KOYO ELECTRONICS INDUSTRIES CO., LTD.

# KOSTAC/DL Series MODBUS TCP Driver

Introduction

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<br>This section shows the types of External Devices which can be connected and SIO type. | ☞ "1 System Configuration" (page 3) |

| 2 | Selection of External Device<br>Select a model (series) of the External Device to be connected and connection method. | ☞ "2 Selection of External Device" (page 5) |

| 3 | Example of Communication Settings<br>This section shows setting examples for communicating between the Display and the External Device. | ☞ "3 Example of Communication Setting" (page 6) |

| 4 | Setup Items<br>This section describes communication setup items on the Display.<br>Set communication settings of the Display with GP-Pro Ex or in offline mode. | ☞ "4 Setup Items" (page 8) |

Operation

# 1 System Configuration

The system configuration in the case when the External Device of KOYO ELECTRONICS INDUSTRIES CO., LTD. and the Display are connected is shown.

| Series | CPU | Link I/F[*1] | SIO Type | Setting Example |
|--------|-----|-----------|----------|-----------------|
| Direct Logic05 | D0-05AA, D0-05AD, D0-05AR, D0-05DA, D0-05DD, D0-05DD-D, D0-05DR, D0-05DR-D | H0-ECOM100 | Ethernet (TCP) | "Setting Example 1" (page 6) |
| Direct Logic06 | D0-06DD1, D0-06DD1-D, D0-06DD2, D0-06DD2-D, D0-06DR, D0-06DR-D, D0-06DA, D0-06AR, D0-06AA | H0-ECOM100 | | |
| DL205 | D2-240, D2-250-1, D2-260 | H2-ECOM100 | | |
| DL405 | D4-430, D4-440, D4-450 | H4-ECOM100 | | |
| KOSTAC SU | SU-5E, SU-6B, SU-5M, SU-6M | H4-ECOM100 | | |

*1 Link I/F of Firmware version 4.0.1299 or later is required for communication with External Device.
  Firmware version can be checked with PLC programming tool software (DirectSOFT).
  Please refer to the manual of External Device for more details.
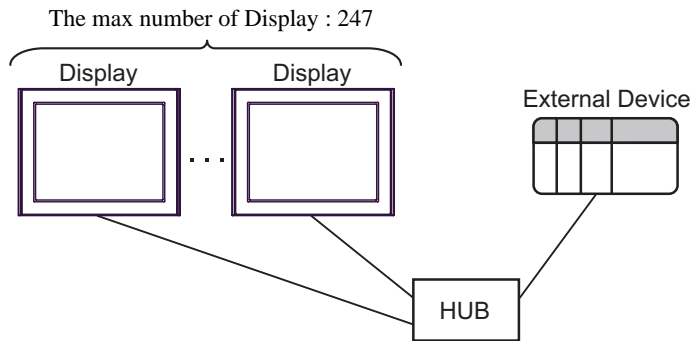
■ Connection Configuration

- 1:1 Connection

• 1:n Connection

The max number of External Device : 16
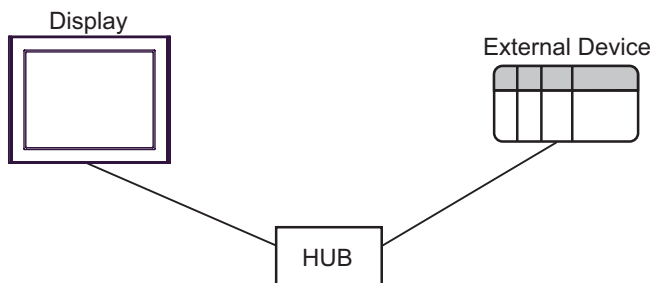


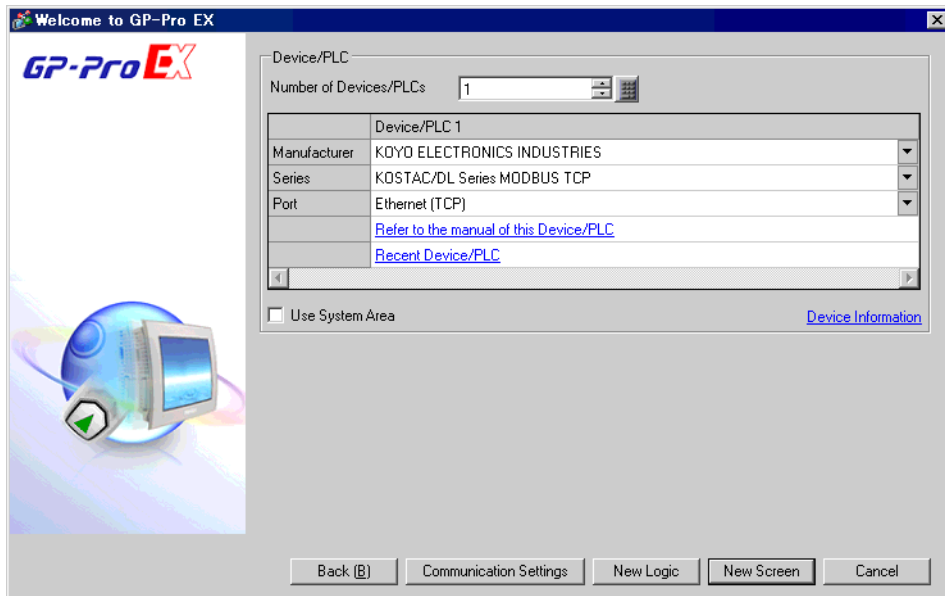• n:1 Connection
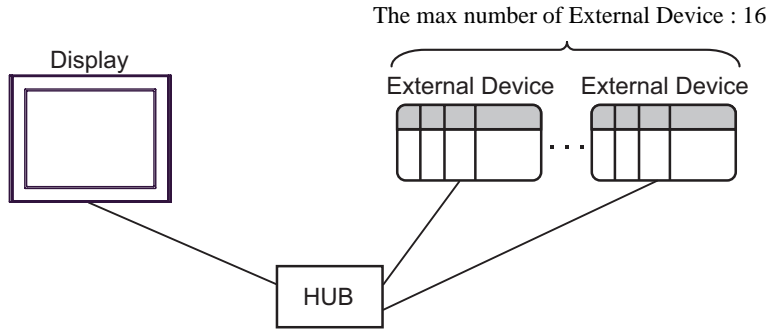
The max number of Display : 247



| NOTE | • A maximum of 247 Displays can be connected to a HUB. However, the greater the number of Displays connected, the more the communication load increases. |
|------|---|

# 2 Selection of External Device

Select the External Device to be connected to the Display.



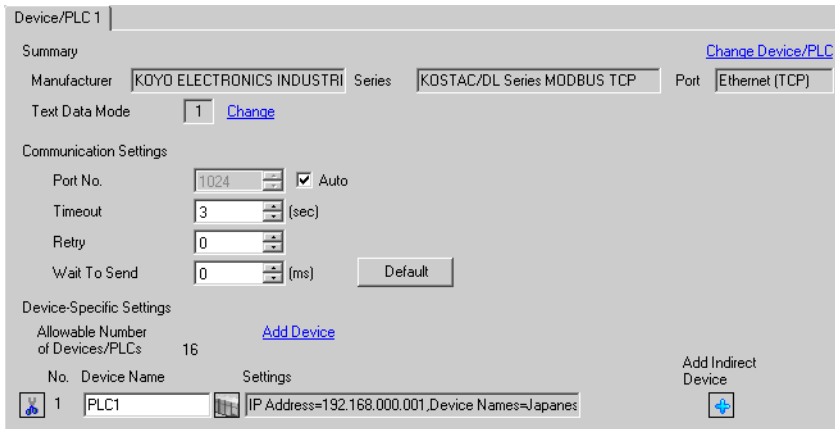| Setup Items | Setup Description |
|---|---|
| Number of Devices/PLCs | Enter an integer from 1 to 4 to define the number of Devices/PLCs to connect to the display. |
| Manufacturer | Select the manufacturer of the External Device to connect. Select "KOYO ELECTRONICS INDUSTRIES". |
| Series | Select the External Device model (series) and the connection method. Select "KOSTAC/DL Series MODBUS TCP".<br>In System configuration, make sure the External Device you are connecting is supported by "KOSTAC/DL Series MODBUS TCP".<br>☞ "1 System Configuration" (page 3) |
| Port | Select the Display port to connect to the External Device. |
| Use System Area | Check this option to synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the External Device's ladder program to switch the display or display the window on the Display.<br>　Cf.　GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"<br>This feature can also be set in GP-Pro EX or in the Display's offline mode.<br>　Cf.　GP-Pro EX Reference Manual "System Settings [Display Unit] - [System Area] Settings Guide"<br>　Cf.　Maintenance/Troubleshooting Guide "Main Unit - System Area Settings" |

# 3 Example of Communication Setting

Examples of communication settings of the Display and the External Device, recommended by Pro-face, are shown.
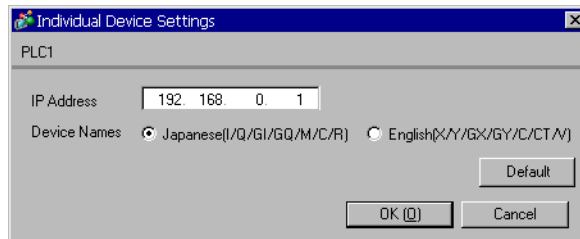
## 3.1 Setting Example 1

### ■ 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 | KOYO ELECTRONICS INDUSTRI | Series KOSTAC/DL Series MODBUS TCP | Port Ethernet (TCP) |

Text Data Mode    1   Change

Communication Settings

Port No.     1024   ✔ Auto

Timeout    3   (sec)

Retry    0

Wait To Send   0   (ms)    Default

Device-Specific Settings

Allowable Number    Add Device
of Devices/PLCs   16

No. Device Name    Settings               Add Indirect Device

1 PLC1    IP Address=192.168.000.001,Device Names=Japanes

#### ◆ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]    . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.

Individual Device Settings

PLC1

IP Address    192. 168. 0. 1

Device Names   ● Japanese(I/Q/GI/GQ/M/C/R)    ○ English(X/Y/GX/GY/C/CT/V)

Default

OK (O)    Cancel

■ Settings of External Device

Communication setting is configured with the setting tool (NetEdit3).

Please refer to the manual of External Device for more details.

1 Start up the setting tool.

In the startup screen, the External Devices on network are all displayed.

NOTE
• If there is no External Device display, click [Scan Network] to refresh the network status.

2 Select an External Device from the list to configure the communication setting.

3 Right click the selected External Device and select [General...] from the displayed menu. [General Settings] dialog box is displayed.

4 Select [Use the following IP settings] and input as follows.

| Setup Items | Setup Description |
| --- | --- |
| IP Address | 192.168.0.1 |
| Subnet Mask | 255.255.255.0 |
| Gateway | 0.0.0.0 |

5 Click [OK].

NOTE
• When communication between the Display and External Device has not occurred for a set period of time, the External Device will shut down the connection.
If communication is made after the shut down, the error message, "TCP connection open error." appears on the Display, but communication will immediately resume.
Time out for shutting down the connection can be set at [Slave Timeout] (1410065 seconds max.) of the [ECOM advanced settings] dialog box.
The [ECOM advanced settings] dialog box is displayed by clicking [Advanced] on [ECOM Settings] tab.
• When using a gateway, set the IP address as [Gateway].

# 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.
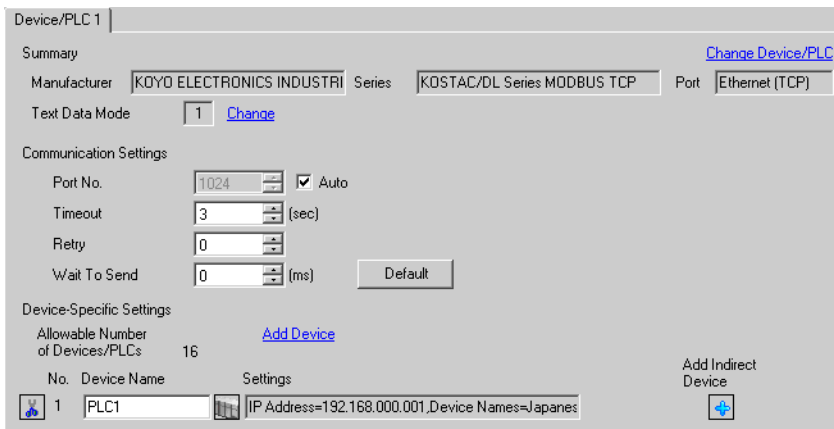
☞ "3 Example of Communication Setting" (page 6)

| NOTE | • Set the Display's IP address in offline mode. |
|------|------------------------------------------------|
|      | Cf.    Maintenance/Troubleshooting Manual "Ethernet Settings" |

## 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].



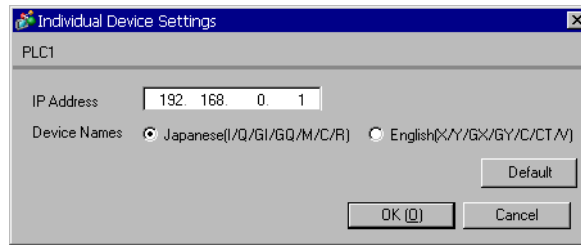| Setup Items | Setup Description |
|-------------|------------------|
| Port No. | Use an integer from 1024 to 65535 to enter the port No. of the Display. When you check the option of [Auto], the port No. will be automatically set. |
| Timeout | Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device. |
| Retry | In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command. |
| Wait To Send | Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands. |

| 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)" |

■ Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]     . To connect multiple External Devices, from [Device-Specific Settings] in the [Device/PLC] window, click [Add Device] to add another External Device.



| Setup Items | Setup Description |
|---|---|
| IP Address | Set IP address of the External Device.<br><br>**NOTE**<br>• Check with a network administrator about IP address. Do not set the duplicate IP address. |
| Device Names | Select whether the device name is described in Japanese (I/Q/GI/GQ/M/C/R) or English (X/Y/GX/GY/C/CT/V). |

## 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 Manual "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 Settings] in offline mode. Touch the External Device you want to set from the displayed list.

| Comm. | Device | | | |
|---|---|---|---|---|
| | | | | |

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|  | |
|---|---|
| Timeout(s) | 3 ▼ ▲ |
| Retry | 0 ▼ ▲ |
| Wait To Send(ms) | 0 ▼ ▲ |

| | Exit | | Back | 2007/09/21 22:38:02 |

| Setup Items | Setup Description |
|---|---|
| Timeout (s) | Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device. |
| Retry | In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command. |
| Wait To Send (ms) | Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands. |

■ Device Setting

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

| Comm. | Device | | | |
|-------|--------|--|--|--|
| | | | | |

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     Device/PLC Name    PLC1                        ▼

        IP Address            192 168 0 1

        Device Names         English

| | Exit | | Back | 2007/09/21 22:38:12 |
|--|------|--|------|---------------------|

| Setup Items | Setup Description |
|-------------|-------------------|
| Device/PLC Name | Select the External Device for device setting. Device name is a title of External Device set with GP-Pro EX.(Initial value [PLC1]) |
| IP Address | Set IP address of the External Device.<br>**NOTE**<br>Check with a network administrator about IP address. Do not set the duplicate IP address. |
| Device Names | Display whether the device name is described in Japanese (I/Q/GI/GQ/M/C/R) or English (X/Y/GX/GY/C/CT/V). |
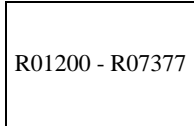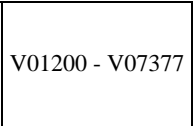
# 5 Supported Device

Range of supported device address is shown in the table below.

## 5.1 Direct Logic05

▭ This address can be specified as system data area.

| Device | Bit Address | | Word Address | | 32 bits | Remarks |
|---|---|---|---|---|---|---|
| | Japanese | English | Japanese | English | | |
| Input Points | I000 - I377 | X000 - X377 | R40400 - R40417 | V40400 - V40417 | | [oct 8] *1 |
| Output Points | Q000 - Q377 | Y000 - Y377 | R40500 - R40517 | V40500 - V40517 | | [oct 8] |
| Control Relays | M000 - M777 | C000 - C777 | R40600 - R40637 | V40600 - V40637 | | [oct 8] |
| Special Relays | SP000 - SP777 | | R41200 - R41237 | V41200 - V41237 | | [oct 8] |
| Timers | T000 - T177 | | R41100 - R41107 | V41100 - V41107 | | [oct 8] |
| Counters | C000 - C177 | CT000 - CT177 | R41140 - R41147 | V41140 - V41147 | | [oct 8] |
| Stages | S000 - S377 | | R41000 - R41017 | V41000 - V41017 | | [oct 8] |
| Timer Current Values | - | | R00000 - R00177 | V00000 - V00177 | [L / H] | [oct 8] |
| Counter Current Values | - | | R01000 - R01177 | V01000 - V01177 | | [oct 8] |
| User Data Words | - | | R01200 - R07377 | V01200 - V07377 | | [oct 8] [Bit 15] *2 |
| User Data Words (Non-Volatile) | - | | R07400 - R07577 | V07400 - V07577 | | [oct 8] [Bit 15] |
| System Parameters | - | | R07600 - R07777 | V07600 - V07777 | | [oct 8] [Bit 15] |

*1 When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

*2 R01200 to R01377 (Japanese) and V01200 to V01377 (English) cannot used for bit assignment.

NOTE
- Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
- Please refer to the precautions on manual notation for icons in the table.

) "Manual Symbols and Terminology"

## 5.2 Direct Logic06

☐☐☐ This address can be specified as system data area.

| Device | Bit Address | | Word Address | | 32 bits | Remarks |
|---|---|---|---|---|---|---|
| | Japanese | English | Japanese | English | | |
| Input Points | I000 - I777 | X000 - X777 | R40400 - R40437 | V40400 - V40437 | | OCT**8** *1 |
| Output Points | Q000 - Q777 | Y000 - Y777 | R40500 - R40537 | V40500 - V40537 | | OCT**8** |
| Remote Input | GI0000 - GI3777 | GX0000 - GX3777 | R40000 - R40177 | V40000 - V40177 | | OCT**8** *1 |
| Remote Output | GQ0000 - GQ3777 | GY0000 - GY3777 | R40200 - R40377 | V40200 - V40377 | | OCT**8** |
| Control Relays | M0000 - M1777 | C0000 - C1777 | R40600 - R40677 | V40600 - V40677 | | OCT**8** |
| Special Relays | SP000 - SP777 | | R41200 - R41237 | V41200 - V41237 | | OCT**8** |
| Timers | T000 - T377 | | R41100 - R41117 | V41100 - V41117 | | OCT**8** |
| Counters | C000 - C177 | CT000 - CT177 | R41140 - R41147 | V41140 - V41147 | | OCT**8** |
| Stages | S0000 - S1777 | | R41000 - R41077 | V41000 - V41077 | L / H | OCT**8** |
| Timer Current Values | - | | R00000 - R00377 | V00000 - V00377 | | OCT**8** |
| Counter Current Values | - | | R01000 - R01177 | V01000 - V01177 | | OCT**8** |
| User Data Words | - | | R00400 - R00677<br>R01200 - R07377<br>R10000 - R17777 | V00400 - V00677<br>V01200 - V07377<br>V10000 - V17777 | | OCT**8**<br>Bit**15** *2 |
| User Data Words (Non-Volatile) | - | | R07400 - R07577 | V07400 - V07577 | | OCT**8**<br>Bit**15** |
| System Parameters*3 | - | | R00700 - R00777<br>R07600 - R07777<br>R36000 - R37777 | V00700 - V00777<br>V07600 - V07777<br>V36000 - V37777 | | OCT**8**<br>Bit**15** |

*1 When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

*2 R01200 to R01377 (Japanese) and V01200 to V01377 (English) cannot used for bit assignment.

*3 R07600 to R07777 (Japanese) and V07600 to V07777 (English) cannot be assigned for system data area.

NOTE
• Please refer to the GP-Pro EX Reference Manual for system data area.
   Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.

☞ "Manual Symbols and Terminology"

## 5.3 DL205 D2-240

<img> This address can be specified as system data area.

| Device | Bit Address | | Word Address | | 32 bits | Remarks |
|--------|-------------|---------|--------------|---------|---------|---------|
| | Japanese | English | Japanese | English | | |
| Input Points | I000 - I477 | X000 - X477 | R40400 - R40423 | V40400 - V40423 | | OCT 8 *1 |
| Output Points | Q000 - Q477 | Y000 - Y477 | R40500 - R40523 | V40500 - V40523 | | OCT 8 |
| Control Relays | M000 - M377 | C000 - C377 | R40600 - R40617 | V40600 - V40617 | | OCT 8 |
| Special Relays | SP000 - SP137 SP540 - SP617 | | R41200 - R41205 R41226 - R41230 | V41200 - V41205 V41226 - V41230 | | OCT 8 |
| Timers (Contact) | T000 - T177 | | R41100 - R41107 | V41100 - V41107 | | OCT 8 |
| Counters (Contact) | C000 - C177 | CT000 - CT177 | R41140 - R41147 | V41140 - V41147 | | OCT 8 |
| Stages | S000 - S777 | | R41000 - R41037 | V41000 - V41037 | L / H | OCT 8 |
| Timer Current Values | - | | R00000 - R00177 | V00000 - V00177 | | OCT 8 |
| Counter Current Values | - | | R01000 - R01177 | V01000 - V01177 | | OCT 8 |
| User Data Words | - | | R02000 - R03777 | V02000 - V03777 | | OCT 8 Bit 15 |
| User Data Words (Non-Volatile) | - | | R04000 - R04377 | V04000 - V04377 | | OCT 8 Bit 15 |
| System Parameters | - | | R07620 - R07637 R07746 - R07777 | V07620 - V07637 V07746 - V07777 | | OCT 8 Bit 15 |

*1 When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

NOTE
• Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

## 5.4 DL205 D2-250-1

☐☐☐☐ This address can be specified as system data area.

| Device | Bit Address | | Word Address | | 32 bits | Remarks |
|---|---|---|---|---|---|---|
| | Japanese | English | Japanese | English | | |
| Input Points | I000 - I777 | X000 - X777 | R40400 - R40437 | V40400 - V40437 | | [oct 8] *1 |
| Output Points | Q000 - Q777 | Y000 - Y777 | R40500 - R40537 | V40500 - V40537 | | [oct 8] |
| Control Relays | M0000 - M1777 | C0000 - C1777 | R40600 - R40677 | V40600 - V40677 | | [oct 8] |
| Special Relays | SP000 - SP777 | | R41200 - R41237 | V41200 - V41237 | | [oct 8] |
| Timers (Contact) | T000 - T377 | | R41100 - R41117 | V41100 - V41117 | | [oct 8] |
| Counters (Contact) | C000 - C177 | CT000 - CT177 | R41140 - R41147 | V41140 - V41147 | | [oct 8] |
| Stages | S0000 - S1777 | | R41000 - R41077 | V41000 - V41077 | ⌈L / H⌉ | [oct 8] |
| Timer Current Values | - | | R00000 - R00377 | V00000 - V00377 | | [oct 8] |
| Counter Current Values | - | | R01000 - R01177 | V01000 - V01177 | | [oct 8] |
| User Data Words | - | | R01400 - R07377 R10000 - R17777 | V01400 - V07377 V10000 - V17777 | | [oct 8] [Bit 15] |
| System Parameters*2 | - | | R07400 - R07777 R36000 - R37777 | V07400 - V07777 V36000 - V37777 | | [oct 8] [Bit 15] |

*1  When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

*2  R07400 to R07777 (Japanese) and V07400 to V07777 (English) cannot be assigned for system data area.

| NOTE | • Please refer to the GP-Pro EX Reference Manual for system data area. |
|---|---|

　　Cf.　GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.

　　☞ "Manual Symbols and Terminology"

## 5.5    DL205  D2-260

☐☐☐☐  This address can be specified as system data area.

| Device | Bit Address | | Word Address | | 32 bits | Remarks |
| --- | --- | --- | --- | --- | --- | --- |
| | Japanese | English | Japanese | English | | |
| Input Points | I0000 - I1777 | X0000 - X1777 | R40400 - R40477 | V40400 - V40477 | | ⊙oct⁸ *1 |
| Output Points | Q0000 - Q1777 | Y0000 - Y1777 | R40500 - R40577 | V40500 - V40577 | | ⊙oct⁸ |
| Remote Input | GI0000 - GI3777 | GX0000 - GX3777 | R40000 - R40177 | V40000 - V40177 | | ⊙oct⁸ *1 |
| Remote Output | GQ0000 - GQ3777 | GY0000 - GY3777 | R40200 - R40377 | V40200 - V40377 | | ⊙oct⁸ |
| Control Relays | M0000 - M3777 | C0000 - C3777 | R40600 - R40777 | V40600 - V40777 | | ⊙oct⁸ |
| Special Relays | SP000 - SP777 | | R41200 - R41237 | V41200 - V41237 | | ⊙oct⁸ |
| Timers (Contact) | T000 - T377 | | R41100 - R41117 | V41100 - V41117 | | ⊙oct⁸ |
| Counters (Contact) | C000 - C377 | CT000 - CT377 | R41140 - R41157 | V41140 - V41157 | [L/H] | ⊙oct⁸ |
| Stages | S0000 - S1777 | | R41000 - R41077 | V41000 - V41077 | | ⊙oct⁸ |
| Timer Current Values | - | | R00000 - R00377 | V00000 - V00377 | | ⊙oct⁸ |
| Counter Current Values | - | | R01000 - R01377 | V01000 - V01377 | | ⊙oct⁸ |
| User Data Words | - | | R00400 - R00777<br>R01400 - R07377<br>R10000 - R35777 | V00400 - V00777<br>V01400 - V07377<br>V10000 - V35777 | | ⊙oct⁸<br>Bit15 |
| System Parameters*2 | - | | R07400 - R07777<br>R36000 - R37777 | V07400 - V07777<br>V36000 - V37777 | | ⊙oct⁸<br>Bit15 |

*1    When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

*2    R07400 to R07777 (Japanese) and V07400 to V07777 (English) cannot be assigned for system data area.

NOTE
• Please refer to the GP-Pro EX Reference Manual for system data area.
  Cf.  GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.
  ☞ "Manual Symbols and Terminology"

## 5.6    DL405  D4-430

This address can be specified as system data area.

| Device | Bit Address | Word Address | 32bits | Remarks |
|---|---|---|---|---|
| Input Points | X000 - X477 | V40400 - V40423 | | OCT 8 *1 |
| Output Points | Y000 - Y477 | V40500 - V40523 | | OCT 8 |
| Remote Input | GX000 - GX777 | V40000 - V40037 | | OCT 8 |
| Control Relays | C000 - C737 | V40600 - V40635 | | OCT 8 |
| Special Relays | SP000 - SP137<br>SP320 - SP617 | V41200 - V41205<br>V41215 - V41230 | | OCT 8 |
| Timers (Contact) | T000 - T177 | V41100 - V41107 | | OCT 8 |
| Counters (Contact) | CT000 - CT177 | V41140 - V41147 | L / H | OCT 8 |
| Stages | S000 - S577 | V41000 - V41027 | | OCT 8 |
| Timer Current Values | - | V00000 - V00177 | | OCT 8 |
| Counter Current Values | - | V01000 - V01177 | | OCT 8 |
| User Data Words | - | V01400 - V07377 | | OCT 8 Bit 15 |
| System Parameters | - | V07400 - V07777 | | OCT 8 Bit 15 |

*1    When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

NOTE

• Please refer to the GP-Pro EX Reference Manual for system data area.
    Cf.   GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.

    ☞ "Manual Symbols and Terminology"

## 5.7     DL405  D4-440

This address can be specified as system data area.

| Device | Bit Address | Word Address | 32bits | Remarks |
|---|---|---|---|---|
| Input Points | X000 - X477 | V40400 - V40423 | | [oct 8] *1 |
| Output Points | Y000 - Y477 | V40500 - V40523 | | [oct 8] |
| Remote Input | GX0000 - GX1777 | V40000 - V40077 | | [oct 8] *1 |
| Control Relays | C0000 - C1777 | V40600 - V40677 | | [oct 8] |
| Special Relays | SP000 - SP137<br>SP320 - SP717 | V41200 - V41205<br>V41215 - V41234 | | [oct 8] |
| Timers (Contact) | T000 - T377 | V41100 - V41117 | [L / H] | [oct 8] |
| Counters (Contact) | CT000 - CT177 | V41140 - V41147 | | [oct 8] |
| Stages | S0000 - S1777 | V41000 - V41077 | | [oct 8] |
| Timer Current Values | - | V00000 - V00377 | | [oct 8] |
| Counter Current Values | - | V01000 - V01177 | | [oct 8] |
| User Data Words | - | V01400 - V07377<br>V10000 - V17777 | | [oct 8]<br>[Bit 15] |
| System Parameters*2 | - | V00700 - V00737<br>V07400 - V07777 | | [oct 8]<br>[Bit 15] |

*1    When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

*2    V07400 to V07777 cannot be assigned for system data area.

NOTE

• Please refer to the GP-Pro EX Reference Manual for system data area.

  Cf.   GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.

  ☞ "Manual Symbols and Terminology"

## 5.8 　　　DL405　D4-450

This address can be specified as system data area.

| Device | Bit Address | Word Address | 32bits | Remarks |
|---|---|---|---|---|
| Input Points | X0000 - X1777 | V40400 - V40477 | | OCT **8** *1 |
| Output Points | Y0000 - Y1777 | V40500 - V40577 | | OCT **8** |
| Remote Input | GX0000 - GX3777 | V40000 - V40177 | | OCT **8** *1 |
| Remote Output | GY0000 - GY3777 | V40200 - V40377 | | OCT **8** |
| Control Relays | C0000 - C3777 | V40600 - V40777 | | OCT **8** |
| Special Relays | SP000 - SP777 | V41200 - V41237 | | OCT **8** |
| Timers (Contact) | T000 - T377 | V41100 - V41117 | ⌐L / H⌐ | OCT **8** |
| Counters (Contact) | CT000 - CT377 | V41140 - V41157 | | OCT **8** |
| Stages | S0000 - S1777 | V41000 - V41077 | | OCT **8** |
| Timer Current Values | - | V00000 - V00377 | | OCT **8** |
| Counter Current Values | - | V01000 - V01377 | | OCT **8** |
| User Data Words | - | V01400 - V07377<br>V10000 - V36777 | | OCT **8**<br>Bit **15** |
| System Parameters[2] | - | V00400 - V00777<br>V07400 - V07777<br>V37000 - V37777 | | OCT **8**<br>Bit **15** |

*1 When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

*2 V07400 to V07777 cannot be assigned for system data area.

NOTE
• Please refer to the GP-Pro EX Reference Manual for system data area.
    Cf.   GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.

    ☞ "Manual Symbols and Terminology"

## 5.9 SU-5E

▭▭▭ This address can be specified as system data area.

| Device | Bit Address | Word Address | 32bits | Remarks |
|---|---|---|---|---|
| Input Points | I000 - I477 | R40400 - R40423 | | [OCT 8] *1 |
| Output Points | Q000 - Q477 | R40500 - R40523 | | [OCT 8] |
| Remote Input | GI000 - GI777 | R40000 - R40037 | | [OCT 8] |
| Control Relays | M000 - M737 | R40600 - R40635 | | [OCT 8] |
| Special Relays | SP000 - SP137 SP320 - SP617 | R41200 - R41205 R41215 - R41230 | | [OCT 8] |
| Timers | T000 - T177 | R41100 - R41107 | | [OCT 8] |
| Counters | C000 - C177 | R41140 - R41147 | [L / H] | [OCT 8] |
| Stages | S000 - S577 | R41000 - R41027 | | [OCT 8] |
| Timer Current Values | - | R00000 - R00177 | | [OCT 8] |
| Counter Current Values | - | R01000 - R01177 | | [OCT 8] |
| Data Register | - | R01400 - R07377 | | [OCT 8] [Bit 15] |
| Special Register | - | R07400 - R07777 | | [OCT 8] [Bit 15] |

*1 When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

NOTE

• Please refer to the GP-Pro EX Reference Manual for system data area.

    Cf.    GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.

    ☞ "Manual Symbols and Terminology"

## 5.10    SU-6B

This address can be specified as system data area.

| Device | Bit Address | Word Address | 32bits | Remarks |
|---|---|---|---|---|
| Input Points | I000 - I477 | R40400 - R40423 | | ⌐ₒcₜ**8**⌐ *1 |
| Output Points | Q000 - Q477 | R40500 - R40523 | | ⌐ₒcₜ**8**⌐ |
| Remote Input | GI0000 - GI1777 | R40000 - R40077 | | ⌐ₒcₜ**8**⌐ *1 |
| Control Relays | M0000 - M1777 | R40600 - R40677 | | ⌐ₒcₜ**8**⌐ |
| Special Relays | SP000 - SP137<br>SP320 - SP717 | R41200 - R41205<br>R41215 - R41234 | | ⌐ₒcₜ**8**⌐ |
| Timers | T000 - T377 | R41100 - R41117 | ⌐L / H⌐ | ⌐ₒcₜ**8**⌐ |
| Counters | C000 - C177 | R41140 - R41147 | | ⌐ₒcₜ**8**⌐ |
| Stages | S0000 - S1777 | R41000 - R41077 | | ⌐ₒcₜ**8**⌐ |
| Timer Current Values | - | R00000 - R00377 | | ⌐ₒcₜ**8**⌐ |
| Counter Current Values | - | R01000 - R01177 | | ⌐ₒcₜ**8**⌐ |
| Data Register | - | R01400 - R07377<br>R10000 - R17777 | | ⌐ₒcₜ**8**⌐<br>⌐ᴮⁱᵗ**15**⌐ |
| Special Register*2 | - | R00700 - R00737<br>R07400 - R07777 | | ⌐ₒcₜ**8**⌐<br>⌐ᴮⁱᵗ**15**⌐ |

*1    When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

*2    R07400 to R07777 cannot be assigned for system data area.

NOTE

• Please refer to the GP-Pro EX Reference Manual for system data area.

   Cf.   GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"
• Please refer to the precautions on manual notation for icons in the table.

   ☞ "Manual Symbols and Terminology"

## 5.11 SU-5M / SU-6M

This address can be specified as system data area.

| Device | Bit Address | Word Address | 32bits | Remarks |
|--------|-------------|--------------|--------|---------|
| Input Points | I0000 - I1777 | R40400 - R40477 | | [oct 8] *1 |
| Output Points | Q0000 - Q1777 | R40500 - R40577 | | [oct 8] |
| Remote Input | GI0000 - GI3777 | R40000 - R40177 | | [oct 8] *1 |
| Remote Output | GQ0000 - GQ3777 | R40200 - R40377 | | [oct 8] |
| Control Relays | M0000 - M3777 | R40600 - R40777 | | [oct 8] |
| Special Relays | SP000 - SP777 | R41200 - R41237 | | [oct 8] |
| Timers | T000 - T377 | R41100 - R41117 | [L / H] | [oct 8] |
| Counters | C000 - C377 | R41140 - R41157 | | [oct 8] |
| Stages | S0000 - S1777 | R41000 - R41077 | | [oct 8] |
| Timer Current Values | - | R00000 - R00377 | | [oct 8] |
| Counter Current Values | - | R01000 - R01377 | | [oct 8] |
| Data Register | - | R01400 - R07377 R10000 - R36777 | | [oct 8] [Bit 15] |
| Special Register*2 | - | R00400 - R00777 R07400 - R07777 R37000 - R37777 | | [oct 8] [Bit 15] |

*1    When a bit is written, the Display reads the corresponding word address of the External Device, activates a bit in the read word address, and returns it to the External Device.
There is a case that correct data cannot be written if a ladder program processes to write the word address while the Display is reading the data of the External Device and returning it.

*2    R07400 to R07777 cannot be assigned for system data area.

NOTE

• Please refer to the GP-Pro EX Reference Manual for system data area.

　Cf.   GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"

• Please refer to the precautions on manual notation for icons in the table.

☞ "Manual Symbols and Terminology"

# 6      Device Code and Address Code

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

## 6.1      Direct Logic05/Direct Logic06/DL205/DL405

| Device | Device Name | | Device Code (HEX) | Address Code |
| --- | --- | --- | --- | --- |
| | Japanese | English | | |
| Input Points | I/R | X/V | 0080 | Word Address |
| Output Points | Q/R | Y/V | 0081 | Word Address |
| Remote Input | GI/R | GX/V | 0082 | Word Address |
| Remote Output | GQ/R | GY/V | 0083 | Word Address |
| Control Relays | M/R | C/V | 0084 | Word Address |
| Special Relays | SP/R | SP/V | 0085 | Word Address |
| Timers (Contact) | T/R | T/V | 00E0 | Word Address |
| Counters (Contact) | C/R | CT/V | 00E1 | Word Address |
| Stages | S/R | S/V | 0004 | Word Address |
| Timer Current Values | R | V | 0060 | Word Address |
| Counter Current Values | R | V | 0061 | Word Address |
| User Data Words/System Parameters 1 (Address: 400 or more) | R | V | 0000 | Word Address |
| User Data Words/System Parameters 2 (Address: 1400 or more) | R | V | 0001 | Word Address |
| User Data Words/System Parameters 3 (Address: 7400 or more) | R | V | 0002 | Word Address |
| User Data Words/System Parameters 4 (Address: 10000 or more) | R | V | 0003 | Word Address |

## 6.2 KOSTAC SU Series

| Device | Device Name | Device Code (HEX) | Address Code |
|---|---|---|---|
| Input Points | I/R | 0080 | Word Address |
| Output Points | Q/R | 0081 | Word Address |
| Remote Input | GI/R | 0082 | Word Address |
| Remote Output | GQ/R | 0083 | Word Address |
| Control Relays | M/R | 0084 | Word Address |
| Special Relays | SP/R | 0085 | Word Address |
| Timers | T/R | 00E0 | Word Address |
| Counters | C/R | 00E1 | Word Address |
| Stages | S/R | 0004 | Word Address |
| Timer Current Values | R | 0060 | Word Address |
| Counter Current Values | R | 0061 | Word Address |
| Special Register (Address: 400 or more) | R | 0000 | Word Address |
| Data Register (Address: 1400 or more) | R | 0001 | Word Address |
| Special Register (Address: 7400 or more) | R | 0002 | Word Address |
| Special Register/Data Register (Address: 10000 or more) | R | 0003 | Word Address |

# 7 Error Messages

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

| Item | Description |
|---|---|
| No. | Error No. |
| Device Name | Name of External Device where error occurs. Device name is a title of External Device set with GP-Pro EX. (Initial value [PLC1]) |
| Error Message | Displays messages related to the error which occurs. |
| Error Occurrence Area | Displays IP address or device address of External Device where error occurs, or error codes received from External Device.<br><br>**NOTE**<br>• IP address is displayed such as "IP address (Decimal): MAC address (Hex)".<br>• Device address is displayed such as "Address: Device address".<br>• Received error codes are displayed such as "Decimal [Hex]". |

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 Manual" for details on the error messages common to the driver.

## ■ Error Code Unique for Driver

The table below shows Display's error codes and error codes that are acquired via MODBUS TCP.

| Error Code | Description |
|---|---|
| 0x01 | ILLEGAL FUNCTION |
| 0x02 | ILLEGAL DATA ADDRESS |
| 0x03 | ILLEGAL DATA VALUE |
| 0x04 | ILLEGAL RESPONSE LENGTH |