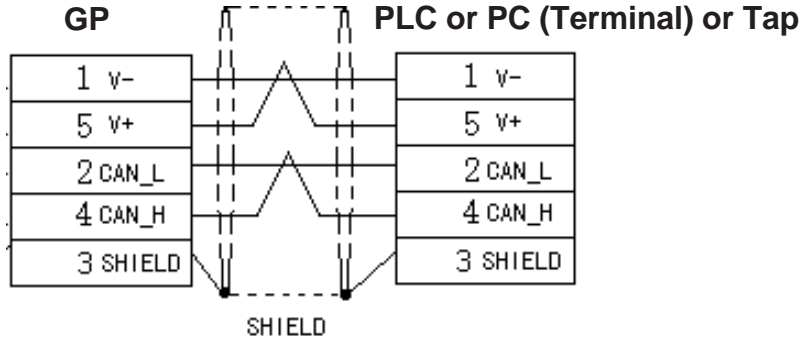
The master (host PLC) unit Output area is allocated to GP's Input area, and the master's Input area is allocated to GP's Output area. The LS area's Input area is followed in sequence by the Output area. (See below)



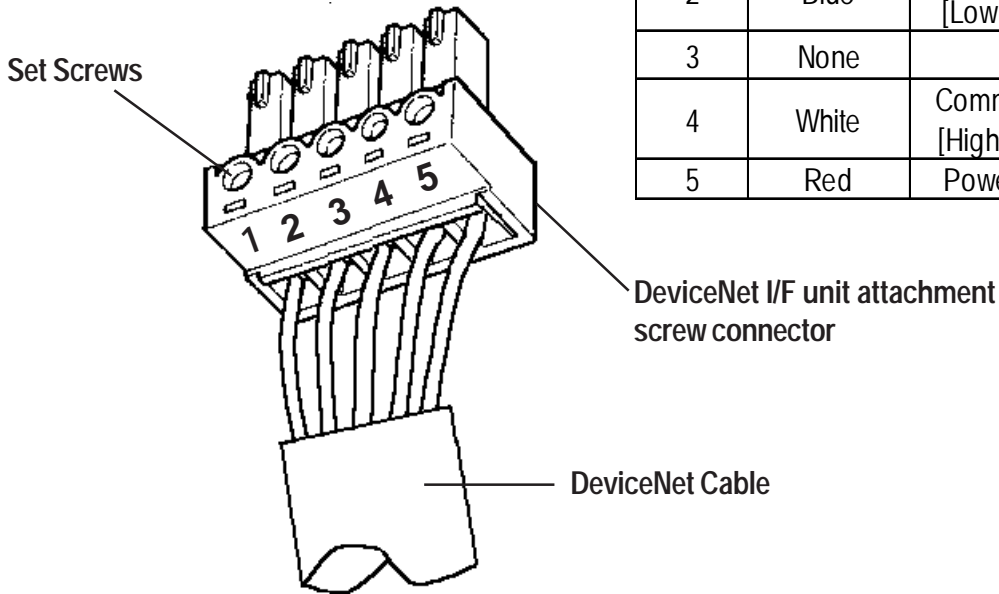
- **Only the LS Area's User Area (from LS20 to LS1999) is used for this communication.**
- **The System Area (from LS0 to LS19) and Reading Area settings cannot be used for PLC communication.**
- **GP will be used as a slave unit.**
- **Explicit Message Communication is not supported.**
- **The Contents in System Area are programless.**

10.2.2 Cable Diagram

<Cable Diagram 1>



Pin No.	Wire Cover Color	Comment
1	Black	Power Supply (V-)
2	Blue	Communication Data [Low side] (CAN_L)
3	None	Shield
4	White	Communication Data [High side] (CAN_H)
5	Red	Power Supply (V+)



After all connector wires are attached to the connector, connect the connector to the Device Net I/F Unit (5-wire type).

Be sure to connect Terminating Resistors (121Ω/4W) to both sides of the cable.

List Device Net Cables

There are two types of cable, thick and thin, for the Device Net unit.

Be sure to use only cables that meet the Device Net specifications. The following two cables are recommended.

- Rockwell (Allen Bradley) Thick type 1485C-PI-A***
- Rockwell (Allen Bradley) Thin type 1485C-PI-C***

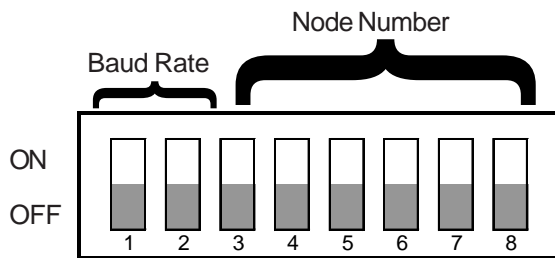
10.2.3 Environment Setup

The following lists Digital's recommended GP settings.

Baud Rate and Node Number Settings

◆ **GP Unit**

For setting the baud rate and the node number, use the Dip Switch (8 positions) on the rear side of the Device Net expansion unit (Model: GP070-DN41). The normal SIO communication setting cannot be used. Node number is available from 0 to 63 on the GP.



Baud Rate	DIPSW1	DIPSW2
125K	0	0
250K	0	1
500K	1	0
Reserved	1	1

Node No.	D3	D4	D5	D6	D7	D8
0	0	0	0	0	0	0
1	0	0	0	0	0	1
2	0	0	0	0	1	0
:	:	:	:	:	:	:
61	1	1	1	1	0	1
62	1	1	1	1	1	0
63	1	1	1	1	1	1

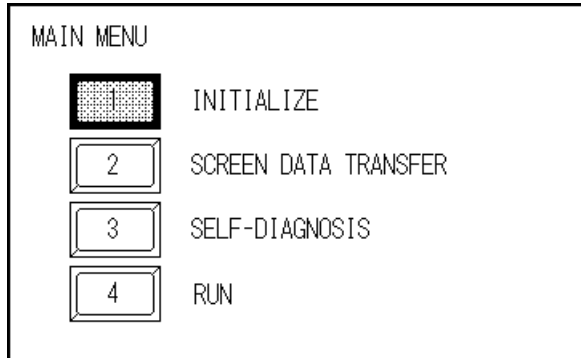
◆ **PLC Unit**

For PLC settings, refer to each company's Device Net communication unit's manual.

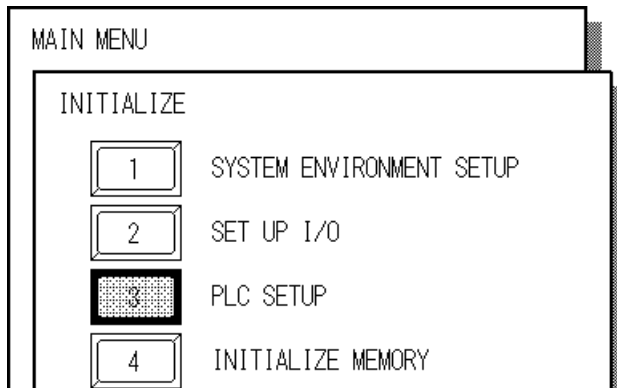
Input / Output area Settings

Enter the GP's communication settings via the SET UP OPERATION SURROUNDINGS menu.

< GP Example screen >



① Touch the INITIALIZE selection. The INITIALIZE menu will appear.



② Touch the PLC SETUP selection. The SET UP OPERATION SURROUNDINGS menu will appear.

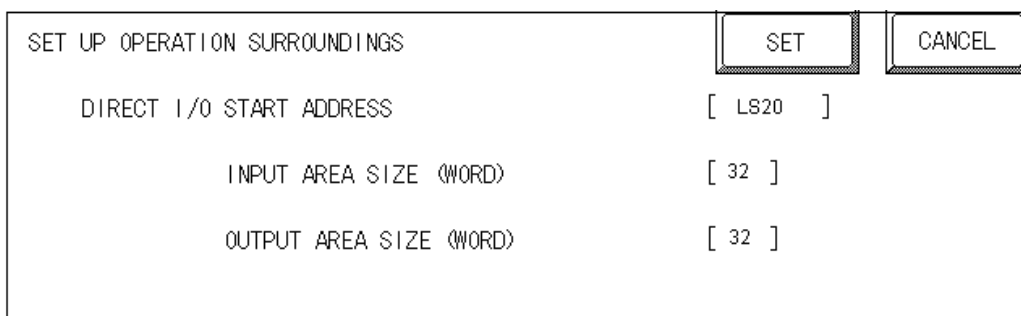


Note: The Initialize screen's SET UP I/O area's settings disabled.

◆ Enter the following settings to begin I/O communication.

- In the DIO Start Address, enter a value from LS20-LS1999.
- In the Input Area Size, enter a value from 0-127 words.

Set the word area size that is equal to the output area size of the DeviceNet master unit.



- In the Output Area Size, enter a value from 0-127 words.
Set a word area size equal to the input area size of the DeviceNet master unit.



The GP's SYSTEM DATA AREA(LS0 to LS19) cannot be allocated.

< PLC Settings >

For PLC settings, refer to each company's Device Net communication unit's manual.

10.2.4 Supported Devices

	Word Address	Particulars	
Input Area Size (word)	0 to 127	*1	L/H
Output Area Size (word)	0 to 127	*1	
DIO Start Address	LS20 to LS1999	*2	

*1 Though the Input /Output area size can be set from 0 to 127, the maximum I/O size used per slave will differ depending on each company's master unit specifications.

The I/O size that each company supports is shown as below.

PLC Series	Input Area Size (word)	Output Area Size (word)
Rockwell SLC500	0 to 64	0 to 64
Rockwell PLC-5	0 to 64	0 to 64
Rockwell ControlLogix 5000	0 to 127	0 to 127
Rockwell MicroLogix 1500	0 to 127	0 to 127
Omron SYSMAC CS1	0 to 32	0 to 32
Omron SYSMAC CJ	0 to 100	0 to 100
Omron SYSMAC CJ1M	0 to 100	0 to 100
HITACHI S10mini	0 to 127	0 to 127
YOKOGAWA FA-M3	0 to 127	0 to 127

*2 Designate the DIO Start Address within the range shown below.
 $20 \leq \text{DIO Start Address} \leq 2000 - \text{Input Area Size} - \text{Output Area Size}$

e.g: When Input Area Size =4, and Output Area Size =16,
 the setting range of the DIO Start Address should be:

$$20 \leq \text{DIO Start Address} \leq 1980$$

10.2.5 Error Codes

The following list shows the error codes for the Device Net connection. These error codes will appear as "PLC COM.ERROR (02:**)" on the bottom left on the GP screen. (** stands for an error code.)

Error Code	Details	Status
14	No reply from the hardware	Unit is not properly installed
		Unit Error
16	A communication error occurred	Communication Setting Error
		Communication Line Error
		Node No. is duplicated