

DELTA Electronics

DVP Series

Computer Link Driver

Supported version

TOP Design Studio

V1.0 or higher



CONTENTS

We want to thank our customers who use the Touch Operation Panel.

1. System configuration [Page 2](#)

Describes the devices required for connection, the setting of each device, cables, and configurable systems.

2. External device selection [Page 3](#)

Select a TOP model and an external device.

3. TOP communication setting [Page 4](#)

Describes how to set the TOP communication.

4. External device setting [Page 9](#)

Describes how to set up communication for external devices.

5. Cable table [Page 11](#)

Describes the cable specifications required for connection.

6. Supported addresses [Page 12](#)

Refer to this section to check the addresses which can communicate with an external device.

1. System configuration

The system configuration of TOP and "Delta Electronics – DVP Series Computer Link" is as follows:

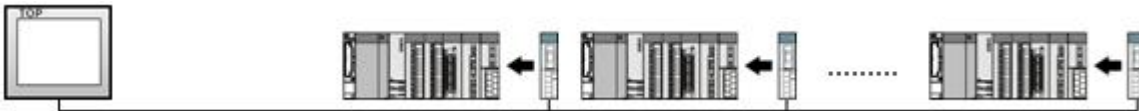
| Series | CPU | Link I/F | Communication method | System setting | Cable |
|------------|-----------|-------------------|----------------------|--|--------------------------------|
| DVP Series | DVP – ES | CPU built-in port | RS-232C | 3. TOP communication setting 4. External device setting | 5. Cable table |
| | DVP – ES2 | | RS-485 | | |

■ Connection configuration

- 1:1 (one TOP and one external device) connection – configuration which is possible in RS232C/422/485 communication.

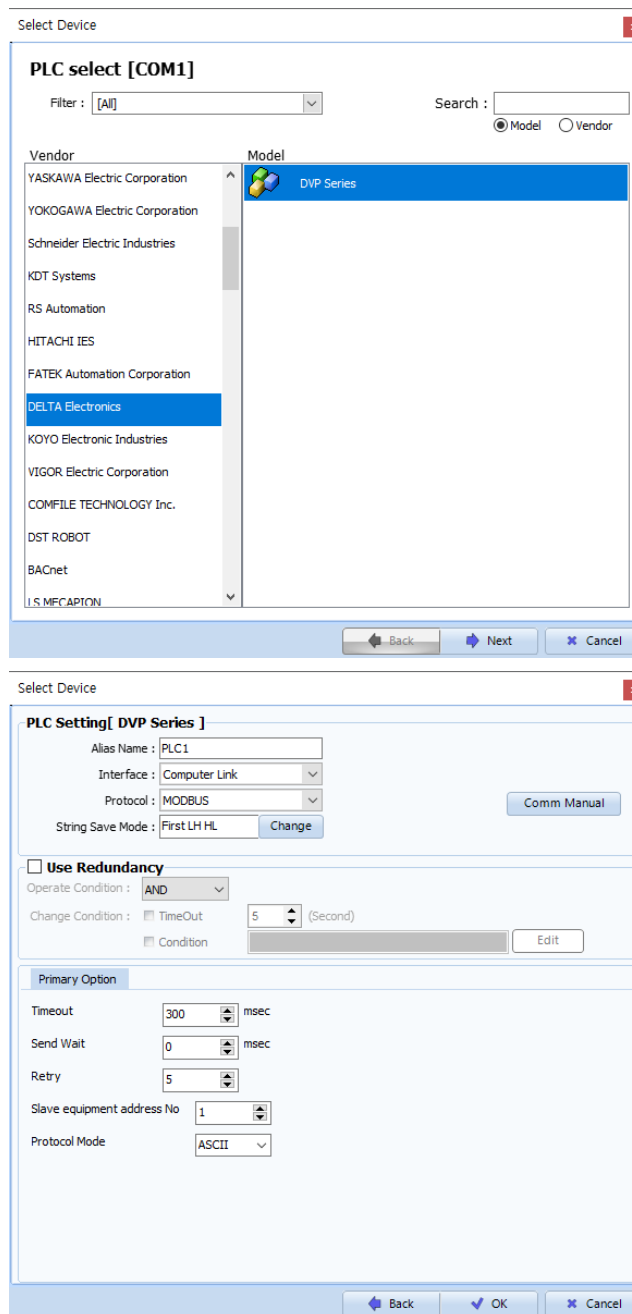


- 1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422/485 communication.



2. External device selection

- Select a TOP model and a port, and then select an external device.



| Settings | | Contents | | | | | | | | | |
|--------------------|---------------|--|-------|-----------|----------|------------|---------------|--------|--------------------|--|--------------|
| TOP | Model | Check the TOP display and process to select the touch model. | | | | | | | | | |
| External device | Vendor | Select the vendor of the external device to be connected to TOP. Select "DELTA Electronics". | | | | | | | | | |
| | PLC | Select an external device to connect to TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>DVP Series</td> <td>Computer Link</td> <td>Modbus</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Supported Protocol</th> </tr> </thead> <tbody> <tr> <td>MODBUS ASCII</td> <td>MODBUS RTU</td> </tr> </tbody> </table> Please check the system configuration in Chapter 1 to see if the external device you want to connect is a model whose system can be configured. | Model | Interface | Protocol | DVP Series | Computer Link | Modbus | Supported Protocol | | MODBUS ASCII |
| Model | Interface | Protocol | | | | | | | | | |
| DVP Series | Computer Link | Modbus | | | | | | | | | |
| Supported Protocol | | | | | | | | | | | |
| MODBUS ASCII | MODBUS RTU | | | | | | | | | | |

3. TOP communication setting

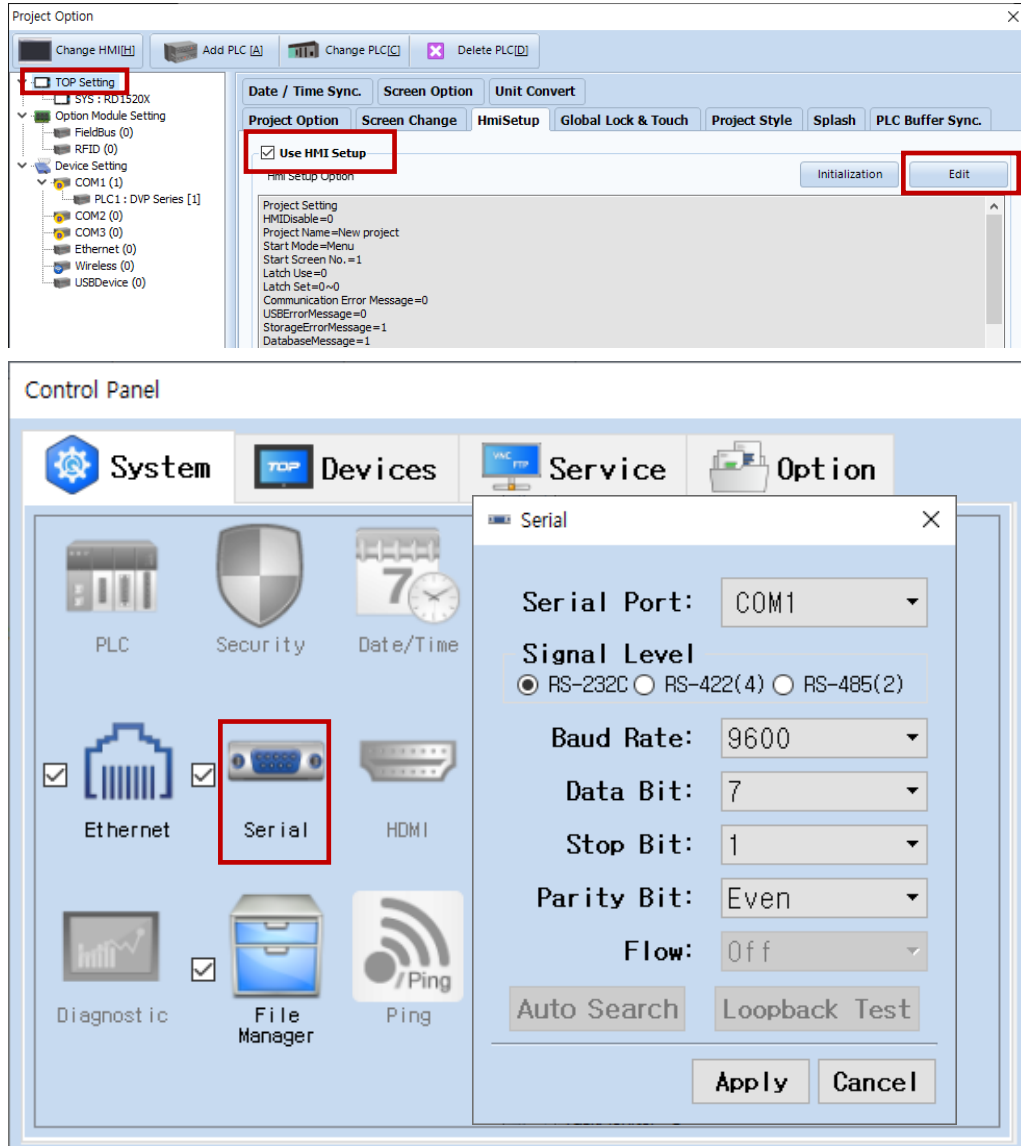
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [Project Option > "Use HMI Setup" Check > Edit > Serial]

– Set the TOP communication interface in TOP Design Studio.



| Items | TOP | External device | Remarks |
|---------------------|-----|-------------------|---------|
| Signal Level (port) | | RS-232C RS-485 | |
| Baud Rate | | 9600 | |
| Data Bit | | 7 | |
| Stop Bit | | 1 | |
| Parity Bit | | Even | |

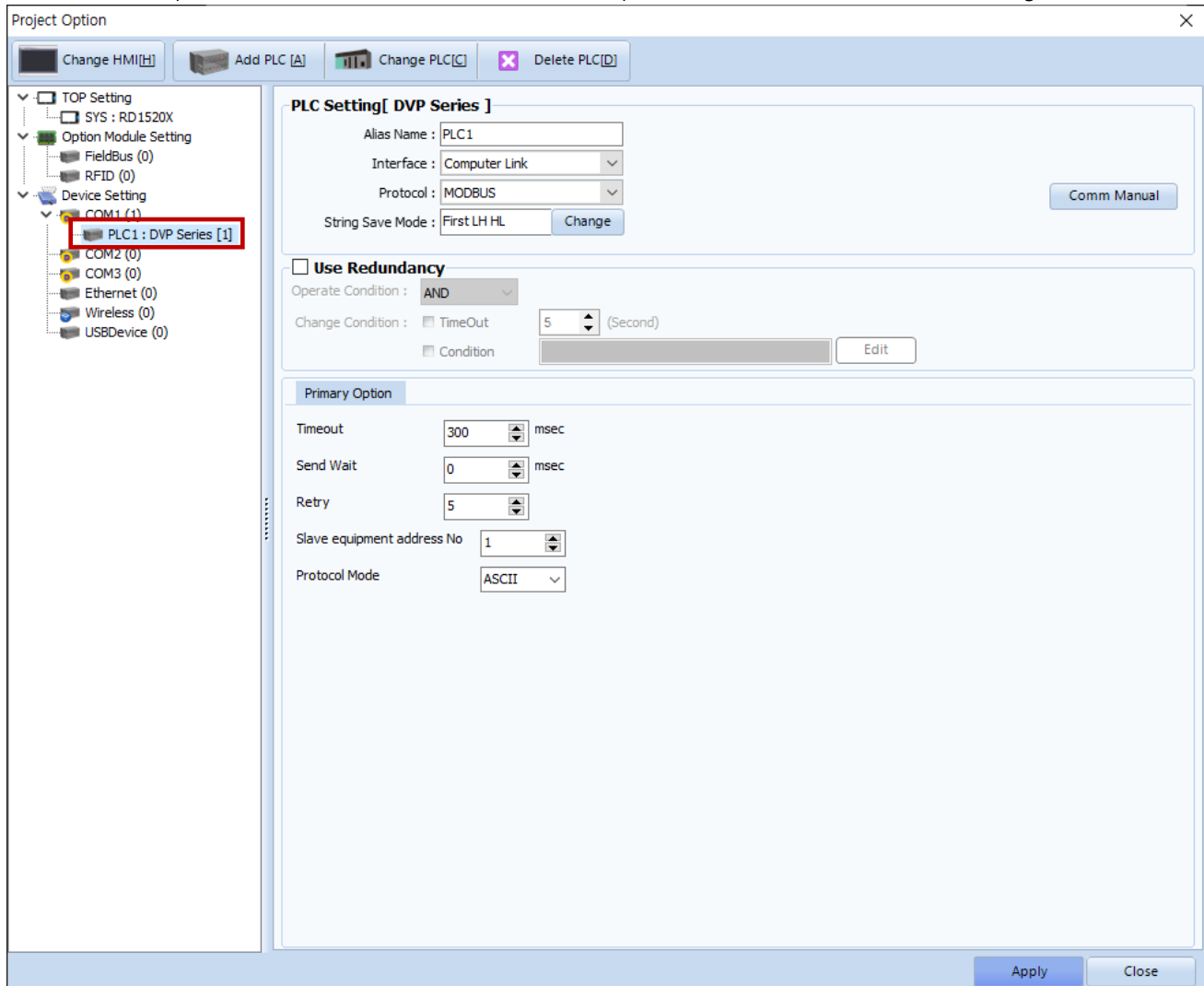
* The above settings are examples recommended by the company.

| Items | Description |
|--------------|---|
| Signal Level | Select the serial communication method between the TOP and an external device. |
| Baud Rate | Select the serial communication speed between the TOP and an external device. |
| Data Bit | Select the serial communication data bit between the TOP and an external device. |
| Stop Bit | Select the serial communication stop bit between the TOP and an external device. |
| Parity Bit | Select the serial communication parity bit check method between the TOP and an external device. |

(2) Communication option setting

■ [Project > Project Property > Device Setting > COM > "PLC1 : DVP Series"]

– Set the options of the DELTA Electronics – DVP Series Computer Link communication driver in TOP Design Studio.

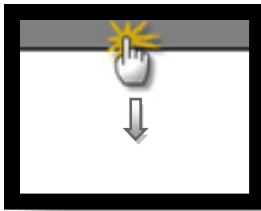


| Items | Settings | Remarks |
|----------------------------|---|--|
| Interface | Select "Computer Link". | Refer to "2. External device selection". |
| Protocol | Select "Modbus". | |
| TimeOut (ms) | Set the time for the TOP to wait for a response from an external device. | |
| SendWait (ms) | Set the waiting time between TOP's receiving a response from an external device and sending the next command request. | |
| Slave equipment address No | Enter the prefix number of an external device (Slave). | |
| Protocol Mode | Select the protocol mode. | |

3.2. Communication setting in TOP

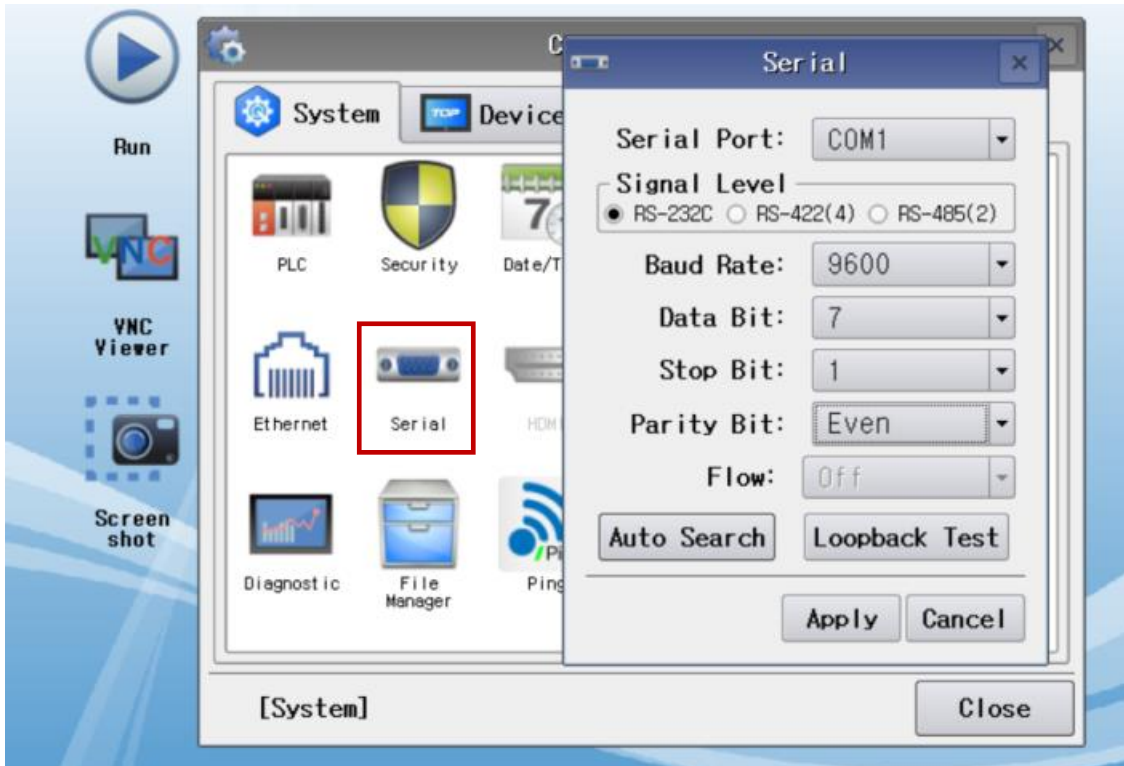
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

- [Main Screen > Control Panel > Serial]



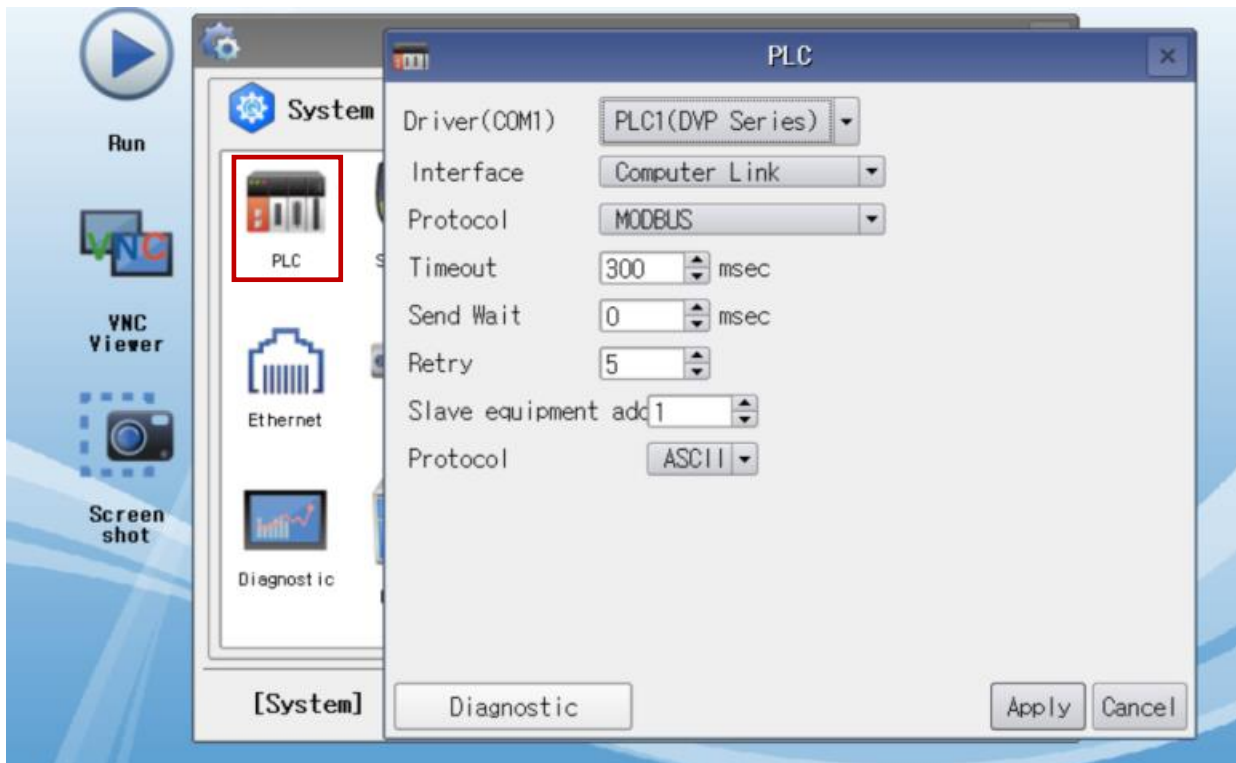
| Items | TOP | External device | Remarks |
|---------------------|-----|-------------------|---------|
| Signal Level (port) | | RS-232C RS-485 | |
| Baud Rate | | 9600 | |
| Data Bit | | 7 | |
| Stop Bit | | 1 | |
| Parity Bit | | Even | |

* The above settings are setting examples recommended by the company.

| Items | Description |
|--------------|---|
| Signal Level | Select the serial communication method between the TOP and an external device. |
| Baud Rate | Select the serial communication speed between the TOP and an external device. |
| Data Bit | Select the serial communication data bit between the TOP and an external device. |
| Stop Bit | Select the serial communication stop bit between the TOP and an external device. |
| Parity Bit | Select the serial communication parity bit check method between the TOP and an external device. |

(2) Communication option setting

■ [Main Screen > Control Panel > PLC]



| Items | Settings | Remarks |
|----------------------------|---|--|
| Interface | Select "Computer Link". | Refer to "2. External device selection". |
| Protocol | Select "Modbus". | Refer to "2. External device selection". |
| TimeOut (ms) | Set the time for the TOP to wait for a response from an external device. | |
| SendWait (ms) | Set the waiting time between TOP's receiving a response from an external device and sending the next command request. | |
| Slave equipment address No | Enter the prefix number of an external device (Slave). | |
| Protocol Mode | Select the protocol mode. | |

3.3 Communication diagnostics

- Check the interface setting status between the TOP and an external device.
 - Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
 - Check if the COM port settings you want to use in [Control Panel > Serial] are the same as those of the external device.

- Diagnosis of whether the port communication is normal or not
 - Touch "Communication diagnostics" in [Control Panel > PLC].
 - The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

| | |
|-----------------------|--|
| OK | Communication setting normal |
| Time Out Error | Communication setting abnormal - Check the cable, TOP, and external device setting status. (Reference: Communication diagnostics sheet) |

- Communication diagnostics sheet
 - If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

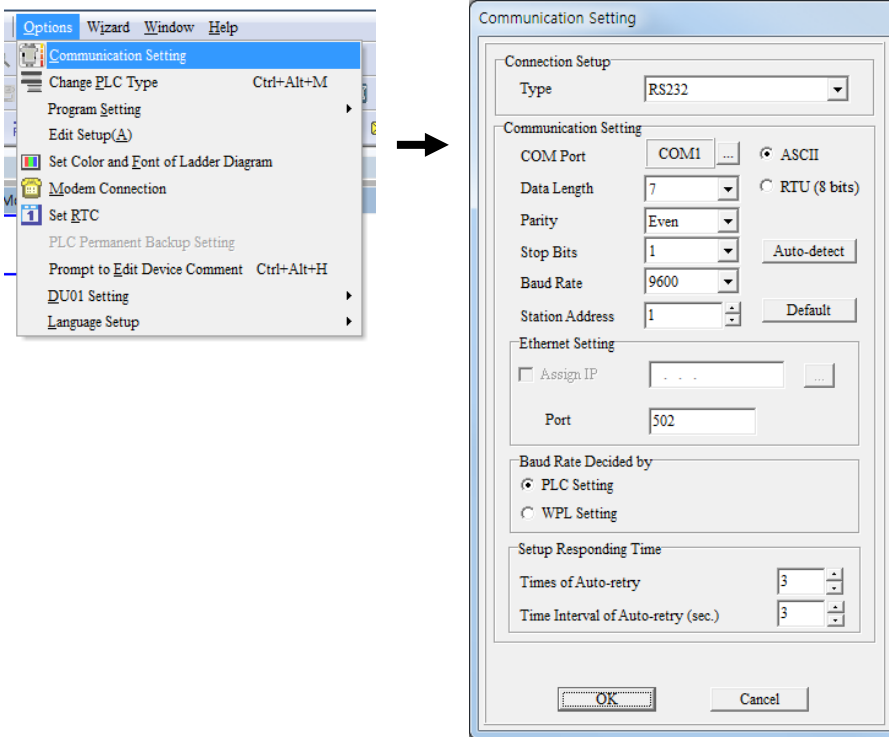
| Items | Contents | Check | | Remarks | |
|----------------------|---------------------------------------|---------------------------|---|--|----|
| System configuration | How to connect the system | OK | NG | 1. System configuration | |
| | Connection cable name | OK | NG | | |
| TOP | Version information | OK | NG | 2. External device selection 3. Communication setting | |
| | Port in use | OK | NG | | |
| | Driver name | OK | NG | | |
| | Other detailed settings | OK | NG | | |
| | Relative prefix | Project setting | OK | | NG |
| | | Communication diagnostics | OK | | NG |
| | Serial Parameter | Transmission Speed | OK | | NG |
| Data Bit | | OK | NG | | |
| Stop Bit | | OK | NG | | |
| Parity Bit | | OK | NG | | |
| External device | CPU name | OK | NG | 4. External device setting | |
| | Communication port name (module name) | OK | NG | | |
| | Protocol (mode) | OK | NG | | |
| | Setup Prefix | OK | NG | | |
| | Other detailed settings | OK | NG | | |
| | Serial Parameter | Transmission Speed | OK | | NG |
| | | Data Bit | OK | | NG |
| | | Stop Bit | OK | | NG |
| Parity Bit | | OK | NG | | |
| Check address range | OK | NG | 6. Supported addresses (For details, please refer to the PLC vendor's manual.) | | |

4. External device setting

Set as below using "DVP Series" Ladder Software "DELTA WPLsoft".

For more detailed setting method than that described in this example, refer to the PLC user manual.

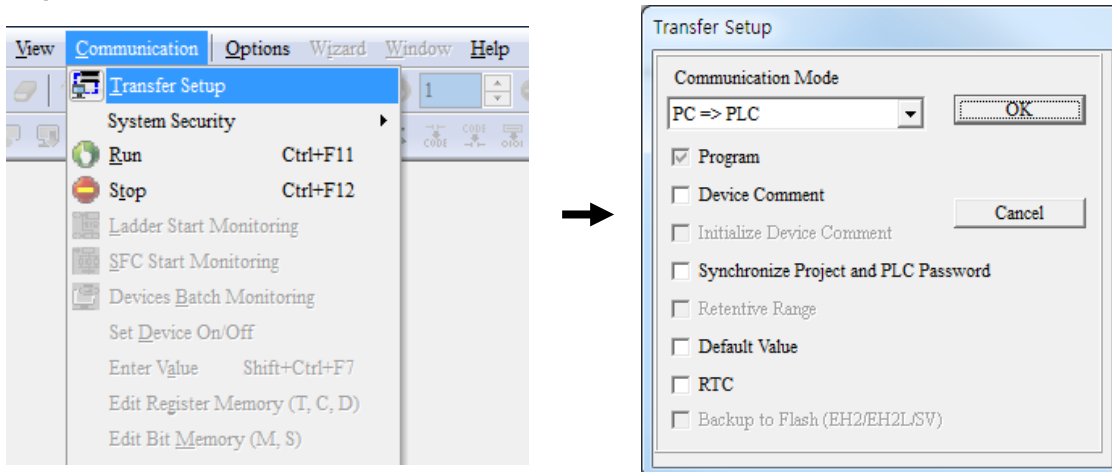
Step 1. Set up communication between WPLsoft and DVP Series PLC under [Options – Communication Setting] in the menu.



Step 2. Create a ladder program that sets communication parameters after creating a new project or reading PLC data. (Refer to example)

※ Initial value when the communication parameter setting program is not completed: ASCII, 9600 bps, 7 Data bit, 1 Stop bit, Even parity, Prefix 1

Step 3. After running [Communication – Transfer Setup] from the menu, the program transmits.



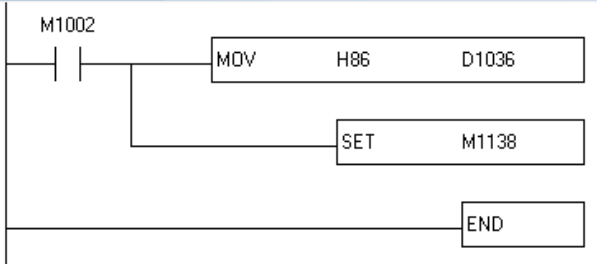
Step 4. Change the PLC action to RUN to apply the communication settings of the ladder program.

■ Communication setting ladder program example

For more detailed setting method than that described in this example, refer to the PLC user manual.

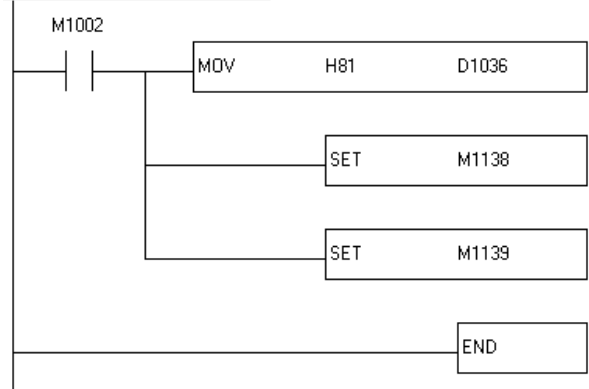
COM1 ASCII

(9600 bps, 7 Data bit, 1 Stop bit, Even parity)



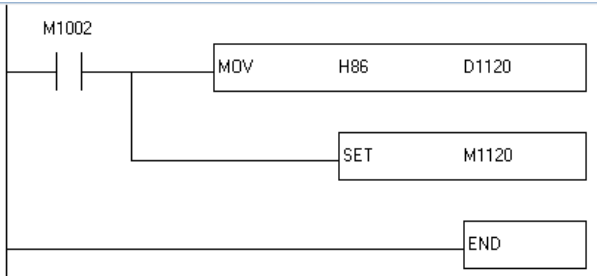
COM1 RTU

(9600 bps, 8 Data bit, 1 Stop bit, None parity)



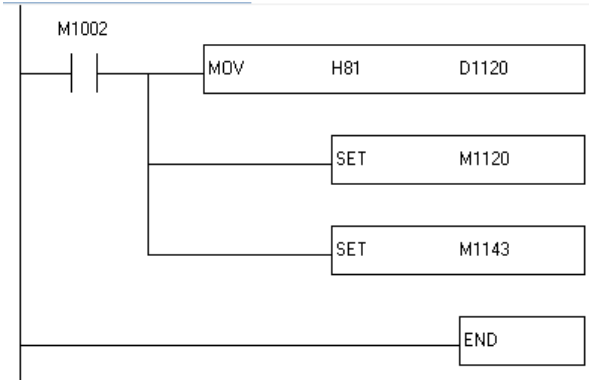
COM2 ASCII

(9600 bps, 7 Data bit, 1 Stop bit, Even parity)



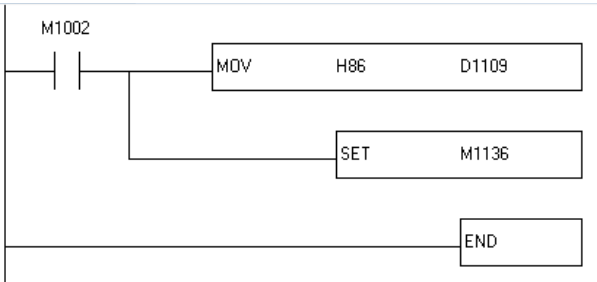
COM2 RTU

(9600 bps, 8 Data bit, 1 Stop bit, None parity)

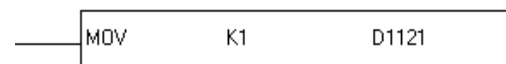


COM3 ASCII

(9600 bps, 7 Data bit, 1 Stop bit, Even parity)



PLC prefix setting

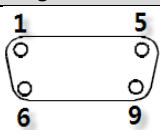
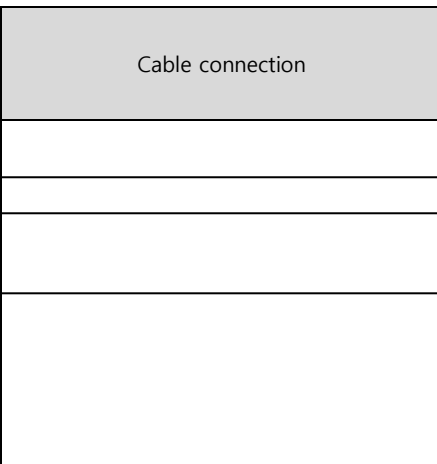



D1121: PLC communication address
K1: 1

5. Cable table

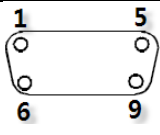
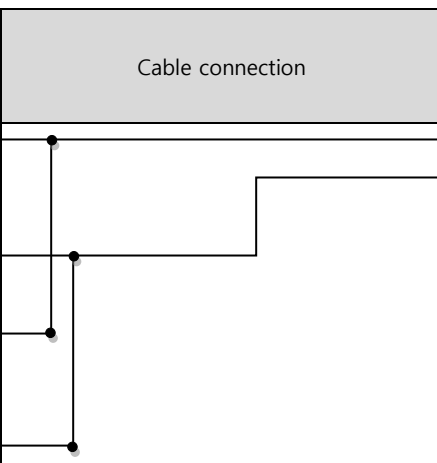
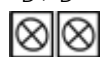
This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.
 (The cable diagram described in this section may differ from the recommendations of "DELTA Electronics")

■ RS-232C (1:1 connection)

| TOP | | | Cable connection | External device | | | |
|--|-------------|------------|--|-----------------|-------------|---|--|
| Pin arrangement* Note 1) | Signal name | Pin number | | Pin number | Signal name | Pin arrangement* Note 1) | |
|  <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p> | RD | 2 |  | 5 | TXD |  <p>mini-DIN connector</p> | |
| | SD | 3 | | 4 | RXD | | |
| | SG | 5 | | 8 | SG | | |
| | | | | | | | |
| | | | | | | | |


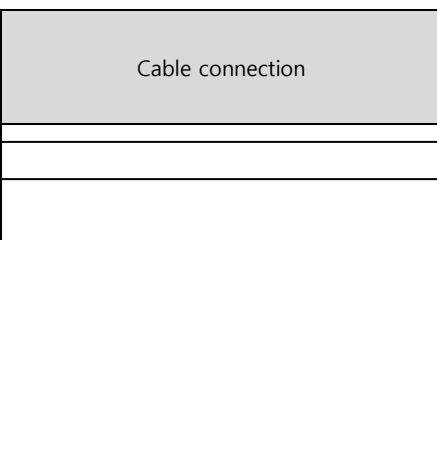

***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485 (1:1 connection)

| TOP | | | Cable connection | External device | | |
|--|-------------|------------|---|-----------------|--|----|
| Pin arrangement* Note 1) | Signal name | Pin number | | Signal name | Pin arrangement | |
|  <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p> | RDA | 1 |  | D+ | <p>D+ D-</p>  <p>Based on communication cable connector front, Terminal Block 2 Pin</p> | |
| | | | | 2 | | D- |
| | | | | 3 | | |
| | RDB | 4 | | | | |
| | | | | 5 | | |
| | SDA | 6 | | | | |
| | | | | 7 | | |
| | | | | 8 | | |
| | SDB | 9 | | | | |

***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

■ RS-485 (1:1 connection)

| TOP | | Cable connection | External device | |
|---|-------------|--|-----------------|--|
| Pin arrangement | Signal name | | Signal name | Pin arrangement |
|  <p>SG - +</p> | + |  | D+ | <p>D+ D-</p>  <p>Based on communication cable connector front, Terminal Block 2 Pin</p> |
| | - | | D- | |
| | SG | | | |

6. Supported addresses

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

| Device | TOP Address | | Effective Range | | Remarks | |
|-----------------|---------------|---------------|----------------------------|----------------------|---------|-------------|
| | Bit Address | Word Address | ES | ES2 | | |
| Step relay | S0000 ~ S1023 | —— | 0 ~ 127 | 0 ~ 1023 | | |
| Input relay | X000 ~ X357 | —— | 0 ~ 177 | 0 ~ 357 | | |
| Output relay | Y000 ~ Y357 | —— | 0 ~ 177 | 0 ~ 357 | | |
| Auxiliary relay | M0000 ~ M4095 | M0000 ~ M4080 | 0 ~ 1279 | 0 ~ 4095 | | |
| Timer | Contact | T000 ~ T255 | 0 ~ 127 | 0 ~ 255 | | |
| | Current | —— | | | | T0 ~ T255 |
| Counter | Contact | C000 ~ C255 | 0 ~ 127 235 ~ 255 | 0 ~ 199 200 ~ 255 | | |
| | Current | —— | | | | C000 ~ C199 |
| | | —— | | | | C200 ~ C255 |
| Data register | —— | D0000 ~ D4095 | 0 ~ 599 | 0 ~ 9999 | | |
| | —— | D4096 ~ D9999 | 1000 ~ 1143 1256 ~ 1311 | | | |