



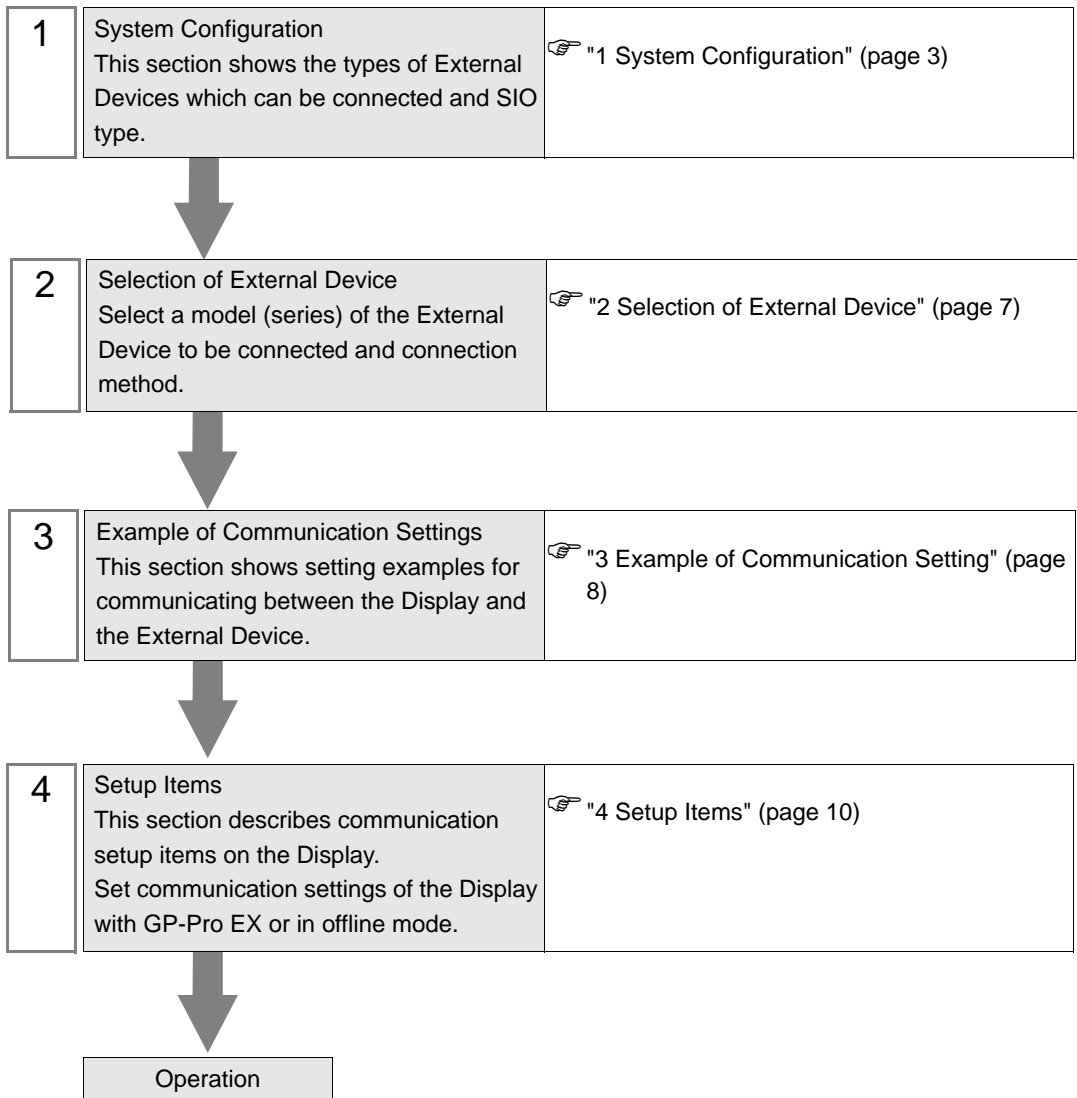
# DeviceNet Slave Driver

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## PREFACE

This manual describes how to connect the Display and the External Device (target PLC).

In this manual, the connection procedure will be described by following the below sections:



# 1 System Configuration

The system configuration in the case when the Display and the DeviceNet master are connected is shown.

| Maker                     | Series          | CPU  | Link I/F        | Setting Example                  | SIO Type   |
|---------------------------|-----------------|--|-----------------|----------------------------------|------------|
| Rockwell Automation, Inc. | SLC500          | SLC 5/03<br>SLC 5/04<br>SLC 5/05   | 1747-SDN        |                                  |            |
|                           | PLC-5           | PLC-5/20   | 1771-SDN        |                                  |            |
|                           | ControlLogix    | All CPUs that support the link I/F on the right  | 1756-DNB        |                                  |            |
|                           | MicroLogix      | MicroLogix 1500  | 1769-SDN        |                                  |            |
|                           | CompactLogix    | All CPUs that support the link I/F on the right  | 1769-SDN        |                                  |            |
| OMRON Corporation         | SYSMAC $\alpha$ | C200HE-CPU11<br>C200HE-CPU32<br>C200HE-CPU42<br>C200HG-CPU33<br>C200HG-CPU43<br>C200HG-CPU53<br>C200HG-CPU63<br>C200HX-CPU32<br>C200HX-CPU33<br>C200HX-CPU34<br>C200HX-CPU44<br>C200HX-CPU53<br>C200HX-CPU54<br>C200HX-CPU64<br>C200HE-CPU11-Z<br>C200HE-CPU32-Z<br>C200HE-CPU42-Z<br>C200HG-CPU33-Z<br>C200HG-CPU43-Z<br>C200HG-CPU53-Z<br>C200HG-CPU63-Z<br>C200HX-CPU32-Z<br>C200HX-CPU33-Z<br>C200HX-CPU34-Z<br>C200HX-CPU44-Z<br>C200HX-CPU53-Z<br>C200HX-CPU54-Z<br>C200HX-CPU64-Z<br>C200HX-CPU65-Z<br>C200HX-CPU85-Z | C200HW-DRM21-V1 | "3.1 Setting Example 1" (page 8) | Device Net |

Continue to the next page

| Maker             | Series     | CPU   | Link I/F             | Setting Example                        | SIO Type   |
|-------------------|------------|---|----------------------|--|------------|
| OMRON Corporation | SYSMAC CS1 | CS1G-CPU42<br>CS1G-CPU43<br>CS1G-CPU44<br>CS1G-CPU45<br>CS1H-CPU63<br>CS1H-CPU64<br>CS1H-CPU65<br>CS1H-CPU66<br>CS1H-CPU67  | CS200HW-<br>DRM21-V1 | "3.1 Setting<br>Example 1"<br>(page 8) | Device Net |
|                   |            | CS1G-CPU42<br>CS1G-CPU43<br>CS1G-CPU44<br>CS1G-CPU45<br>CS1H-CPU63<br>CS1H-CPU64<br>CS1H-CPU65<br>CS1H-CPU66<br>CS1H-CPU67<br>CS1G-CPU42H<br>CS1G-CPU43H<br>CS1G-CPU44H<br>CS1G-CPU45H<br>CS1H-CPU63H<br>CS1H-CPU64H<br>CS1H-CPU65H<br>CS1H-CPU66H<br>CS1H-CPU67H | CS1W-DRM21           |  |            |
|                   | SYSMAC CJ  | CJ1M-CPU11<br>CJ1M-CPU12<br>CJ1M-CPU13<br>CJ1M-CPU21<br>CJ1M-CPU22<br>CJ1M-CPU23<br>CJ1G-CPU44<br>CJ1G-CPU45<br>CJ1G-CPU42H<br>CJ1G-CPU43H<br>CJ1G-CPU44H<br>CJ1G-CPU45H<br>CJ1H-CPU65H<br>CJ1H-CPU66H  | CJ1W-DRM21           |  |            |
| Hitachi, Ltd.     | S10mini    | LQP800<br>LQP000<br>LQP010<br>LQP011<br>LQP120  | LQE070               |  |            |
|                   | S10V       | LQP510  | LQE575               |  |            |

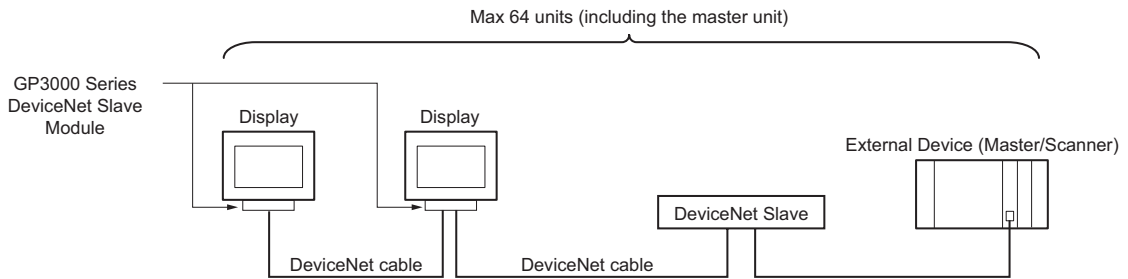
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| Maker                            | Series | CPU   | Link I/F  | Setting Example                        | SIO Type   |
|----------------------------------|--------|---|-----------|--|------------|
| YOKOGAWA<br>Electric Corporation | FA-M3  | F3SP20-0N<br>F3SP21-0N<br>F3SP25-2N<br>F3SP28-3N<br>F3SP30-0N<br>F3SP35-5N<br>F3SP38-6N<br>F3SP53-4H<br>F3SP58-6H<br>F3SP36-3N<br>F3SP28-3S<br>F3SP38-6S<br>F3SP53-4S<br>F3SP58-6S<br>F3SP59-7S | F3LD01-0N | "3.1 Setting<br>Example 1"<br>(page 8) | Device Net |

- 
- IMPORTANT**
- To use a DeviceNet slave driver, you need a DeviceNet slave unit (CA6-DNSALL/EX-01) from Digital Electronics Corp. For more information about the cable diagram between the Display (DeviceNet slave unit) and the DeviceNet master and about the DeviceNet slave unit, please refer to "DeviceNet Slave Unit Hardware Manual".
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## ■ Connection Configuration

### ◆ Connection Image



## ■ Data Transfer Through DeviceNet

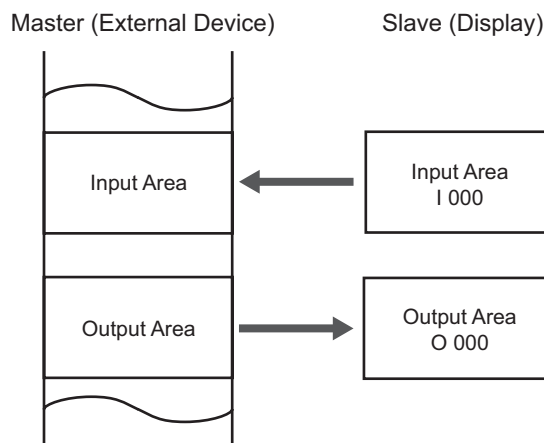
Slave I/O communication allows the Display to communicate with the DeviceNet master.

### ◆ Slave I/O communication

Slave I/O communication is the feature that converts I/O data automatically between the External Device installed with the master unit and the Display.

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

The master's output area is allocated to the Display's output area, and the master's input area is allocated to the Display's input area.

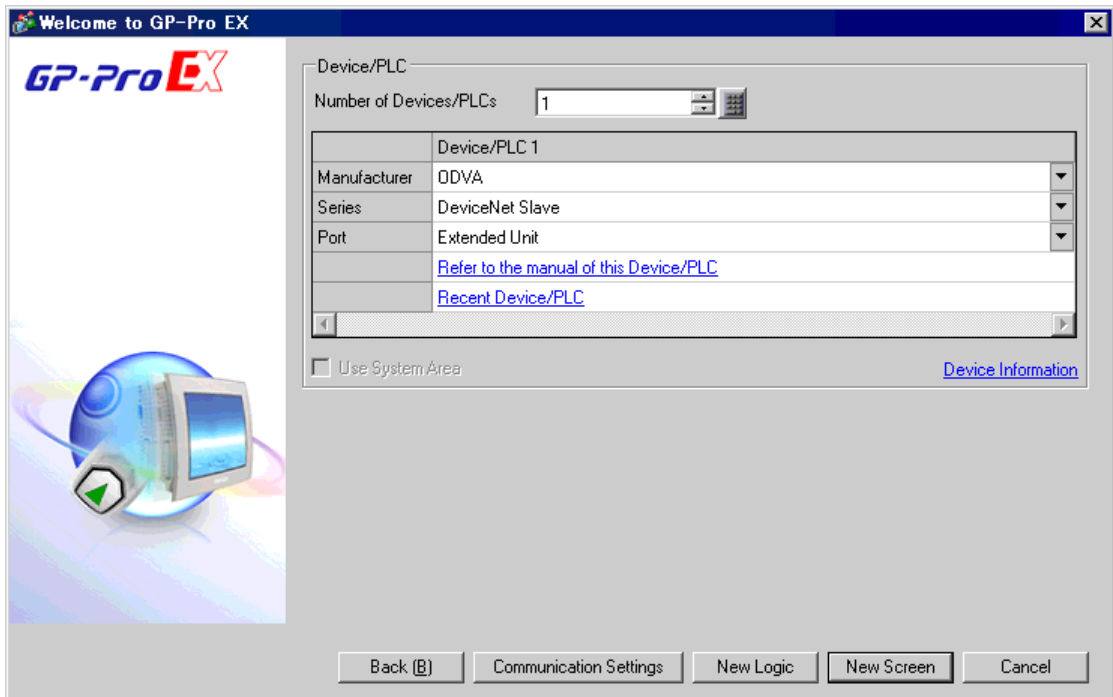


#### NOTE

- The Display is used as a slave unit.
- Explicit message communication is not supported.

## 2 Selection of External Device

Select the External Device to be connected to the Display.



| Setup Items            | Setup Description   |
|------------------------|---|
| Number of Devices/PLCs | Enter an integer from 1 to 4 to define the number of Devices/PLCs to connect to the display.  |
| Manufacturer           | Select the manufacturer of the External Device to connect. Select "ODVA".   |
| Series                 | Select the External Device model (series) and the connection method. Select "DeviceNet Slave".<br>In System configuration, make sure the External Device you are connecting is supported by "DeviceNet Slave".<br>☞ "1 System Configuration" (page 3) |
| Port                   | Select the Display port to be connected to the External Device.   |
| Use System Area        | Not available in this driver.   |

## 3 Example of Communication Setting

Examples of communication settings of the Display and the External Device, recommended by Digital Electronics Corp., are shown.

### 3.1 Setting Example 1

#### ■ Settings of GP-Pro EX

##### ◆ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1

Summary [Change Device/PLC](#)

Manufacturer  Series  Port

Text Data Mode  [Change](#)

Communication Settings

Node Number

Baud Rate   Auto

Slave I/O

Input Area Size  (words)

Output Area Size  (words)

Input and Output size should match with the DeviceNet Master configuration for this slave.

Device-Specific Settings

Allowable Number of Devices/PLCs  [Add Device](#)

| No.                              | Device Name                       | Settings             |
|----------------------------------|-----------------------------------|----------------------|
| <input type="button" value="1"/> | <input type="text" value="PLC1"/> | <input type="text"/> |

[Add Indirect Device](#)

##### ◆ Device Setting

There is no setting on the External Device.

##### ◆ Notes

- The input and output area sizes must be identical to the settings on the DeviceNet master.



## ■ Settings of External Device

With the External Device to be used as a DeviceNet master, register the Display (DeviceNet slave unit) as a DeviceNet slave, and then conform the DeviceNet master's input and output area sizes to the settings on the Display.

Please refer to the maker's manual of the External Device for more details on how to register as a slave.

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**NOTE**

- You can use an EDS file when registering the Display as a slave. The EDS file for the Display is stored in the [\\Fieldbus\\DeviceNet] folder on the CD-ROM of GP-Pro EX. Please refer to the manual of the External Device (master) for more details on how to use EDS files.
-

## 4 Setup Items

Set communication settings of the Display with GP-Pro Ex or in offline mode of the Display.

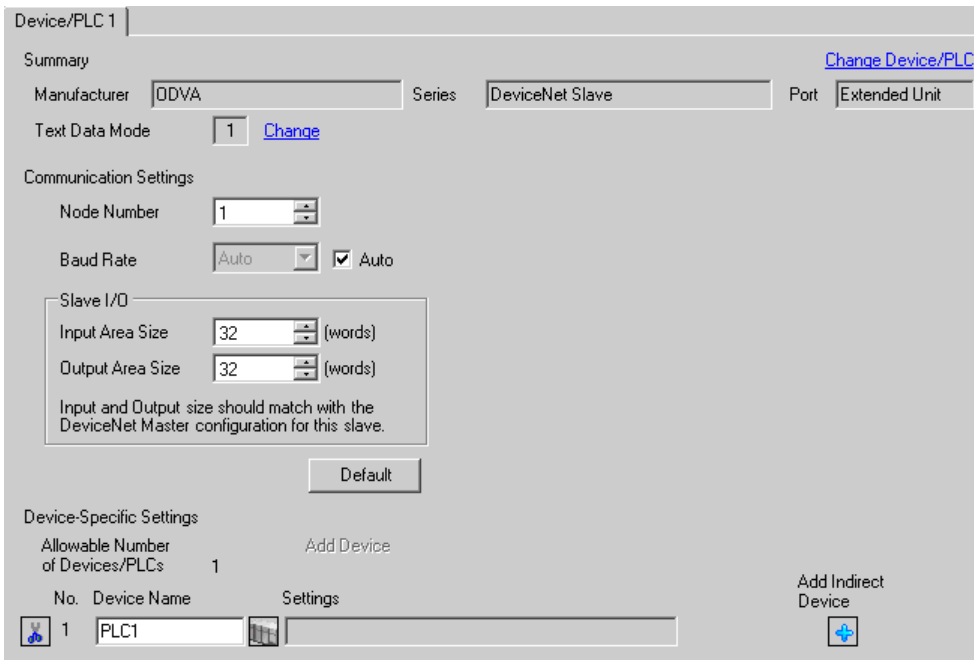
The setting of each parameter must be identical to that of the External Device.

 "3 Example of Communication Setting" (page 8)

### 4.1 Setup Items in GP-Pro EX

#### ■ Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].



Device/PLC 1

Summary [Change Device/PLC](#)

Manufacturer  Series  Port

Text Data Mode  [Change](#)

Communication Settings

Node Number

Baud Rate   Auto

Slave I/O

Input Area Size  (words)

Output Area Size  (words)

Input and Output size should match with the DeviceNet Master configuration for this slave.

Device-Specific Settings

Allowable Number of Devices/PLCs  [Add Device](#)

| No.                              | Device Name                       | Settings                                |
|----------------------------------|-----------------------------------|---|
| <input type="button" value="1"/> | <input type="text" value="PLC1"/> | <input type="button" value="Settings"/> |

[Add Indirect Device](#)

| Setup Items                   | Setup Description   |
|-------------------------------|---|
| Node Number                   | Use an integer from "0 to 63" to enter the node No.   |
| Baud Rate                     | Select the communication speed between the External Device and the Display.<br>If you check [Auto], the port will be automatically set. |
| Slave I/O<br>Input Area Size  | Set the input area size from "0" to "128" in word unit.   |
| Slave I/O<br>Output Area Size | Set the output area size from "0" to "128" in word unit.  |

#### NOTE

- Refer to the GP-Pro EX Reference Manual for Indirect Device.

Cf. GP-Pro EX Reference Manual "Changing the Device/PLC at Runtime (Indirect Device)"

## 4.2 Setup Items in Offline Mode

**NOTE**

- Refer to the Maintenance/Troubleshooting manual for information on how to enter offline mode or about the operation.

Cf. Maintenance/Troubleshooting Guide "Offline Mode"

- The number of the setup items to be displayed for 1 page in the offline mode depends on the Display in use. Please refer to the Reference manual for details.

### ■ Communication Settings

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Equipment Settings] in the offline mode. Touch the External Device you want to set from the displayed list.

|                 |  |   |     |                        |
|-----------------|--|---|-----|------------------------|
| Comm.           |  |   |     |                        |
| DeviceNet Slave |  |   |     | Page 1/1               |
| Node Number     |  | 1   | ▼ ▲ |                        |
| Baud Rate       |  | <input type="radio"/> Fixed <input checked="" type="radio"/> Auto |     |                        |
| Input Size      |  | 125Kbps   | ▼ ▲ |                        |
| Output Size     |  | 32  | ▼ ▲ |                        |
| Exit            |  | Back  |     | 2006/11/30<br>19:21:05 |

| Setup Items      | Setup Description  |
|------------------|--|
| Node Number      | Use an integer from "0 to 63" to enter the node No.  |
| Baud Rate        | Select the communication speed between the External Device and the Display.<br>Select either "Fixed" or "Auto". If you select "Fixed", select the communication speed. If you select "Auto", the communication speed will be automatically set, regardless of the set value. |
| Input Area Size  | Set the input area size from "0" to "128" in word unit.  |
| Output Area Size | Set the output area size from "0" to "128" in word unit.   |

## 5 Supported Device

Range of supported device address is shown in the table below. Note that the actually supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your External Device.

### ■ Slave I/O

| Device | Bit Address       | Word Address | 32 bits    | Remarks |
|--------|-------------------|--------------|------------|---------|
| Input  | I000.00 - I127.15 | I000 - I127  | <b>L/H</b> | *1 *3   |
| Output | O000.00 - O127.15 | O000 - O127  |            | *2 *3   |

- \*1 Indicates Display's input area in the DeviceNet master (External Device). Write data to this area of the DeviceNet master (External Device) with the application on the Display.
- \*2 Indicates Display's output area in the DeviceNet master (External Device). Read data from this area of the DeviceNet master (External Device) with the application on the Display. Data cannot be written to but can be read from this area with the application on the Display.
- \*3 The above indicates the maximum range supported by DeviceNet slave unit. Actual maximum values depend on the input and output area sizes assigned to the Display by the DeviceNet master (External Device).

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|             |                                 |
|-------------|---------------------------------|
| <b>NOTE</b> | • System area is not supported. |
|-------------|---------------------------------|

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## 6 Device Code and Address Code

Use device code and address code if you select "Device Type & Address" for the address type in data displays.

| Device | Word Address | Device Code (HEX) | Address Code |
|--------|--------------|-------------------|--------------|
| Input  | I            | 0084              | Word Address |
| Output | O            | 0085              | Word Address |

## 7 Error Messages

Error messages are displayed on the Display screen as follows: "No.: Device Name: Error Message (Error Occurrence Area)". Each description is shown below.

| Item                  | Description  |
|-----------------------|--|
| No.                   | Error No.  |
| Device Name           | Name of the External Device where error occurs. Device name is a title of the External Device set with GP-Pro EX. (Initial value [PLC1])   |
| Error Message         | Displays messages related to the error which occurs.   |
| Error Occurrence Area | <p>Displays IP address or device address of the External Device where error occurs, or error codes received from the External Device.</p> <p><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• IP address is displayed such as "IP address (Decimal): MAC address (Hex)".</li> <li>• Device address is displayed such as "Address: Device address".</li> <li>• Received error codes are displayed such as "Decimal [Hex]".</li> </ul> |

Display Examples of Error Messages

"RHAA035: PLC1: Error has been responded for device write command (Error Code: 2 [02H])"

- NOTE**
- Refer to your External Device manual for details on received error codes.
  - Refer to "Display-related errors" in "Maintenance/Troubleshooting Guide" for details on the error messages common to the driver.

### ■ Error Messages Specific to the External Device

| Error No. | Message  | Solution  |
|-----------|--|---|
| RHxx128   | Error During Initialization of Interface Module    | This is a hardware problem. Check the module.   |
| RHxx129   | Illegal Initialization Parameter                   | Reduce the size of the input or output area.  |
| RHxx130   | Incorrect Interface Module Detected                | Connect the correct module.   |
| RHxx131   | Network Communication Error,<br>LED Status: [0x%x] | Check the cable, baud rate settings, input and output sizes, master (scanner) settings.<br>Check the LED status for more details.*1 |

\*1 For more information about the LED status, please refer to "DeviceNet Slave Unit Hardware Manual".