

Device/PLC Connection Manuals



About the Device/PLC Connection Manuals

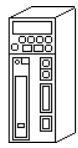

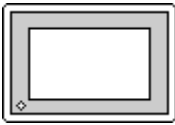
Prior to reading these manuals and setting up your device, be sure to read the "Important: Prior to reading the Device/PLC Connection manual" information. Also, be sure to download the "Preface for Trademark Rights, List of Units Supported, How to Read Manuals and Documentation Conventions" PDF file.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

14.2 Matsushita Electric Industrial Servo

14.2.1 System Structure

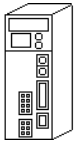

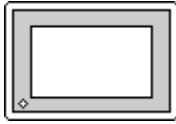
This subsection describes system configurations where the GP unit is connected to Matsushita Electric Industrial Co.'s servo.

■ MINAS-A Series

| Servo | Cable Diagram | Applicable Cable | GP/GLC/LT |
|---|--|---|---|
|  |  | |  |
| M□DA□□□□□□ ^{*1} | RS-232C (1:1) | DVOP1160 made by Matsushita Electric Industrial Co. | GP/GLC series LT Type C |
| | RS-232C (1:n) | DVOP1160 made by Matsushita Electric Industrial Co. | |

*1 □□□□□□ varies depending upon the servo types. For detailed information, refer to the manual or catalog of the servo used.

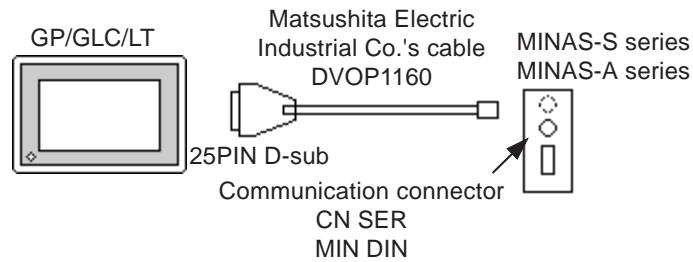
■ MINAS-S Series

| Servo | Cable Diagram | Applicable Cable | GP/GLC/LT |
|---|--|---|---|
|  |  | |  |
| MUDS□□□□□□ ^{*1} | RS-232C (1:1) | DVOP1160 made by Matsushita Electric Industrial Co. | GP/GLC series LT Type C |

*1 □□□□□□ varies depending upon the servo types. For detailed information, refer to the manual or catalog of the servo used.

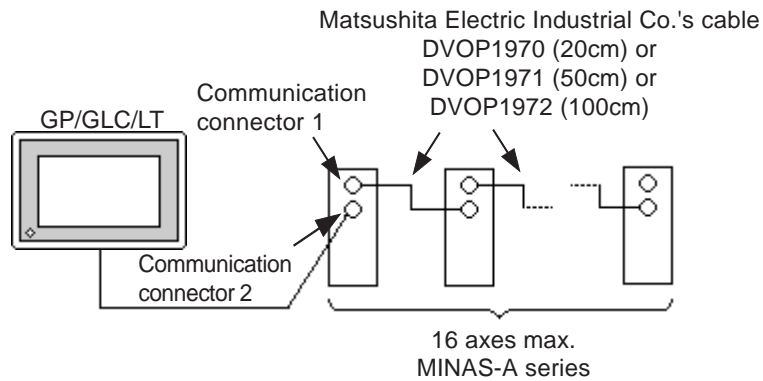
◆ Connections

- 1:1 connection



- Connect a MINAS-S series servo to the communication connector CN SER.
- Connect a MINAS-A series servo to the communication connector 2 CN SER.

- 1:n connection (MINAS-A series only)



- **In the case of 1:n connection, if the tag setup specifies that the parameter information on multiple servos is read or written on the same screen, it may take several seconds for display updating or other operations. If the parameter information from more than one servo is read out on the same screen, it will take, normally, approximately 0.5 seconds before the parameter information on each servo has been read out. It is recommended that the parameters for multiple servos be set on their respective screens. This will allow more efficient data checking and be useful for other purposes.**










14.2.2 Supported Devices

The following table shows the range of devices that are supported by the GP:

■ **MINAS-S/A Series**

 may be specified at the first address of the system area.

| Device | Bit Addresses | Word Addresses | Remarks |
|---|---------------|----------------|---|
| Driver model readout | ———— | 05_00 ~ 05_05 | *1 |
| Status readout (control mode) | ———— | 20_00 | Bit 15 *1 *4 |
| Status readout (status) | ———— | 20_21 | Bit 15 *1 *4 |
| Command pulse counter readout | ———— | 21_00 | Bit 31 *1 *3 L/H |
| FB pulse counter readout | ———— | 22_00 | Bit 31 *1 *3 L/H |
| Current speed readout | ———— | 24_00 | Bit 15 *1 |
| Current torque output readout | ———— | 25_00 | Bit 15 *1 |
| Current deviation counter readout | ———— | 26_00 | Bit 31 *1 *3 L/H |
| Input signal readout | ———— | 27_00 | Bit 31 *1 *3 L/H |
| Output signal readout (data) | ———— | 28_00 | Bit 31 *1 *3 L/H |
| Output signal readout (warning data) | ———— | 28_01 | Bit 15 *1 |
| Current speed readout | ———— | 29_00 | Bit 15 *1 |
| Current torque readout | ———— | 29_01 | Bit 15 *1 |
| Current deviation counter readout | ———— | 29_02 | Bit 31 *1 *3 L/H |
| Status, input signal, and output signal readout (control mode) | ———— | 2A_00 | Bit 15 *1 *4 |
| Status, input signal, and output signal readout (status) | ———— | 2A_-01 | Bit 15 *1 *4 |
| Status, input signal, and output signal readout (input signal) | ———— | 2A_02 | Bit 31 *1 *3 L/H |
| Status, input signal, and output signal readout (output signal) | ———— | 2A_03 | Bit 31 *1 *3 L/H |
| Status, input signal, and output signal readout (warning data) | ———— | 2A_04 | Bit 15 *1 |
| Absolute encoder readout (encoder ID) | ———— | 2D_00 | Bit 15 *1 *6 |
| Absolute encoder readout (status) | ———— | 2D_01 | Bit 15 *1 *6 |
| Absolute encoder readout (1-rotation data) | ———— | 2D_02 | Bit 31 *1 *5 *6 L/H |
| Absolute encoder readout (multi-rotation data) | ———— | 2D_03 | Bit 15 *1 *6 |
| Individual readout/write of parameter | ———— | 80_00 ~ 80_7F | Bit F *1 |
| Write of parameter to EEPROM | ———— | 84_00 | *2 *7 |
| Current alarm data readout | ———— | 90_00 | Bit 15 *1 *4 |
| Individual readout of user alarm history (history No.) | ———— | 91_00 ~ 91_0F | Bit F *1 *4 |
| Individual readout of user alarm history (alarm No.) | ———— | 91_11 ~ 91_1F | Bit F *1 *4 |
| Batch readout of user alarm history | ———— | 92_01 ~ 92_14 | Bit 15 *1 *4 |

| Device | Bit Addresses | Word Addresses | Remarks |
|--|---------------|-----------------|---|
| Clearing of user alarm history (also in EEPROM) | ————— | 93_00 | *2 *7 |
| Clearing of alarm | ————— | 94_00 | *2 *7 |
| Clearing of absolute encoder | ————— | 9B_00 | *2 *6 *7 |
| Individual readout of user parameter (parameter value) | ————— | B0_00 ~ B0_07F |  *1 |
| Individual readout of user parameter (MIN value) | ————— | B0_100 ~ B0_17F |  *1 |
| Individual readout of user parameter (MAX value) | ————— | B0_200 ~ B0_27F |  *1 |
| Individual readout of user parameter (attribute) | ————— | B0_300 ~ B0_37F |  *1 |
| Individual readout of user parameter page (parameter value) | ————— | B1_000 ~ B1_07F |  *1 |
| User parameter page readout (MIN value) | ————— | B1_010 ~ B1_17F |  *1 |
| User parameter page readout (MAX value) | ————— | B1_020 ~ B1_27F |  *1 |
| User parameter page readout (attribute) | ————— | B1_030 ~ B1_37F |  *1 |
| User parameter page write | ————— | B2_000 ~ B2_07F |  *2 |

*1 Exclusively for readout

*2 Exclusively for write

*3 32-bit device

*4 Handled as byte data by the AC servo, but as word data by the GP.

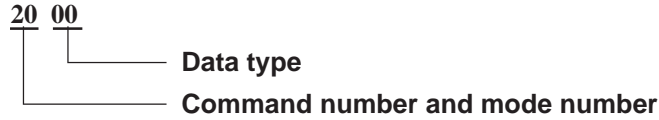
*5 Used as 24-bit data by the AC servo, but as a double-word device by the GP.

*6 Only the MINAS-A series is supported.

*7 Writing arbitrary data executes the command.



- Assign the parameters and other similar AC servo data to device codes and addresses as follows. For the command numbers and mode numbers, refer to “Lists of MINAS-A and MINAS-S series command numbers and mode numbers.”



- When creating part or tag on the screen creation software, specify the controller unit number when entering an address. If not, the last entered unit number is assumed. (The default value at startup is 00.)

00 / 20_ 00

Data type

Command number and mode number

Servo ID number

Enter the servo ID number you want to specify.

■ Lists of MINAS-A and MINAS-S series command numbers and mode numbers

| AC Servo Motor Driver | | GP/GLC/LT | Description | Item | R/W | Particulars | |
|-----------------------|---------|--------------------------------|---|--|------------------|-------------|-------|
| Command | Mode | Device | | | | | |
| 0 | 5 | 05_00 ~ 05_05 | Driver model readout | ——— | R | *1 | |
| 2 | 0 | 20_00 | Status readout | Control mode | R | *2 *5 | |
| | | 20_21 | | Status | R | *2 *5 | |
| | 1 | 21_00 | Command pulse counter readout | ——— | R | *3 | |
| | 2 | 22_00 | FB pulse counter readout | ——— | R | *3 | |
| | 4 | 24_00 | Current speed readout | ——— | R | *1 | |
| | 5 | 25_00 | Current torque output readout | ——— | R | *1 | |
| | 6 | 26_00 | Current deviation counter readout | ——— | R | *3 | |
| | 7 | 27_00 | Input signal readout | ——— | R | *3 | |
| | 8 | 8 | 28_00 28_01 | Output signal readout | Data | R | *3 *5 |
| | | | | | Warning data | R | *1 *5 |
| | 9 | 9 | 29_00 29_01 29_02 | Current speed/torque/deviation counter readout | Data (speed) | R | *1 *5 |
| | | | | | Data (torque) | R | *1 *5 |
| | | | | | Data (deviation) | R | *3 *5 |
| | A | A | 2A_00 2A_01 2A_02 2A_03 2A_04 | Status/input signal/output signal readout | Control mode | R | *2 *5 |
| | | | | | Status | R | *2 *5 |
| | | | | | Input signal | R | *3 *5 |
| | | | | | Output signal | R | *3 *5 |
| | | | | | Warning data | R | *1 *5 |
| | D | D | 2D_00 2D_01 2D_02 2D_03 | Absolute encoder readout | Encoder ID | R | *1 *5 |
| | | | | | Status | R | *1 *5 |
| 1-rotation data | | | | | R | *4 *5 | |
| Multi-rotation data | | | | | R | *1 *5 | |
| 8 | 0 and 1 | 80_00 ~ 80_7F | Individual readout/write of parameter | ——— | R/W | *1 *8 | |
| | 4 | 84_00 | Write of parameter to EEPROM | ——— | W | *1 | |
| 9 | 0 | 90_00 | Current alarm data readout | ——— | R | *2 | |
| | 1 | 91_00 ~ 91_0F 91_11 ~ 91_1F | Individual readout of user alarm history | History No. | R | *2 *5 | |
| | | | | Alarm No. | R | *2 *5 | |
| | 2 | 92_01 ~ 92_14 | Batch readout of user alarm history | ——— | R | *2 | |
| | 3 | 93_00 | Clearing of user alarm history | ——— | W | *1 | |
| | 4 | 94_00 | Clearing of alarm | ——— | W | *1 | |
| B | 9B_00 | Clearing of absolute encoder | ——— | W | *1 *11 | | |

| AC Servo Motor Driver | | GP/GLC/LT | Description | Item | R/W | Particulars |
|-----------------------|------|-----------------|--------------------------------------|-----------------|-----|-------------|
| Command | Mode | Device | | | | |
| B | 0 | B0_00 ~ B0_07F | Individual readout of user parameter | Parameter value | R | *1 *7 *9 |
| | | B0_100 ~ B0_17F | | MIN value | R | *1 *7 *9 |
| | | B0_200 ~ B0_27F | | MAX value | R | *1 *7 *9 |
| | | B0_300 ~ B0_37F | | Attribute | R | *1 *7 *9 |
| | 1 | B1_000 ~ B1_07F | User parameter page readout | Parameter value | R | *1 *7 *10 |
| | | B1_010 ~ B1_17F | | MIN value | R | *1 *7 *10 |
| | | B1_020 ~ B1_27F | | MAX value | R | *1 *7 *10 |
| | | B1_030 ~ B1_37F | | Attribute | R | *1 *7 *10 |
| | 2 | B2_000 ~ B2_07F | User parameter page write | — | W | *1 *8 |

*1 Word device

*2 Used as byte data by the AC servo motor driver, but as a double-word device by the GP.

*3 Double-word device

*4 Used as 24-bit data by the AC servo motor driver, but as a double-word device by the GP.

*5 The device names are same, but the device codes are different for each address.

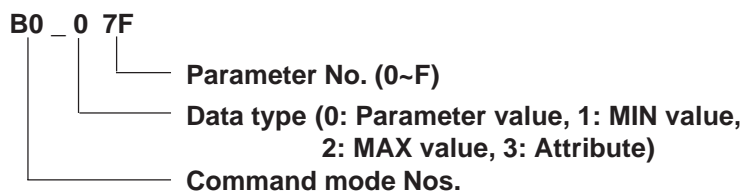
*6 Use the same command when reading out the driver model. Therefore, the data that can be read out from this device is the same as the driver model readout.

*7 For the parameter numbers and other detailed information, refer to the organization and list of parameters in the instruction manual for the AC servo driver.

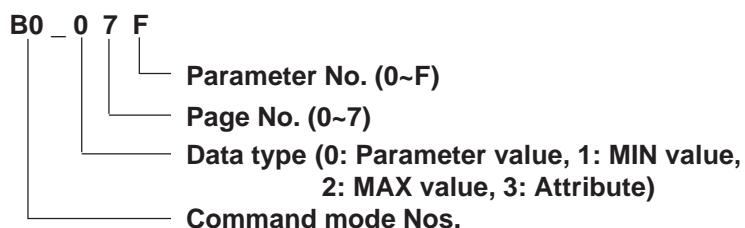
*8 Specify a device as follows:



*9 Specify a device as follows:



*10 Specify a device as follows:



*11 Only the MINAS-A series is supported.

14.2.3 Environment Setup

The following tables show the communication settings for the servo and the corresponding settings for the GP/GLC/LT, which are recommended by Digital:

■ MINAS-A Series

| GP/GLC/LT Setup | | Servo Setup | |
|--------------------------------|----------------|--------------------------------|---------|
| Baud Rate | 19200bps | Baud Rate | 9600bps |
| Data Length | 8 bits (fixed) | _____ | _____ |
| Stop Bit | 1 bit (fixed) | _____ | _____ |
| Parity Bit | None (fixed) | _____ | _____ |
| Data Flow Control | ER Control | _____ | _____ |
| Communication Format (RS-232C) | RS-232C | _____ | _____ |
| Unit No. | 0 | ID Rotary Switch ^{*1} | 0 |

**1. Set the ID No. to 0.*

■ MINAS-S Series

| GP/GLC/LT Setup | | Servo Setup | |
|--------------------------------|----------------|-------------|---------|
| Baud Rate | 19200bps | Baud Rate | 9600bps |
| Data Length | 8 bits (fixed) | _____ | _____ |
| Stop Bit | 1 bit (fixed) | _____ | _____ |
| Parity Bit | None (fixed) | _____ | _____ |
| Data Flow Control | ER Control | _____ | _____ |
| Communication Format (RS-232C) | RS-232C | _____ | _____ |
| Unit No. | 0 | _____ | _____ |

14.2.4 Error Codes**■ Servo Error Codes**

An error code specific to the servo is displayed as "Host communication error (02:**:##)" in the lower left part of the GP screen. "**" stands for the error code specific to the servo, and "##" stands for the servo unit number where the error has occurred.

| Error No. | Description | Causes |
|-----------|---------------|---|
| 0x90 | RS485 error | The unit that has been specified in the 1:n connection cannot be found. |
| 0xA0 | Command error | A command that is not supported has been transmitted. |
| 0xC0 | Data error | The written data exceeds the specified range. |

