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## **DOP Series HMI Connection Manual**



# **DOP Series HMI Connection Manual**



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## Allen Bradley Ethernet IP(Controllogix, Compactlogix)

(Support Allen Bradley ControlLogix, CompactLogix series PLC)

### HMI Factory Setting:

Controller IP Address: 192.168.0.1

Controller COM Port: 44818 ([Note 4](#))

Controller Station Number: 0 (Slot Number) ([Note 5](#))

Control Area / Status Area: None / None

### Connection

Standard Jumper Cable / Network Cable without jumper (Auto-detected by HMI)

### Definition of PLC Read/Write Address

#### a. Registers

| Type          | Format                     | Read/Write Range        | Data Length | Note              |
|---------------|----------------------------|-------------------------|-------------|-------------------|
|               | File No.(f)<br>Word No.(n) |                         |             |                   |
| SINT Variable | SINTf:n                    | SINT0:0 - SINT999:65534 | Byte        | <a href="#">1</a> |
| INT Variable  | INTf:n                     | INT0:0 - INT999:65535   | Word        |                   |
| DINT Variable | DINTf:n                    | DINT0:0 - DINT999:65535 | Double Word |                   |
| BOOL Variable | BOOLf:n                    | BOOL0:0 - BOOL999:65504 | Double Word | <a href="#">2</a> |
| REAL Variable | REALf:n                    | REAL0:0 - REAL999:65535 | Double Word |                   |

#### b. Contacts

| Type          | Format                                   | Read/Write Range             | Note |
|---------------|--|------------------------------|------|
|               | File No.(f)<br>Word No.(n)<br>Bit No.(b) |                              |      |
| SINT Variable | SINTf:n/b                                | SINT0:0/0 - SINT999:65535/7  |      |
| INT Variable  | INTf:n/b                                 | INT0:0/0 - INT999:65535/15   |      |
| DINT Variable | DINTf:n/b                                | DINT0:0/0 - DINT999:65535/31 |      |
| BOOL Variable | BOOLf:n                                  | BOOL0:0 - BOOL999:65535      |      |

### NOTE

- 1) **SINTf:n** : n must be an even number.
- 2) **BOOLf:n** : n must be the multiple of 32.



- 3) PLC IP address must be set first on RSLogix 5000 software and downloaded to PLC; otherwise PLC IP address can not be read. For detailed information about the setting methods, please refer to RSLogix 5000 software user manual.
- 4) Please do not change the COM port setting.
- 5) In this driver, PLC station number represents PLC slot number.

## Allen Bradley Ethernet IP(MicroLogix, SLC500)

(Support Allen Bradley MicroLogix, SLC500 series PLC)

### HMI Factory Setting:

Controller IP Address: 192.168.0.1

Controller COM Port: 44818 ([Note 2](#))

Controller Station Number: 1 ([Note 3](#))

Control Area / Status Area: None / None

### Connection

Standard Jumper Cable / Network Cable without jumper (Auto-detected by HMI)

### Definition of PLC Read/Write Address

#### a. Registers

| Type                    | Format                                       | Read/Write Range                                  | Data Length | Note |
|-------------------------|--|---|-------------|------|
|                         | Word No. (n)<br>Slot No. (s)<br>File No. (f) |   |             |      |
| Output file             | O:n  | O:0 - O:255 (s = 0, f = 0)                        | Word        |      |
|                         | O:s.n  | O:0.0 - O:255.255 (f = 0)                         |             |      |
| Input file              | I:n  | I:0 - I:255 (s = 0, f = 1)                        | Word        |      |
|                         | I:s.n  | I:0.0 - I:255.255 (f = 1)                         |             |      |
| Status file             | S2:n   | S2:0 - S2:255 (f = 2)                             | Word        |      |
| Bit file                | B:n  | B:0 - B:255 (f = 3)                               | Word        |      |
|                         | Bf:n   | B3:0 - B3:255, B9:0 - B255:255                    |             |      |
| Timer flag              | T:n  | T:0 - T:255 (f = 4)                               | Word        |      |
|                         | Tf:n   | T4:0 - T4:255, T9:0 - T255:255                    |             |      |
| Timer Preset Value      | T:n.PRE                                      | T:0.PRE - T:255.PRE (f = 4)                       | Word        |      |
|                         | Tf:n.PRE                                     | T4:0.PRE - T4:255.PRE,<br>T9:0.PRE - T255:255.PRE |             |      |
| Timer Accumulator Value | T:n.ACC                                      | T:0.ACC - T:255.ACC, (f = 4)                      | Word        |      |
|                         | Tf:n.ACC                                     | T4:0.ACC - T4:255.ACC,<br>T9:0.ACC - T255:255.ACC |             |      |
| Counter flag            | C:n  | C:0 - C:255, (f = 5)                              | Word        |      |
|                         | Cf:n   | C5:0 - C5:255, C9:0 - C255:255                    |             |      |
| Counter Preset Value    | C:n.PRE                                      | C:0.PRE - C:255.PRE, (f = 5)                      | Word        |      |
|                         | Cf:n.PRE                                     | C5:0.PRE - C5:255.PRE,<br>C9:0.PRE - C255:255.PRE |             |      |

| Type                      | Format                                       | Read/Write Range                                  | Data Length | Note |
|---------------------------|--|---|-------------|------|
|                           | Word No. (n)<br>Slot No. (s)<br>File No. (f) |   |             |      |
| Counter Accumulator Value | C:n.ACC                                      | C:0.ACC – C:255.ACC, (f = 5)                      | Word        |      |
|                           | Cf:n.ACC                                     | C5:0.ACC – C5:255.ACC,<br>C9:0.ACC – C255:255.ACC |             |      |
| Control file              | R:n  | R:0 – R:255, (f = 6)                              | Word        |      |
|                           | Rf:n   | R6:0 – R6:255, R9:0 – R255:255                    |             |      |
| Control Size of Bit Array | R:n.LEN                                      | R:0.LEN – R:255.LEN, (f = 6)                      | Word        |      |
|                           | Rf:n.LEN                                     | R6:0.LEN – R6:255.LEN,<br>R9:0.LEN – R255:255.LEN |             |      |
| Control Reserved file     | R:n.POS                                      | R:0.POS – R:255.POS, (f = 6)                      | Word        |      |
|                           | Rf:n.POS                                     | R6:0.POS – R6:255.POS,<br>R9:0.POS – R255:255.POS |             |      |
| Integer file              | N:n  | N:0 – N:255, (f = 7)                              | Word        |      |
|                           | Nf:n   | N7:0 – N7:255, N9:0 – N255:255                    |             |      |
| Floating Point file       | F:n  | F:0 – F:255, (f = 8)                              | Double Word |      |
|                           | Ff:n   | F8:0 – F8:255, F9:0 – F255:255                    |             |      |
| String File               | STf:n  | ST9:0 – ST255:255                                 | 41 Words    |      |
| Long Word File            | Lf:n   | L9:0 – L255:255                                   | Double Word |      |

**b. Contacts**

| Type   | Format  | Read/Write Range   | Note |
|--------|---|--|------|
|        | Word No. (n)<br>Slot No. (s)<br>File No. (f)<br>Bit No. (b) |  |      |
| Output | O:n/b   | O:0/0 – O:255/15 (s = 0, f = 0)                                  |      |
|        | O:s.n/b   | O:0.0/0 – O:255.255/15 (f = 0)                                   |      |
| Input  | I:n/b   | I:0/0 – I:255/15 (s = 0, f = 1)                                  |      |
|        | I:s.n/b   | I:0.0/0 – I:255.255/15 (f = 1)                                   |      |
| Status | S2:n/b  | S2:0/0 – S2:255/15 (f = 2)                                       |      |
| Bit    | B:n/b   | B:0/0 – B:255/15, (f = 3)  |      |
|        | Bf:n/b  | B3:0/0 – B3:255/15, B9:0/0 – B255:255/15                         |      |
| Timer  | T:n/b   | T:0/0 – T:255/15, (f = 4)  |      |
|        | Tf:n/b  | T4:0/0 – T4:255/15, T9:0/0 – T255:255/15                         |      |
|        | T:n/EN  | T:0/EN – T:255/EN, (b = 15) (f = 4)                              |      |
|        | Tf:n/EN   | T4:0/EN – T4:255/EN, (b = 15),<br>T9:0/EN – T255:255/EN (b = 15) |      |
|        | T:n/TT  | T:0/TT – T:255/TT, (b = 14) (f = 4)                              |      |

| Type                    | Format  | Read/Write Range  | Note |
|-------------------------|---|---|------|
|                         | Word No. (n)<br>Slot No. (s)<br>File No. (f)<br>Bit No. (b) |   |      |
| Output                  | O:n/b   | O:0/0 - O:255/15 (s = 0, f = 0)                                 |      |
|                         | O:s.n/b   | O:0.0/0 - O:255.255/15 (f = 0)                                  |      |
| Input                   | I:n/b   | I:0/0 - I:255/15 (s = 0, f = 1)                                 |      |
|                         | I:s.n/b   | I:0.0/0 - I:255.255/15 (f = 1)                                  |      |
| Status                  | S2:n/b  | S2:0/0 - S2:255/15 (f = 2)                                      |      |
| Bit                     | B:n/b   | B:0/0 - B:255/15, (f = 3)                                       |      |
|                         | Bf:n/b  | B3:0/0 - B3:255/15, B9:0/0 - B255:255/15                        |      |
|                         | Tf:n/TT   | T4:0/TT - T4:255/TT, (b = 14)<br>T9:0/TT - T255:255/TT (b = 14) |      |
|                         | T:n/DN  | T:0/TT - T:255/TT, (b = 13), (f = 4)                            |      |
|                         | Tf:n/DN   | T4:0/TT - T4:255/TT, (b = 13)<br>T9:0/TT - T255:255/TT (b = 13) |      |
| Timer Preset Value      | T:n.PRE/b   | T:0.PRE/0 - T:255.PRE/15, (f = 4)                               |      |
|                         | Tf:n.PRE/b  | T4:0.PRE/0 - T4:255.PRE/15,<br>T9:0.PRE/0 - T255:255.PRE/15     |      |
| Timer Accumulator Value | T:n.ACC/b   | T:0.ACC/0 - T:255.ACC/15, (f = 4)                               |      |
|                         | Tf:n.ACC/b  | T4:0.ACC/0 - T4:255.ACC/15,<br>T9:0.ACC/0 - T255:255.ACC/15     |      |
| Counter flag            | C:n/b   | C:0/0 - C:255/15, (f = 5)                                       |      |
|                         | Cf:n/b  | C5:0/0 - C5:255/15, C9:0/0 - C255:255/15                        |      |
|                         | C:n/CU  | C:0/CU - C:255/CU, (b = 15) (f = 5)                             |      |
|                         | Cf:n/CU   | C5:0/CU - C5:255/CU, (b = 15)<br>C9:0/CU - C255:255/CU (b = 15) |      |
|                         | C:n/CD  | C:0/CD - C:255/CD, (b = 14) (f = 5)                             |      |
|                         | Cf:n/CD   | C5:0/CD - C5:255/CD, (b = 14)<br>C9:0/CD - C255:255/CD (b = 14) |      |
|                         | C:n/DN  | C:0/DN - C:255/DN, (b = 13) (f = 5)                             |      |
|                         | Cf:n/DN   | C5:0/DN - C5:255/DN, (b = 13)<br>C9:0/DN - C255:255/DN (b = 13) |      |
|                         | C:n/OV  | C:0/OV - C:255/OV, (b = 12) (f = 5)                             |      |
|                         | Cf:n/OV   | C5:0/OV - C5:255/OV, (b = 12)<br>C9:0/OV - C255:255/OV (b = 12) |      |
|                         | C:n/UN  | C:0/UN - C:255/UN, (b = 11) (f = 5)                             |      |
|                         | Cf:n/UN   | C5:0/UN - C5:255/UN, (b = 11)<br>C9:0/UN - C255:255/UN (b = 11) |      |
|                         | C:n/UA  | C:0/UA - C:255/UA, (b = 10) (f = 5)                             |      |
|                         | Cf:n/UA   | C5:0/UA - C5:255/UA, (b = 10)<br>C9:0/UA - C255:255/UA (b = 10) |      |

| Type                      | Format  | Read/Write Range  | Note |
|---------------------------|---|---|------|
|                           | Word No. (n)<br>Slot No. (s)<br>File No. (f)<br>Bit No. (b) |   |      |
| Output                    | O:n/b   | O:0/0 - O:255/15 (s = 0, f = 0)                                 |      |
|                           | O:s.n/b   | O:0.0/0 - O:255.255/15 (f = 0)                                  |      |
| Input                     | I:n/b   | I:0/0 - I:255/15 (s = 0, f = 1)                                 |      |
|                           | I:s.n/b   | I:0.0/0 - I:255.255/15 (f = 1)                                  |      |
| Status                    | S2:n/b  | S2:0/0 - S2:255/15 (f = 2)                                      |      |
| Bit                       | B:n/b   | B:0/0 - B:255/15, (f = 3)                                       |      |
|                           | Bf:n/b  | B3:0/0 - B3:255/15, B9:0/0 - B255:255/15                        |      |
| Counter                   | C:n.PRE/b   | C:0.PRE/0 - C:255.PRE/15, (f = 5)                               |      |
|                           | Cf:n.PRE/b  | C5:0.PRE/0 - C5:255.PRE/15,<br>C9:0.PRE/0 - C255:255.PRE/15     |      |
| Counter Accumulator Value | C:n.ACC/b   | C:0.PRE/0 - C:255.PRE/15, (f = 5)                               |      |
|                           | Cf:n.ACC/b  | C5:0.PRE/0 - C5:255.PRE/15,<br>C9:0.PRE/0 - C255:255.PRE/15     |      |
| Control                   | R:n/b   | R:0/0 - R:255/15, (f = 6)                                       |      |
|                           | Rf:n/b  | R6:0/0 - R6:255/15,<br>R9:0/0 - R255:255/15                     |      |
|                           | R:n/EN  | R:0/EN - R:255/EN, (b = 15) (f = 6)                             |      |
|                           | Rf:n/EN   | R6:0/EN - R6:255/EN, (b = 15)<br>R9:0/EN - R255:255/EN (b = 15) |      |
|                           | R:n/EU  | R:0/EU - R:255/EU, (b = 14) (f = 6)                             |      |
|                           | Rf:n/EU   | R6:0/EU - R6:255/EU, (b = 14)<br>R9:0/EU - R255:255/EU (b = 14) |      |
|                           | R:n/DN  | R:0/DN - R:255/DN, (b = 13) (f = 6)                             |      |
|                           | Rf:n/DN   | R6:0/DN - R6:255/DN, (b = 13)<br>R9:0/DN - R255:255/DN (b = 13) |      |
|                           | R:n/EM  | R:0/EM - R:255/EM, (b = 12) (f = 6)                             |      |
|                           | Rf:n/EM   | R6:0/EM - R6:255/EM, (b = 12)<br>R9:0/EM - R255:255/EM (b = 12) |      |
|                           | R:n/ER  | R:0/ER - R:255/ER, (b = 11) (f = 6)                             |      |
|                           | Rf:n/ER   | R6:0/ER - R6:255/ER, (b = 11)<br>R9:0/ER - R255:255/ER (b = 11) |      |
|                           | R:n/UL  | R:0/UL - R:255/UL, (b = 10) (f = 6)                             |      |
|                           | Rf:n/UL   | R6:0/UL - R6:255/UL, (b = 10)<br>R9:0/UL - R255:255/UL (b = 10) |      |
|                           | R:n/IN  | R:0/IN - R:255/IN, (b = 9) (f = 6)                              |      |
|                           | Rf:n/IN   | R6:0/IN - R6:255/IN, (b = 9)<br>R9:0/IN - R255:255/IN (b = 9)   |      |
|                           | R:n/FD  | R:0/FD - R:255/FD, (b = 8) (f = 6)                              |      |
|                           | Rf:n/FD   | R6:0/FD - R6:255/FD, (b = 8)<br>R9:0/FD - R255:255/FD (b = 8)   |      |

| Type                      | Format  | Read/Write Range  | Note |
|---------------------------|---|---|------|
|                           | Word No. (n)<br>Slot No. (s)<br>File No. (f)<br>Bit No. (b) |   |      |
| Output                    | O:n/b   | O:0/0 - O:255/15 (s = 0, f = 0)                             |      |
|                           | O:s.n/b   | O:0.0/0 - O:255.255/15 (f = 0)                              |      |
| Input                     | I:n/b   | I:0/0 - I:255/15 (s = 0, f = 1)                             |      |
|                           | I:s.n/b   | I:0.0/0 - I:255.255/15 (f = 1)                              |      |
| Status                    | S2:n/b  | S2:0/0 - S2:255/15 (f = 2)                                  |      |
| Bit                       | B:n/b   | B:0/0 - B:255/15, (f = 3)                                   |      |
|                           | Bf:n/b  | B3:0/0 - B3:255/15, B9:0/0 - B255:255/15                    |      |
| Control size of bit array | R:n.LEN/b   | R:0.LEN/0 - R:255.LEN/15, (f = 6)                           |      |
|                           | Rf:n.LEN/b  | R6:0.LEN/0 - R6:255.LEN/15,<br>R9:0.LEN/0 - R255:255.LEN/15 |      |
| Control Reserved          | R:n.POS/b   | R:0.POS/0 - R:255.POS/15, (f = 6)                           |      |
|                           | Rf:n.POS/b  | R6:0.POS/0 - R6:255.POS/15,<br>R9:0.POS/0 - R255:255.POS/15 |      |
| Integer                   | N:n/b   | N:0/0 - N:255/15, (f = 7)                                   |      |
|                           | Nf:n/b  | N7:0/0 - N7:255/15,<br>N9:0/0 - N255:255/15                 |      |
| Long Word File            | Lf:n/b  | L9:0/0 - L255:255/31  |      |

 **NOTE**

- 1) PLC IP address must be set first on RSLogix 5000 software and downloaded to PLC; otherwise PLC IP address can not be read. For detailed information about the setting methods, please refer to RSLogix 5000 software user manual.
- 2) Please do not change the COM port setting.
- 3) In this driver, PLC station number has no function.

## Allen Bradley MicroLogix

### HMI Factory Setting:

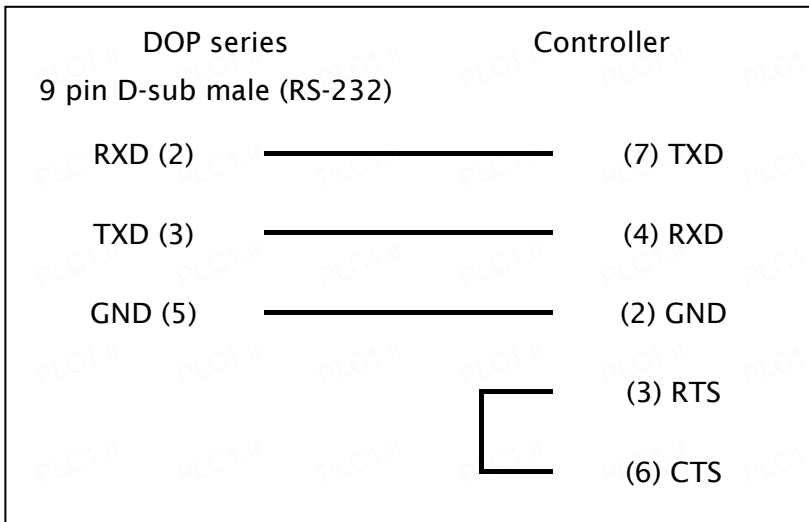
Baud Rate: 192.168.0.1

Controller Station Number: 1

Control Area / Status Area: B3:0/B3:10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type                      | Format                       | Read/Write Range              | Data Length | Note |
|---------------------------|------------------------------|-------------------------------|-------------|------|
|                           | Word No. (n)<br>File No. (f) |                               |             |      |
| Output file               | O:n                          | O:0 - O:255 (f = 0)           | Word        |      |
| Input file                | I:n                          | I:0 - I:255 (f = 1)           | Word        |      |
| Status file               | S2:n                         | S2:0 - S2:255 (f = 2)         | Word        |      |
| Bit file                  | B3:n                         | B3:0 - B3:255 (f = 3)         | Word        |      |
| Timer flag                | T4:n                         | T4:0 - T4:255 (f = 4)         | Word        |      |
| Timer Preset Value        | T4:n.PRE                     | T4:0.PRE - T4:255.PRE (f = 4) | Word        |      |
| Timer Accumulator Value   | T4:n.ACC                     | T4:0.ACC - T4:255.ACC (f = 4) | Word        |      |
| Counter flag              | C5:n                         | C5:0 - C5:255 (f = 5)         | Word        |      |
| Counter Preset Value      | C5:n.PRE                     | C5:0.PRE - C5:255.PRE (f = 5) | Word        |      |
| Counter Accumulator Value | C5:n.ACC                     | C5:0.ACC - C5:255.ACC (f = 5) | Word        |      |

| Type                      | Format                       | Read/Write Range              | Data Length | Note              |
|---------------------------|------------------------------|-------------------------------|-------------|-------------------|
|                           | Word No. (n)<br>File No. (f) |                               |             |                   |
| Control file              | R6:n                         | R6:0 - R6:255 (f = 6)         | Word        |                   |
| Control Size of Bit Array | R6:n.LEN                     | R6:0.LEN - R6:255.LEN (f = 6) | Word        |                   |
| Control Reserved file     | R6:n.POS                     | R6:0.POS - R6:255.POS (f = 6) | Word        |                   |
| Integer file              | N7:n                         | N7:0 - N7:255 (f = 7)         | Word        |                   |
| Floating Point file       | F8:n                         | F8:0 - F8:255 (f = 8)         | Double Word | <a href="#">2</a> |

**b. Contacts**

| Type                      | Format                                      | Read/Write Range                    | Note |
|---------------------------|---|-------------------------------------|------|
|                           | Word No. (n)<br>Bit No. (b)<br>File No. (f) |                                     |      |
| Output                    | O:n/b                                       | O:0/0 - O:255/15 (f = 0)            |      |
| Input                     | I:n/b                                       | I:0/0 - I:255/15 (f = 1)            |      |
| Status                    | S2:n/b                                      | S2:0/0 - S2:255/15 (f = 2)          |      |
| Bit                       | B3:n/b                                      | B3:0/0 - B3:255/15 (f = 3)          |      |
| Timer                     | T4:n/b                                      | T4:0/0 - T4:255/15 (f = 4)          |      |
|                           | T4:n/EN                                     | T4:0/EN - T4:255/EN (f = 4, b = 15) |      |
|                           | T4:n/TT                                     | T4:0/TT - T4:255/TT (f = 4, b = 14) |      |
|                           | T4:n/DN                                     | T4:0/DN - T4:255/DN (f = 4, b = 13) |      |
| Timer Preset Value        | T4:n.PRE/b                                  | T4:0.PRE/0 - T4:255.PRE/15 (f = 4)  |      |
| Timer Accumulator Value   | T4:n.ACC/b                                  | T4:0.ACC/0 - T4:255.ACC/15 (f = 4)  |      |
| Counter                   | C5:n/b                                      | C5:0/0 - C5:255/15 (f = 5)          |      |
|                           | C5:n/CU                                     | C5:0/CU - C5:255/CU (f = 5, b = 15) |      |
|                           | C5:n/CD                                     | C5:0/CD - C5:255/CD (f = 5, b = 14) |      |
|                           | C5:n/DN                                     | C5:0/DN - C5:255/DN (f = 5, b = 13) |      |
|                           | C5:n/OV                                     | C5:0/OV - C5:255/OV (f = 5, b = 12) |      |
|                           | C5:n/UN                                     | C5:0/UN - C5:255/UN (f = 5, b = 11) |      |
|                           | C5:n/UA                                     | C5:0/UA - C5:255/UA (f = 5, b = 10) |      |
| Counter Preset Value      | C5:n.PRE/b                                  | C5:0.PRE/0 - C5:255.PRE/15 (f = 5)  |      |
| Counter Accumulator Value | C5:n.ACC/b                                  | C5:0.ACC/0 - C5:255.ACC/15 (f = 5)  |      |
| Control                   | R6:n/b                                      | R6:0/0 - R6:255/15 (f = 6)          |      |
|                           | R6:n/EN                                     | R6:0/EN - R6:255/EN (f = 6, b = 15) |      |
|                           | R6:n/EU                                     | R6:0/EU - R6:255/EU (f = 6, b = 14) |      |



| Type                      | Format                                      | Read/Write Range                    | Note |
|---------------------------|---|-------------------------------------|------|
|                           | Word No. (n)<br>File No. (f)<br>Bit No. (b) |                                     |      |
| Control                   | R6:n/DN                                     | R6:0/DN - R6:255/DN (f = 6, b = 13) |      |
|                           | R6:n/EM                                     | R6:0/EM - R6:255/EM (f = 6, b = 12) |      |
|                           | R6:n/ER                                     | R6:0/ER - R6:255/ER (f = 6, b = 11) |      |
|                           | R6:n/UL                                     | R6:0/UL - R6:255/UL (f = 6, b = 10) |      |
|                           | R6:n/IN                                     | R6:0/IN - R6:255/IN (f = 6, b = 9)  |      |
|                           | R6:n/FD                                     | R6:0/FD - R6:255/FD (f = 6, b = 8)  |      |
| Control Size of Bit Array | R6:n.LEN/b                                  | R6:0.LEN/0 - R6:255.LEN/15 (f = 6)  |      |
| Control Reserved          | R6:n.POS/b                                  | R6:0.POS/0 - R6:255.POS/15 (f = 6)  |      |
| Integer                   | N7:n/b                                      | N7:0/0 - N7:255/15 (f = 7)          |      |

 **NOTE**

- 1) This protocol only supports DF1 protocol mode. Setting can be done on with panel located on the top of PLC. Setting parameter: [Advance Set](#) → [DCOMM Cfg](#) → [Enable](#) → [Comms config set to DF1 default](#)
- 2) This protocol supports BCC or CRC Error Check.
- 3) This protocol does not support Sring File and Long Word File, this request can be done by protocol SLC5.
- 4) F8 data is double word, used for Floating point.

## Allen-Bradley SLC5

### HMI Factory Setting:

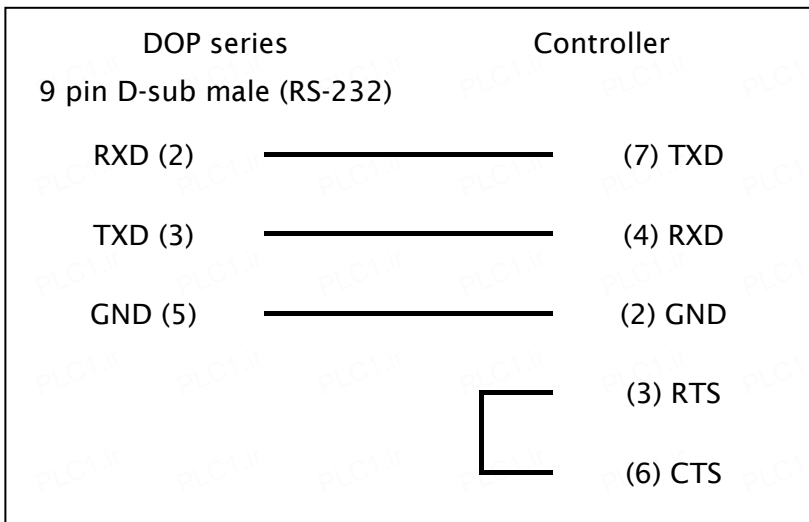
Baud rate: 19200. 8. None. 1

Controller Station Number: 1

Control Area / Status Area: B3:0/B3:10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type        | Format                                       | Read/Write Range                  | Data Length | Note |
|-------------|--|-----------------------------------|-------------|------|
|             | Word No. (n)<br>Slot No. (s)<br>File No. (f) |                                   |             |      |
| Output file | O:n  | O:0 - O:255 (s = 0, f = 0)        | Word        |      |
|             | O:s.n  | O:0.0 - O:255.255 (f = 0)         |             |      |
| Input file  | I:n  | I:0 - I:255 (s = 0, f = 1)        | Word        |      |
|             | I:s.n  | I:0.0 - I:255.255 (f = 1)         |             |      |
| Status file | S2:n   | S2:0 - S2:255 (f = 2)             | Word        |      |
| Bit file    | Bf:n   | B3:0 - B3:255, B9:0 -<br>B255:255 | Word        |      |
| Timer flag  | Tf:n   | T4:0 - T4:255, T9:0 -<br>T255:255 | Word        |      |

| Type                      | Format                                       | Read/Write Range                                  | Data Length | Note |
|---------------------------|--|---|-------------|------|
|                           | Word No. (n)<br>Slot No. (s)<br>File No. (f) |   |             |      |
| Timer Preset Value        | Tf:n.PRE                                     | T4:0.PRE - T4:255.PRE,<br>T9:0.PRE - T255:255.PRE | Word        |      |
| Timer Accumulator Value   | Tf:n.ACC                                     | T4:0.ACC - T4:255.ACC,<br>T9:0.ACC - T255:255.ACC |             |      |
| Counter flag              | Cf:n   | C5:0 - C5:255, C9:0 -<br>C255:255                 | Word        |      |
| Counter Preset Value      | Cf:n.PRE                                     | C5:0.PRE - C5:255.PRE,<br>C9:0.PRE - C255:255.PRE |             |      |
| Counter Accumulator Value | Cf:n.ACC                                     | C5:0.ACC - C5:255.ACC,<br>C9:0.ACC - C255:255.ACC |             |      |
| Control file              | Rf:n   | R6:0 - R6:255, R9:0 -<br>R255:255                 | Word        |      |
| Control Size of Bit Array | Rf:n.LEN                                     | R6:0.LEN - R6:255.LEN,<br>R9:0.LEN - R255:255.LEN |             |      |
| Control Reserved file     | Rf:n.POS                                     | R6:0.POS - R6:255.POS,<br>R9:0.POS - R255:255.POS |             |      |
| Integer file              | Nf:n   | N7:0 - N7:255, N9:0 -<br>N255:255                 | Word        |      |
| Floating Point file       | Ff:n   | F8:0 - F8:255, F9:0 - F255:255                    | Double Word |      |
| String File               | STf:n  | ST9:0 - ST255:255                                 | 41 Words    |      |
| Long Word File            | Lf:n   | L9:0 - L255:255                                   | Double Word |      |

**b. Contacts**

| Type   | Format  | Read/Write Range                         | Note |
|--------|---|--|------|
|        | Word No. (n)<br>Slot No. (s)<br>File No. (f)<br>Bit No. (b) |  |      |
| Output | O:n/b   | O:0/0 - O:255/15 (s = 0, f = 0)          |      |
|        | O:s.n/b   | O:0.0/0 - O:255.255/15 (f = 0)           |      |
| Input  | I:n/b   | I:0/0 - I:255/15 (s = 0, f = 1)          |      |
|        | I:s.n/b   | I:0.0/0 - I:255.255/15 (f = 1)           |      |
| Status | S2:n/b  | S2:0/0 - S2:255/15 (f = 2)               |      |
| Bit    | Bf:n/b  | B3:0/0 - B3:255/15, B9:0/0 - B255:255/15 |      |

| Type                      | Format  | Read/Write Range  | Note |
|---------------------------|---|---|------|
|                           | Word No. (n)<br>Slot No. (s)<br>File No. (f)<br>Bit No. (b) |   |      |
| Timer                     | Tf:n/TT   | T4:0/TT - T4:255/TT, (b = 14)<br>T9:0/TT - T255:255/TT (b = 14) |      |
|                           | Tf:n/DN   | T4:0/TT - T4:255/TT, (b = 13)<br>T9:0/TT - T255:255/TT (b = 13) |      |
| Timer Preset Value        | Tf:n.PRE/b  | T4:0.PRE/0 - T4:255.PRE/15,<br>T9:0.PRE/0 - T255:255.PRE/15     |      |
| Timer Accumulator Value   | Tf:n.ACC/b  | T4:0.ACC/0 - T4:255.ACC/15,<br>T9:0.ACC/0 - T255:255.ACC/15     |      |
| Counter flag              | Cf:n/b  | C5:0/0 - C5:255/15, C9:0/0 - C255:255/15                        |      |
|                           | Cf:n/CU   | C5:0/CU - C5:255/CU, (b = 15)<br>C9:0/CU - C255:255/CU (b = 15) |      |
|                           | Cf:n/CD   | C5:0/CD - C5:255/CD, (b = 14)<br>C9:0/CD - C255:255/CD (b = 14) |      |
|                           | Cf:n/DN   | C5:0/DN - C5:255/DN, (b = 13)<br>C9:0/DN - C255:255/DN (b = 13) |      |
|                           | Cf:n/OV   | C5:0/OV - C5:255/OV, (b = 12)<br>C9:0/OV - C255:255/OV (b = 12) |      |
|                           | Cf:n/UN   | C5:0/UN - C5:255/UN, (b = 11)<br>C9:0/UN - C255:255/UN (b = 11) |      |
|                           | Cf:n/UA   | C5:0/UA - C5:255/UA, (b = 10)<br>C9:0/UA - C255:255/UA (b = 10) |      |
| Counter                   | Cf:n.PRE/b  | C5:0.PRE/0 - C5:255.PRE/15,<br>C9:0.PRE/0 - C255:255.PRE/15     |      |
| Counter Accumulator Value | Cf:n.ACC/b  | C5:0.PRE/0 - C5:255.PRE/15,<br>C9:0.PRE/0 - C255:255.PRE/15     |      |
| Control                   | Rf:n/b  | R6:0/0 - R6:255/15, R9:0/0 - R255:255/15                        |      |
|                           | Rf:n/EN   | R6:0/EN - R6:255/EN, (b = 15)<br>R9:0/EN - R255:255/EN (b = 15) |      |
|                           | Rf:n/EU   | R6:0/EU - R6:255/EU, (b = 14)<br>R9:0/EU - R255:255/EU (b = 14) |      |
|                           | Rf:n/DN   | R6:0/DN - R6:255/DN, (b = 13)<br>R9:0/DN - R255:255/DN (b = 13) |      |

| Type                      | Format  | Read/Write Range  | Note |
|---------------------------|---|---|------|
|                           | Word No. (n)<br>Slot No. (s)<br>File No. (f)<br>Bit No. (b) |   |      |
| Control                   | Rf:n/EM   | R6:0/EM - R6:255/EM, (b = 12)<br>R9:0/EM - R255:255/EM (b = 12) |      |
|                           | Rf:n/ER   | R6:0/ER - R6:255/ER, (b = 11)<br>R9:0/ER - R255:255/ER (b = 11) |      |
|                           | Rf:n/UL   | R6:0/UL - R6:255/UL, (b = 10)<br>R9:0/UL - R255:255/UL (b = 10) |      |
|                           | Rf:n/IN   | R6:0/IN - R6:255/IN, (b = 9)<br>R9:0/IN - R255:255/IN (b = 9)   |      |
|                           | Rf:n/FD   | R6:0/FD - R6:255/FD, (b = 8)<br>R9:0/FD - R255:255/FD (b = 8)   |      |
| Control size of bit array | Rf:n.LEN/b  | R6:0.LEN/0 - R6:255.LEN/15,<br>R9:0.LEN/0 - R255:255.LEN/15     |      |
| Control Reserved          | Rf:n.POS/b  | R6:0.POS/0 - R6:255.POS/15,<br>R9:0.POS/0 - R255:255.POS/15     |      |
| Integer                   | Nf:n/b  | N7:0/0 - N7:255/15, N9:0/0 - N255:255/15                        |      |
| Long Word File            | Lf:n/b  | L9:0/0 - L255:255/31  |      |

 **NOTE**

- 1) This protocol only supports CRC Error Check.

## Cimon PLC

(This PLC is applicable to BP, XP series of PLC)

### HMI Factory Setting:

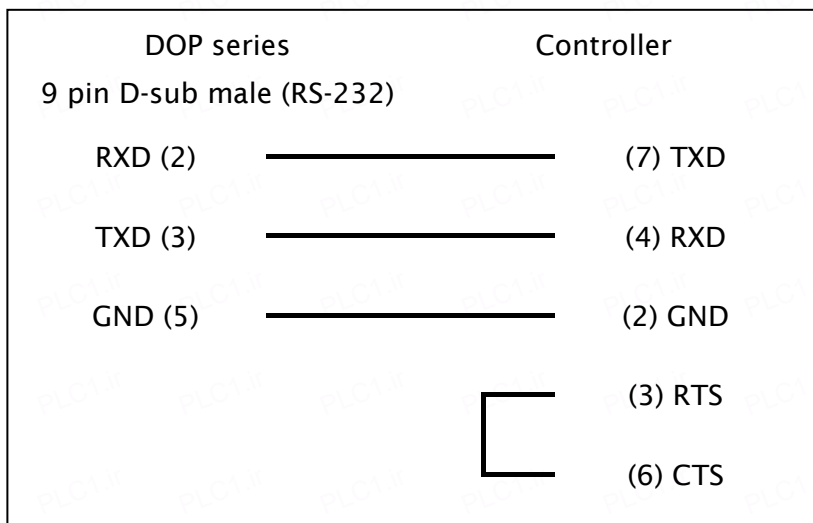
Baud rate: 38400. 8. None. 1

Controller Station Number: 1

Control Area / Status Area: D00000/D00010

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type                    | Format       | Read/Write Range | Data Length | Note |
|-------------------------|--------------|------------------|-------------|------|
|                         | Word No. (n) |                  |             |      |
| Input X                 | Xn           | X000 - X511      | Word        |      |
| Output Y                | Yn           | Y000 - Y511      | Word        |      |
| General Purpose Relay M | Mn           | M000 - M999      | Word        |      |
| General Purpose Relay L | Ln           | L000 - L999      | Word        |      |
| Latch Relay K           | Kn           | K000 - K999      | Word        |      |
| Flags F                 | Fn           | F000 - F127      | Word        |      |
| Timer (Set) TS          | TSn          | TS0000 - TS4095  | Word        |      |
| Timer (Current) TC      | TCn          | TC0000 - TC4095  | Word        |      |
| Counter (Set) CS        | CSn          | CS0000 - CS4095  | Word        |      |
| Counter (Current) CC    | CCn          | CC0000 - CC4095  | Word        |      |

| Type                                  | Format       | Read/Write Range | Data Length | Note              |
|---------------------------------------|--------------|------------------|-------------|-------------------|
|                                       | Word No. (n) |                  |             |                   |
| General Purpose Word Data<br><b>D</b> | Dn           | D00000 - D31999  | Word        |                   |
| Step Controller <b>S</b>              | Sn           | S0 - S99         | Byte        | <a href="#">1</a> |

**b. Contacts**

| Type                           | Format                      | Read/Write Range | Note |
|--------------------------------|-----------------------------|------------------|------|
|                                | Word No. (n)<br>Bit No. (b) |                  |      |
| Input <b>X</b>                 | Xnb                         | X0000 - X511F    |      |
| Output <b>Y</b>                | Ynb                         | Y0000 - Y511F    |      |
| General Purpose Relay <b>M</b> | Mnb                         | M0000 - M999F    |      |
| General Purpose Relay <b>L</b> | Lnb                         | L0000 - L999F    |      |
| Latch Relay <b>K</b>           | Knb                         | K0000 - K999F    |      |
| Flags <b>F</b>                 | Fnb                         | F0000 - F127F    |      |
| Timer Status <b>T</b>          | Tb                          | T0000 - T4095    |      |
| Counter Status <b>C</b>        | Cb                          | C0000 - C4095    |      |

 **NOTE**

- 1) The unit of PLC internal memory is byte and Device S is read in the unit of byte. It is recommended NOT TO USE two consecutive devices S as the read address to prevent occurrence of interference. For example, when choosing two numeric input device, please use S24 and S26, do not use S24 and S25.

## Copley Servo (Stepnet protocol)

### HMI Factory Setting:

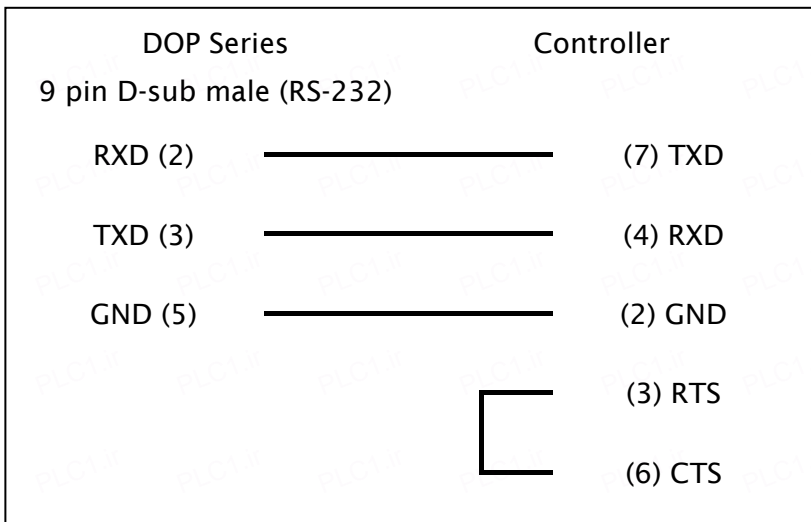
Baud rate: 9600. 8. None. 1

Controller Station Number: 0

Control Area / Status Area: None/None

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type                 | Format       | Read/Write Range | Data Length | Note        |
|----------------------|--------------|------------------|-------------|-------------|
|                      | Word No. (n) |                  |             |             |
| Ram memory R         | Rnn          | R00 - RFF        | Double Word | Hexadecimal |
| Flash memory F       | Fnn          | F00 - FFF        | Double Word | Hexadecimal |
| Internal Register IR | IRn          | IR0 - IR31       | Word        |             |

#### b. Contacts

| Type          | Format                      | Read/Write Range | Note                                  |
|---------------|-----------------------------|------------------|---------------------------------------|
|               | Word No. (n)<br>Bit No. (b) |                  |                                       |
| BIT_DEVICE_RB | RBnn.b                      | RB00.0 - RBFF.31 | <a href="#">1</a>                     |
| BIT_DEVICE_FB | FBnn.b                      | FB00.0 - FBFF.31 | <a href="#">1</a>                     |
| BIT_DEVICE_T0 | T0b                         | T00              | <a href="#">2</a> , <a href="#">5</a> |
| BIT_DEVICE_T1 | T1b                         | T10              | <a href="#">2</a> , <a href="#">5</a> |



| Type           | Format                      | Read/Write Range | Note   |
|----------------|-----------------------------|------------------|--|
|                | Word No. (n)<br>Bit No. (b) |                  |  |
| BIT_DEVICE_T2  | T2b                         | T20              | <a href="#">2</a> , <a href="#">5</a>              |
| BIT_DEVICE_RST | RSTb                        | RST0             | <a href="#">3</a> , <a href="#">5</a>              |
| BIT_DEVICE_CPR | CPRnn                       | CPR00 - CPRFF    | Hexadecimal, <a href="#">4</a> , <a href="#">5</a> |
| BIT_DEVICE_CPF | CPFnn                       | CPF00 - CPFFF    | Hexadecimal, <a href="#">4</a> , <a href="#">5</a> |

 **NOTE**

- 1) RB and FB are the bit access of Ram/Flash memory. Therefore, RB0x21.14 indicates bit 14 of Ram memory 0x21.
- 2) T0, T1 and T2 are virtual devices for simulating Trajectory Generator Command. The number of 0, 1 and 2 indicates the subcommand of that command, so only bit 0 is acceptable.
- 3) RST is for simulating Reset Command, so only bit 0 is acceptable.
- 4) CPR and CPF are for simulating Copy Command of Ram and Flash individually. The address (n) after CPR and CPF is just the copy address for Ram/Flash memory. For example, CPR12 indicates that the content of Ram memory 0x12 will be copied into Flash memory 0x12 and CPF6A indicates that the content of Flash memory 0x6A will be copied into Ram memory 0x6A.
- 5) T0, T1, T2, RST, CPR, CPF are all read-only and they can not be used on Reset button.

## Danfoss VLT 2800 (FC protocol)

### HMI Factory Setting:

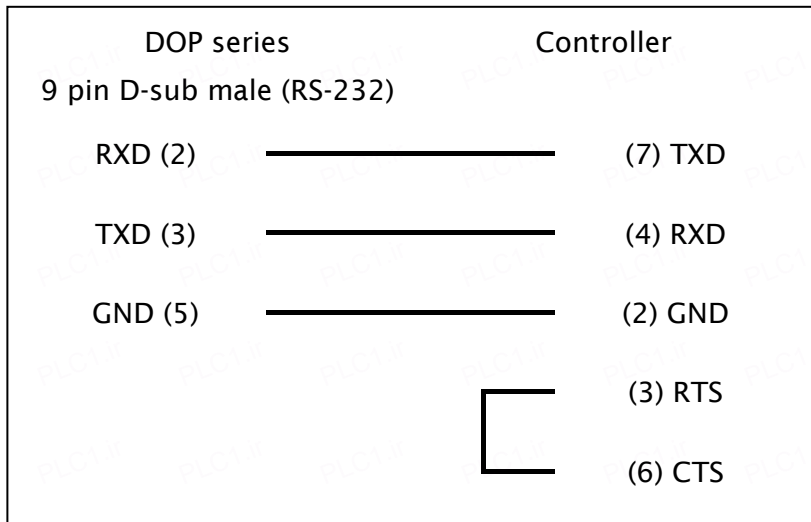
Baud rate: 9600. 8. EVEN. 1(RS-485)

Controller Station Number: 1

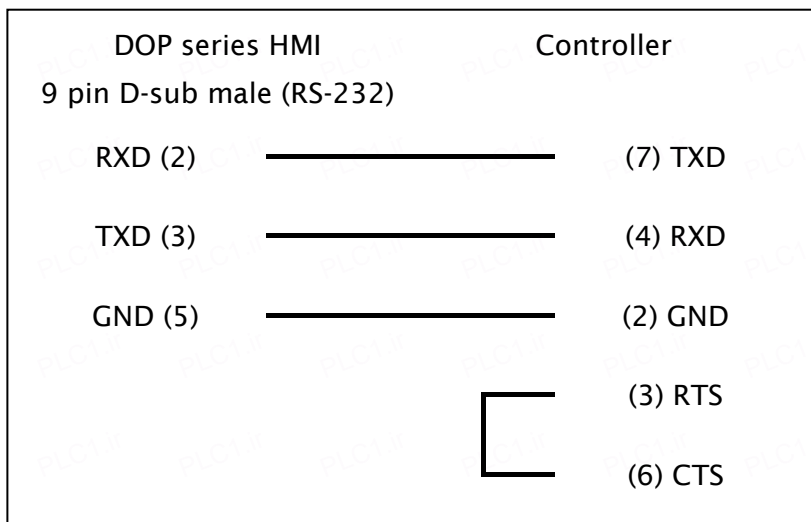
Control Area / Status Area: None/None

### Connection

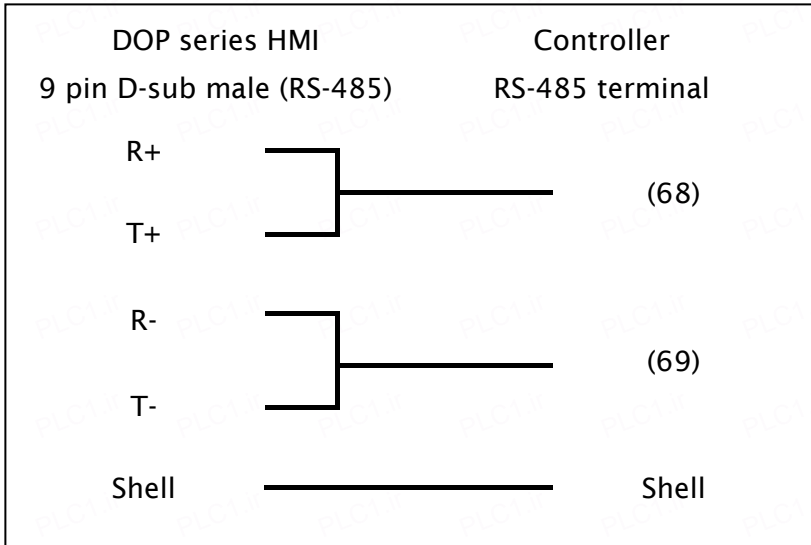
#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



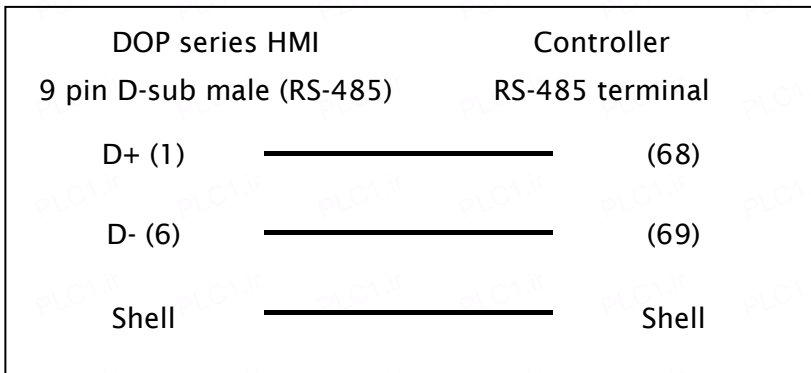
#### b. RS-485 (DOP-AS57 Series)



**c. RS-485 (DOP-AS35/AS38 Series)**



**d. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type         | Format                      | Read/Write Range | Data Length | Note  |
|--------------|-----------------------------|------------------|-------------|---|
|              | Word No.(n)<br>Index No.(i) |                  |             |   |
| Parameter    | Pn:i                        | P0:0 – P999:31   | Double Word | <a href="#">6</a> , <a href="#">7</a> , <a href="#">8</a> |
| Control Word | CTRWDn                      | CTRWD0           | Word        | <a href="#">9</a> , <a href="#">11</a>                    |
| Status Word  | STAWDn                      | STAWD0           | Word        | <a href="#">10</a> , <a href="#">12</a>                   |

**b. Contacts**

| Type      | Format                                     | Read/Write Range    | Note |
|-----------|--|---------------------|------|
|           | Word No.(n)<br>Index No.(i)<br>Bits No.(b) |                     |      |
| Parameter | Pn:i.b                                     | P0:0.0 – P999:31.31 |      |

 **NOTE**

- 1) Delta HMI can be connected to VLT-2800, 5000, 6000, 7000 controller.
- 2) Each data length format of Danfoss AC drive parameter is not fixed, therefore, “Multiple Duplicate” function is not provided.
- 3) Maximum supported alarm number is 16. An alarm number over 16 will result and error.
- 4) Does not support “optimum read/write” characteristic.
- 5) If the selected element is a string, the minimum data length should be greater than 2.
- 6) The default setting for no index No. is 0.
- 7) The default setting of index No. P606 ~ P617 is 1.
- 8) Please notice that it is necessary to enter index No. on certain parameters of Danfoss controllers. Please pay close attention to the setting range of index number. For example, the index No. setting range of the parameter does not starts with 0, if P615 is from 1 to 20, an index value (ex:P615:1) must be entered otherwise read & write failure would occur. For range detail, please see Danfoss manual.
- 9) **CTRWD**: Write-only. (Can not be used on the read devices that display the value and input value...etc. It is recommended to be used on the setting value/setting constant (button), or macro function.)
- 10) **STAWD** : Read-Only.
- 11) Control Word

| Bit | Bit = 0                     | Bit = 1            |
|-----|-----------------------------|--------------------|
| 15  | No Function                 | Reversing          |
| 14  | Choice of Setup 2 (msb)     |                    |
| 13  | Choice of Setup 1 (lsb)     |                    |
| 12  | No Function                 | Relay 04 activated |
| 11  | No Function                 | Relay 01 activated |
| 10  | Data Not Vaild              | Vaild              |
| 9   | Ramp 1                      | Ramp2              |
| 8   | Jog 1 OFF                   | ON                 |
| 7   | No Function                 | Reset              |
| 6   | Ramp Stop                   | Start              |
| 5   | Hold                        | Ramp Enable        |
| 4   | Quick-Stop                  | Ramp               |
| 3   | Coasting                    | Enable             |
| 2   | DC Brake                    | Ramp               |
| 1   | Preset reference choice msb |                    |
| 0   | Preset reference choice msb |                    |

Control Word is useable only if Bit 10 =1 (Data Valid).

12) Status Word

| Bit | Bit = 0           | Bit = 1                       |
|-----|-------------------|-------------------------------|
| 15  | Timer OK          | Above limit                   |
| 14  | Torque OK         | Above limit                   |
| 13  | Voltage OK        | Above limit                   |
| 12  | Temperature OK    | Over-Temp, auto-start pending |
| 11  | Not Running       | Running                       |
| 10  | Out of Range      | Frequency OK                  |
| 9   | Local Control     | Bus Control                   |
| 8   | Speed reference   | Speed reference               |
| 7   | No Warning        | Warning                       |
| 6   | Reserved          |                               |
| 5   | Reserved          |                               |
| 4   | Reserved          |                               |
| 3   | No Fault          | Trip                          |
| 2   | Coasting          | Enabled                       |
| 1   | VLT not ready     | Ready                         |
| 0   | Control not ready | Ready                         |

## Delta Controller ASCII/RTU

### HMI Factory Setting:

Baud rate: 9600, 7, None, 2 (ASCII); 9600, 8, None, 2 (RTU)

Controller Station Number: 1

Control Area / Status Area: None/None

### Connection

#### Delta Servo





##### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP series                |       | Controller                   |
|---------------------------|-------|------------------------------|
| 9 pin D-sub male (RS-232) | _____ | CN3 cable connector (RS-232) |
| RXD (2)                   | _____ | (2) TX                       |
| TXD (3)                   | _____ | (4) RX                       |
| GND (5)                   | _____ | (1) GND                      |





##### b. RS-422 (DOP-A/AE Series)

| DOP series                |       | Controller                   |
|---------------------------|-------|------------------------------|
| 9 pin D-sub male (RS-422) | _____ | CN3 cable connector (RS-422) |
| RXD- (1)                  | _____ | (6) TX-                      |
| RXD+ (2)                  | _____ | (5) TX+                      |
| TXD+ (3)                  | _____ | (3) RX+                      |
| TXD- (4)                  | _____ | (4) RX-                      |




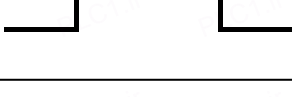
**c. RS-422 (DOP-AS35/AS38/AS57 Series)**

| DOP series                |   | Controller                   |
|---------------------------|---|------------------------------|
| 9 pin D-sub male (RS-422) |   | CN3 cable connector (RS-422) |
| R-                        |  | (6) TX-                      |
| R+                        |  | (5) TX+                      |
| T+                        |  | (3) RX+                      |
| T-                        |  | (4) RX-                      |

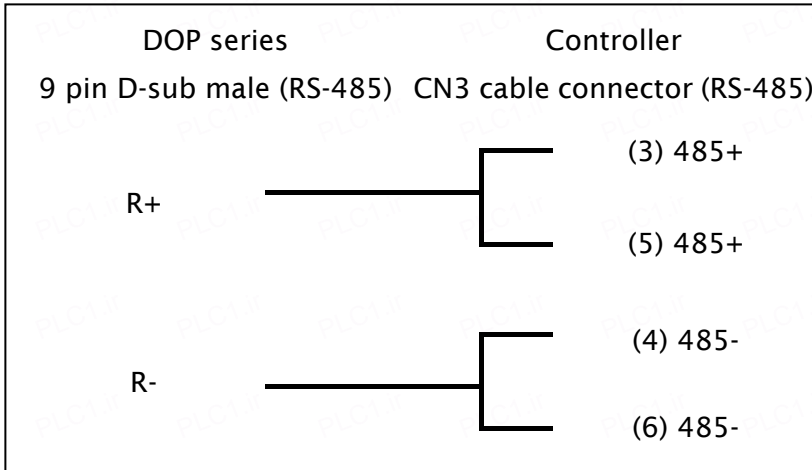
**d. RS-422 (DOP-B Series)**

| DOP series                |   | Controller                   |
|---------------------------|---|------------------------------|
| 9 pin D-sub male (RS-422) |   | CN3 cable connector (RS-422) |
| RXD- (9)                  |    | (6) TX-                      |
| RXD+ (4)                  |  | (5) TX+                      |
| TXD+ (1)                  |  | (3) RX+                      |
| TXD- (6)                  |  | (4) RX-                      |

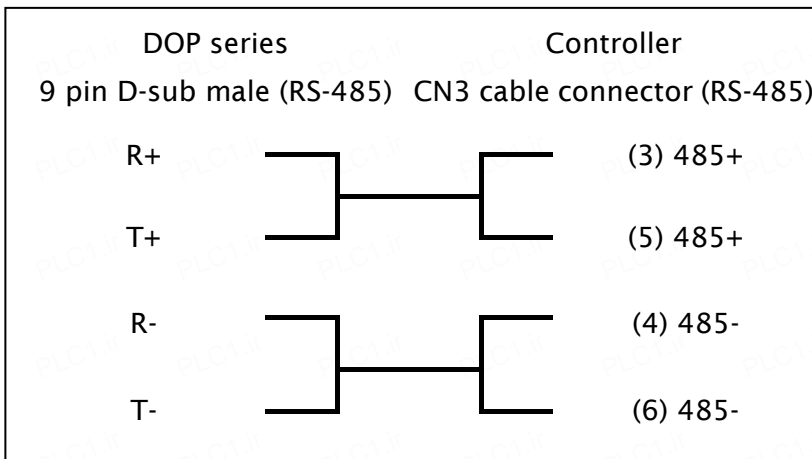
**e. RS-485 (DOP-A/AE Series)**

| DOP series                |   | Controller                   |
|---------------------------|---|------------------------------|
| 9 pin D-sub male (RS-485) |   | CN3 cable connector (RS-485) |
| D+ (2)                    |  | (3) 485+                     |
| D+ (3)                    |  | (5) 485+                     |
| D- (1)                    |  | (4) 485-                     |
| D- (4)                    |  | (6) 485-                     |

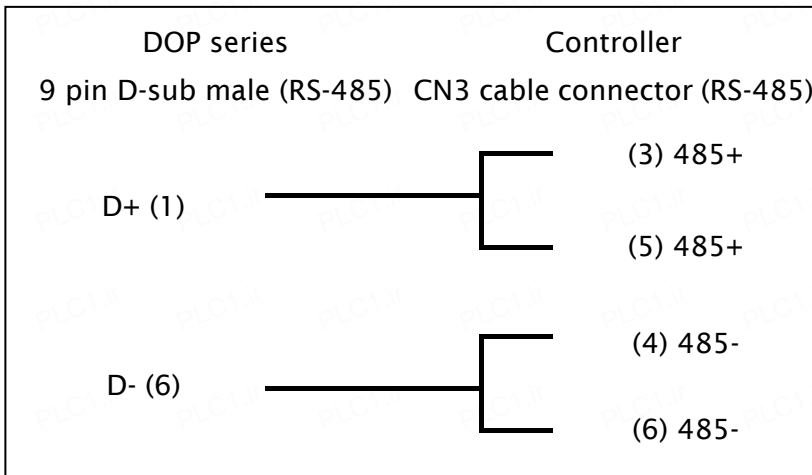
**f. RS-485 (DOP-AS57 Series)**



**g. RS-485 (DOP-AS35/AS38 Series)**



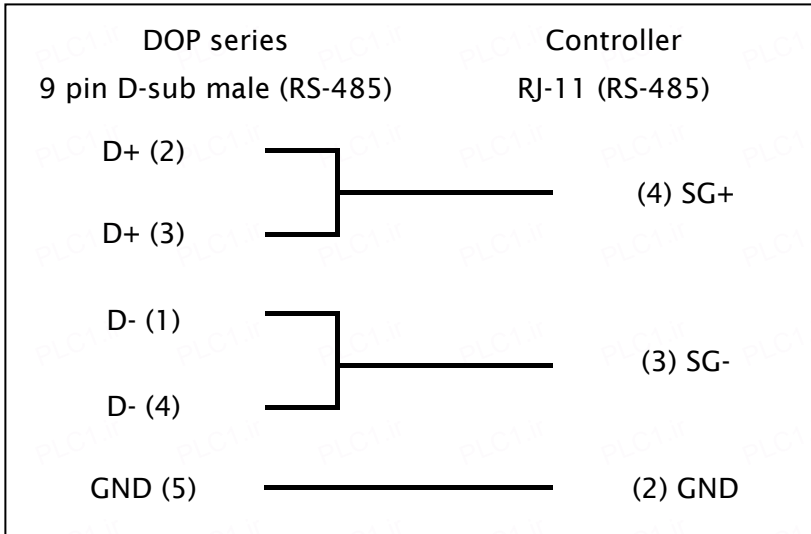
**h. RS-485 (DOP-B Series)**



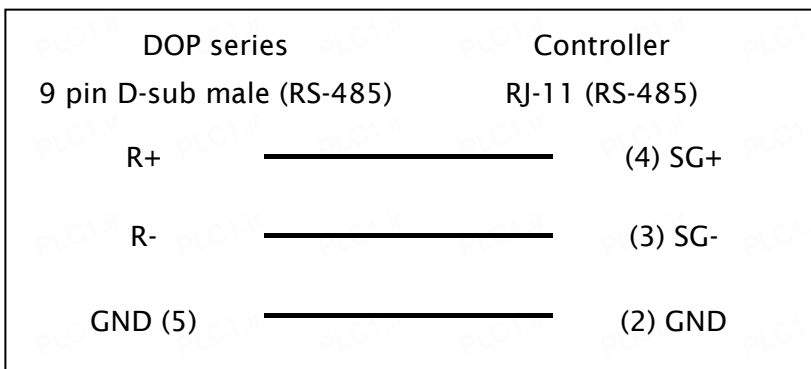


**Delta AC Motor Drive**

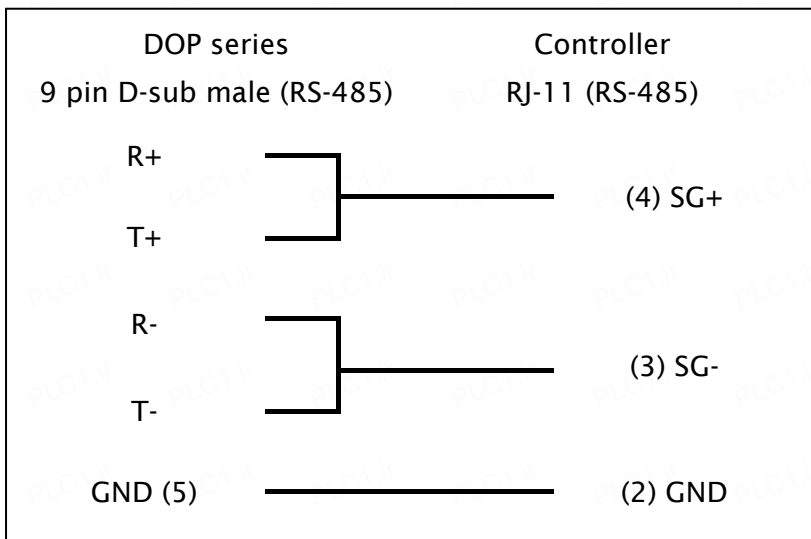
**a. RS-485 (DOP-A/AE Series)**



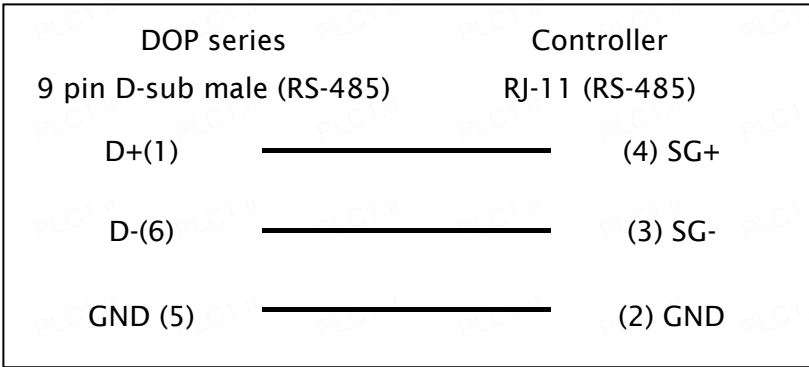
**b. RS-485 (DOP-AS57 Series)**



**c. RS-485 (DOP-AS35/AS38 Series)**

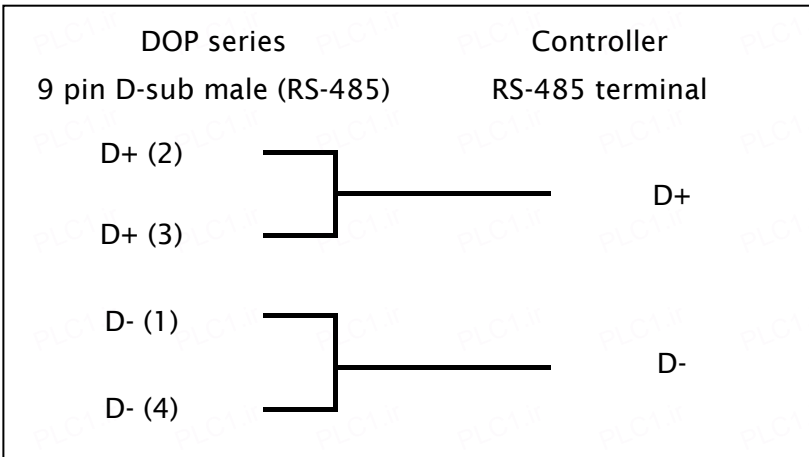


**d. RS-485 (DOP-B Series)**

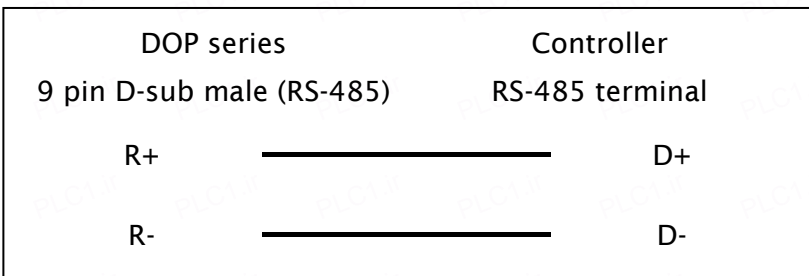


**Temperature Controller**

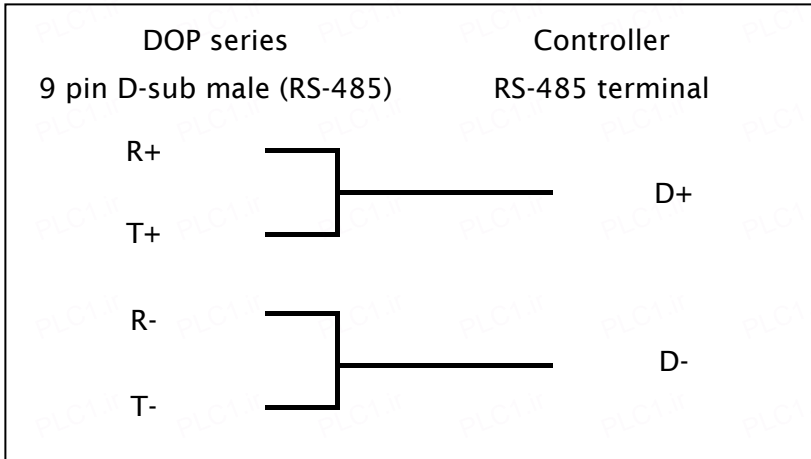
**a. RS-485 (DOP-A/AE Series)**



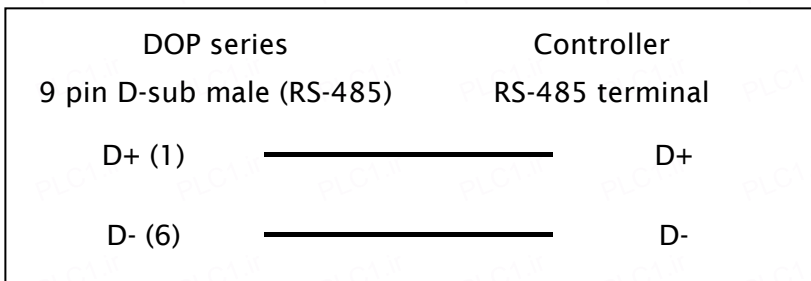
**b. RS-485 (DOP-AS57 Series)**



**c. RS-485 (DOP-AS35/AS38 Series)**



**d. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type   | Format       | Read/Write Range                          | Data Length | Note                     |
|--|--------------|---|-------------|--------------------------|
|  | Word No. (n) |   |             |                          |
| Servo Communication Address                  | SERVO-n      | SERVO-0 - SERVO-FFFF                      | Word        | Hexadecimal              |
| AC Drive Communication Address               | INVERTER-n   | INVERTER-0 - INVERTER-FFFF                | Word        | Hexadecimal              |
| Temperature Controller Communication Address | TEMP_CTRL-n  | TEMP_CTRL-0 - TEMP_CTRL-6000              | Word        | Hexadecimal              |
| PLC Communication Address X                  | PLC_Xn       | PLC_X0 - PLC_X360                         | Word        | Octal, <a href="#">1</a> |
| PLC Communication Address Y                  | PLC_Yn       | PLC_Y0 - PLC_Y360                         | Word        | Octal, <a href="#">1</a> |
| PLC Communication Address M                  | PLC_Mn       | PLC_M0 - PLC_M1520, PLC_M1536 - PLC_M4080 | Word        | <a href="#">1</a>        |
| PLC Communication Address S                  | PLC_Sn       | PLC_S0 - PLC_S1008                        | Word        | <a href="#">1</a>        |

**b. Contacts**

| Type   | Format                     | Read/Write Range                             | Note              |
|--|----------------------------|--|-------------------|
|  | Word No.(n)<br>Bit No. (b) |  |                   |
| Servo Communication Address                      | SERVO-n.b                  | SERVO-0.0 – SERVO-FFFF.F                     | Hexadecimal       |
| AC Drive Communication Address                   | INVERTER-n.b               | INVERTER-0.0 – INVERTER-FFFF.F               | Hexadecimal       |
| Temperature Controller Communication Address     | TEMP_CTRL-n.<br>b          | TEMP_CTRL-0.0 –<br>TEMP_CTRL-6000.F          | Hexadecimal       |
| Servo Digital Input                              | SERVO_DI-b                 | SERVO_DI-1 – SERVO_DI-8                      | <a href="#">2</a> |
| Servo Digital Output                             | SERVO_DO-b                 | SERVO_DO-1 – SERVO_DO-5                      | <a href="#">2</a> |
| PLC Communication Address X                      | PLC_Xb                     | PLC_X0 – PLC_X377                            | Octal             |
| PLC Communication Address Y                      | PLC_Yb                     | PLC_Y0 – PLC_Y377                            | Octal             |
| PLC Communication Address M                      | PLC_Mb                     | PLC_M0 – PLC_M1535,<br>PLC_M1536 – PLC_M4095 |                   |
| PLC Communication Address S                      | PLC_Sb                     | PLC_S0 – PLC_S1023                           |                   |
| PLC Communication Address T                      | PLC_Tb                     | PLC_T0 – PLC_T255                            |                   |
| PLC Communication Address C                      | PLC_Cb                     | PLC_C0 – PLC_C255                            |                   |
| Temperature Controller Bit Communication Address | TEMP_CTRLB-<br>b           | TEMP_CTRLB-800 –<br>TEMP_CTRLB-8FF           | Hexadecimal       |
| Discrete Outputs                                 | RWB-b                      | RWB-0 – RWB-FFFF                             | Hexadecimal       |
| Discrete Inputs                                  | RB-b                       | RB-0 – RB-FFFF                               | Hexadecimal       |
| Discrete Outputs                                 | Bb                         | B1 – B10000                                  |                   |
| Discrete Inputs                                  | Bb                         | B10001 – B20000                              |                   |

 **NOTE**

- 1) Device address must be the multiple of 16.
- 2) SERVO\_DI-, SERVO\_DO- are for Servo only ◦
- 3) HMI can be connected to several temperature controllers using RTU transmission mode. However a communication delay time of 5ms or longer is highly recommended.

## Delta DVP PLC

### HMI Factory Setting:

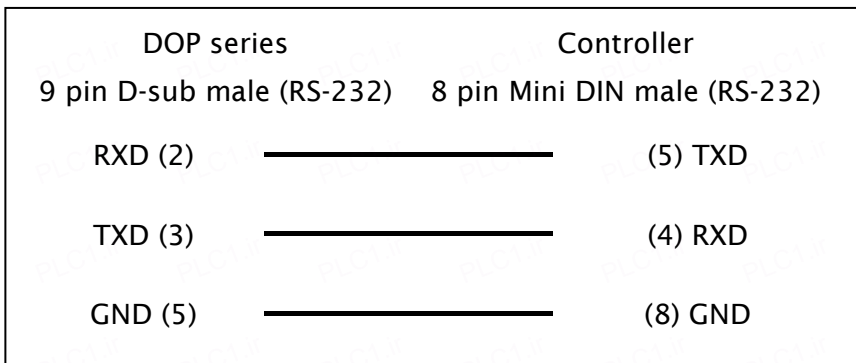
Baud Rate: 9600. 7. Even. 1

Controller Station Number: 1

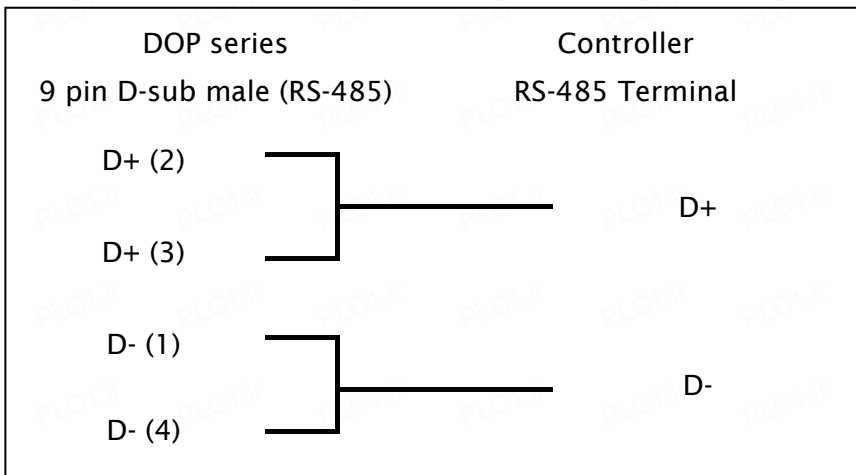
Control Area / Status Area: D0/D10

### Connection

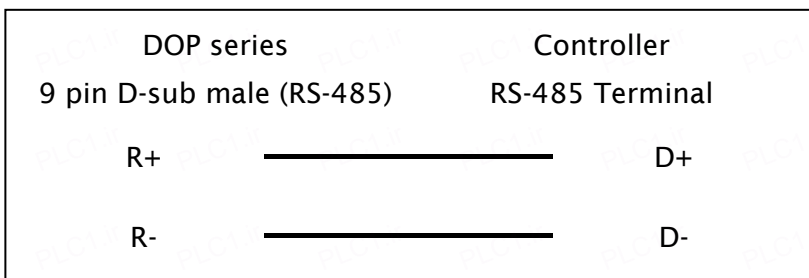
#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



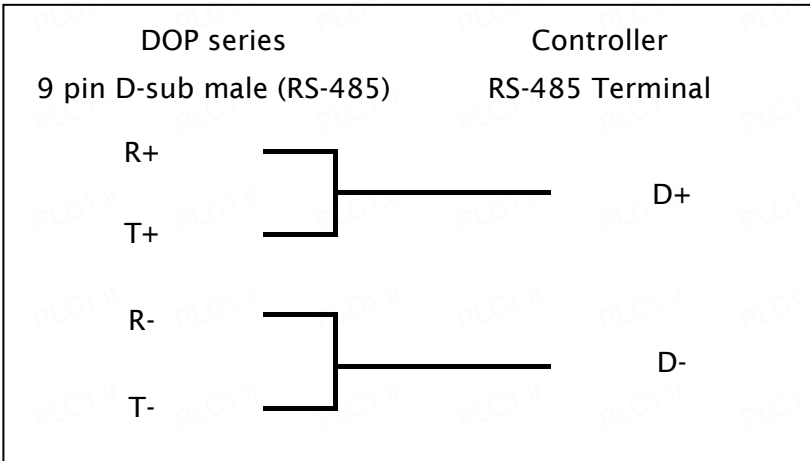
#### b. RS-485 (DOP-A/AE Series)



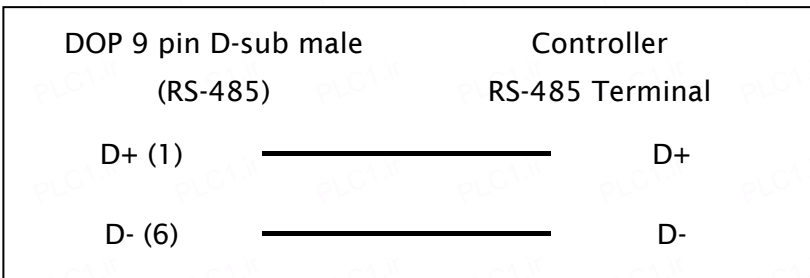
#### c. RS-485 (DOP-AS57 Series)



**d. RS-485 (DOP-AS35/AS38 Series)**



**e. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type        | Format       | Read/Write Range          | Data Length | Note                     |
|-------------|--------------|---------------------------|-------------|--------------------------|
|             | Word No. (n) |                           |             |                          |
| X_Data      | Xn           | X0 - X360                 | Word        | Octal, <a href="#">1</a> |
| Y_Data      | Yn           | Y0 - Y360                 | Word        | Octal, <a href="#">1</a> |
| M_Data      | Mn           | M0 - M1520, M1536 - M4080 | Word        | <a href="#">1</a>        |
| S_Data      | Sn           | S0 - S1008                | Word        | <a href="#">1</a>        |
| T_Register  | Tn           | T0 - T255                 | Word        |                          |
| C_Register  | Cn           | C0 - C199                 | Word        |                          |
| D_Register  | Dn           | D0 - D9999                | Word        |                          |
| HC_Register | Cn           | C200 - C255               | Word        |                          |

**b. Contacts**

| Type   | Format      | Read/Write Range | Note |
|--------|-------------|------------------|------|
|        | Bit No. (b) |                  |      |
| X_Data | Xb          | X0 - X377        |      |
| Y_Data | Yb          | Y0 - Y377        |      |
| M_Data | Mb          | M0 - M4080       |      |
| S_Data | Sb          | S0 - S1023       |      |
| T_Coil | Tb          | T0 - T255        |      |
| C_Coil | Cb          | C0 - C255        |      |

 **NOTE**

- 1) Device address must be the multiple of 16.

## Delta DVP TCP/IP

### HMI Factory Setting:

Controller IP Address: 192.168.0.1  
 Controller COM Port: 502  
 Controller Station Number: 1  
 Control Area / Status Area: D0/D10

### Connection

Standard Jumper Cable / Network Cable without jumper (Auto-detected by HMI)

### Definition of PLC Read/Write Address

#### a. Registers

| Type        | Format       | Read/Write Range          | Data Length | Note     |
|-------------|--------------|---------------------------|-------------|----------|
|             | Word No. (n) |                           |             |          |
| X_Data      | Xn           | X0 - X360                 | Word        | Octal, 1 |
| Y_Data      | Yn           | Y0 - Y360                 | Word        | Octal, 1 |
| M_Data      | Mn           | M0 - M1520, M1536 - M4080 | Word        | 1        |
| S_Data      | Sn           | S0 - S1008                | Word        | 1        |
| T_Register  | Tn           | T0 - T255                 | Word        |          |
| C_Register  | Cn           | C0 - C199                 | Word        |          |
| D_Register  | Dn           | D0 - D9999                | Word        |          |
| HC_Register | Cn           | C200 - C255               | Word        |          |

#### b. Contacts

| Type   | Format      | Read/Write Range | Note |
|--------|-------------|------------------|------|
|        | Bit No. (b) |                  |      |
| X_Data | Xb          | X0 - X377        |      |
| Y_Data | Yb          | Y0 - Y377        |      |
| M_Data | Mb          | M0 - M4080       |      |
| S_Data | Sb          | S0 - S1023       |      |
| T_Coil | Tb          | T0 - T255        |      |



| Type   | Format      | Read/Write Range | Note |
|--------|-------------|------------------|------|
|        | Bit No. (b) |                  |      |
| C_Coil | Cb          | C0 - C255        |      |

---

 **NOTE**

- 1) Device address must be a multiple of 16

## Delta RTU-EN01 (Modbus TCP)

### HMI Factory Setting:

Controller IP Address: 192.168.0.1

Controller COM Port: 502

Controller Station Number: 1

Control Area / Status Area: None/None

### Connection

Standard Jumper Cable / Network Cable without jumper (Auto-detected by HMI)

### Definition of PLC Read/Write Address

#### a. Registers

| Type                        | Format       | Read/Write Range | Data Length | Note      |
|-----------------------------|--------------|------------------|-------------|-----------|
|                             | Word No. (n) |                  |             |           |
| Basic Register              | BR-n         | BR-0 - BR-63     | Word        | Read only |
| Timer Register              | T-n          | T-0 - T-15       | Word        |           |
| Counter Register            | C-n          | C-0 - C-15       | Word        |           |
| I/O Module Control Register | RCR-n        | RCR-0 - RCR-399  | Word        |           |

#### b. Contacts

| Type          | Format      | Read/Write Range | Note      |
|---------------|-------------|------------------|-----------|
|               | Bit No. (b) |                  |           |
| Input Relay   | RX-b        | RX-0 - RX-255    | Read only |
| Output Relay  | RY-b        | RY-0 - RY-255    |           |
| Timer Relay   | T-b         | T-0 - T-15       |           |
| R Relay       | R-b         | R-0 - R-15       |           |
| Counter Relay | C-b         | C-0 - C-15       |           |

 **NOTE**

- 1) The address number can be up to three digits. Even if leading 0 (zero) is used, the total address number should not be more than three digits.
- 2) Relationship between Modbus address and HMI register:

| Delta RTU-EN01 (Modbus TCP) Address |                        | Modbus Address (Dec)     |
|-------------------------------------|------------------------|--------------------------|
| Basic Register                      | <b>BR-0 - BR-63</b>    | <b>W400001 - W400064</b> |
| Timer Register                      | <b>T-0 - T-15</b>      | <b>W405633 - W405648</b> |
| Counter Register                    | <b>C-0 - C-15</b>      | <b>W407681 - W407696</b> |
| I/O Module Control Register         | <b>RCR-0 - RCR-399</b> | <b>W412289 - W412689</b> |
| Input Relay                         | <b>RX-0 - RX-255</b>   | <b>B101025 - B101280</b> |
| Output Relay                        | <b>RY-0 - RY-255</b>   | <b>B001281 - B001536</b> |
| Timer Relay                         | <b>T-0 - T-15</b>      | <b>B005633 - B005648</b> |
| R Relay                             | <b>R-0 - R-15</b>      | <b>B006401 - B006416</b> |
| Counter Relay                       | <b>C-0 - C-15</b>      | <b>B007681 - B007696</b> |

## Delta Solectria Inverter

### HMI Factory Setting:

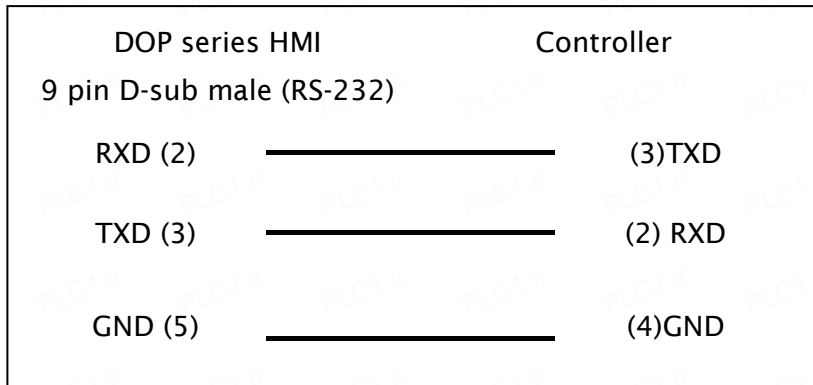
Baud Rate: 19200. 8. None. 1

Controller Station Number: 1

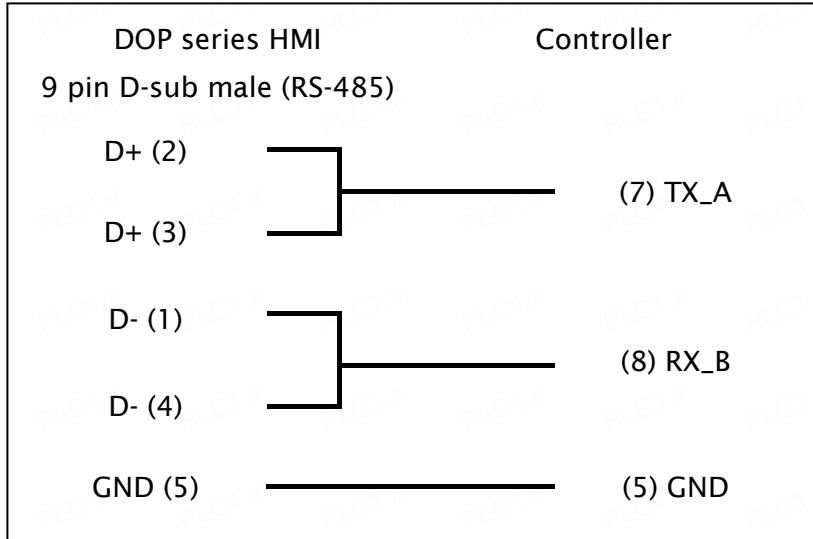
Control Area / Status Area: None/ None

### Connection

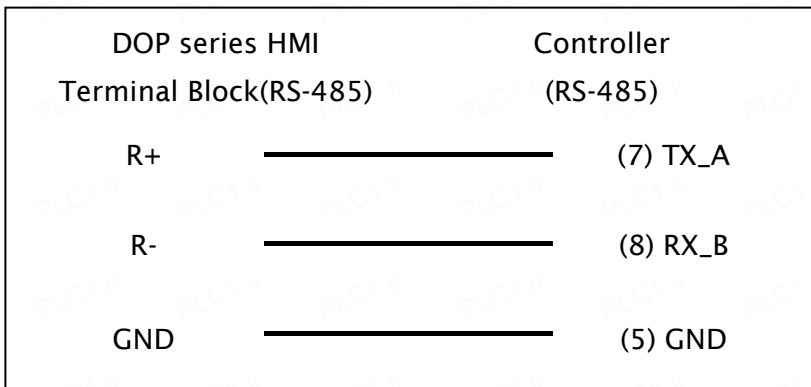
#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



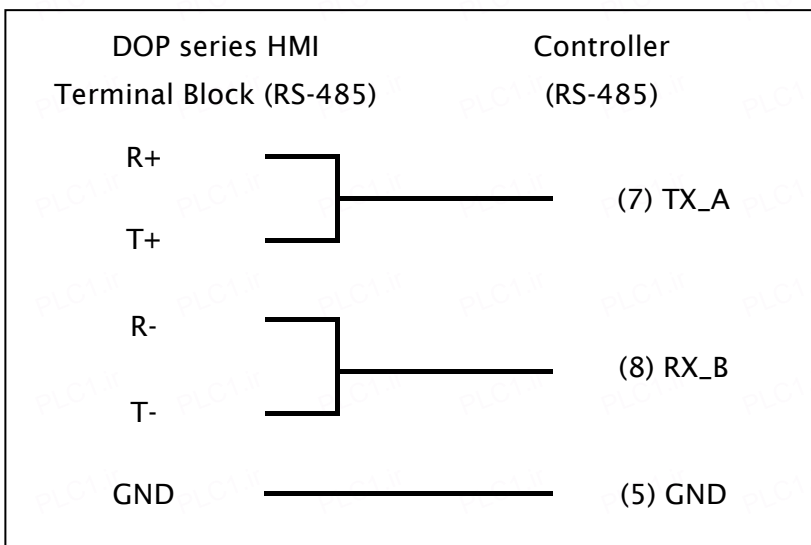
#### b. RS-485 (DOP-A/AE Series)



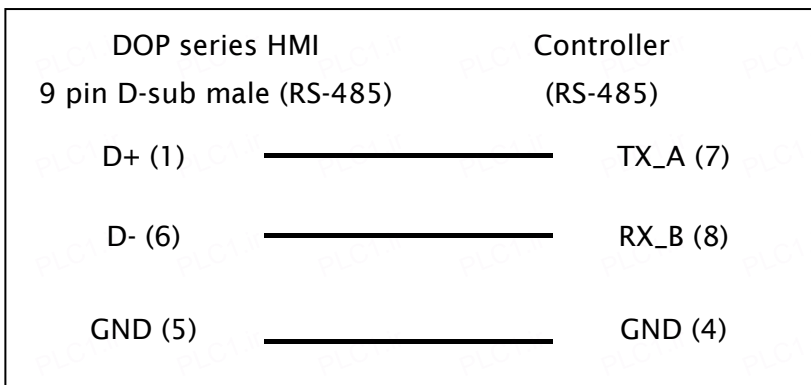
**c. RS-485 (DOP-AS57 Series)**



**d. RS-485 (DOP-AS35/AS38 Series)**



**e. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type          | Format                       | Read/Write Range      | Data Length | Note |
|---------------|------------------------------|-----------------------|-------------|------|
|               | command(n)<br>sub-command(m) |                       |             |      |
| Command Group | CMDBn:m                      | CMDB1:1 - CMDB255:127 | Byte        |      |
| Command Group | CMDWn:m                      | CMDW1:1 - CMDW255:127 | Word        |      |
| Command Group | CMDDn:m                      | CMDD1:1 - CMDD255:127 | Double Word |      |

**b. Contacts**

| Type             | Format                                     | Read/Write Range          | Note |
|------------------|--|---------------------------|------|
|                  | Command(n)<br>Sub-Command(m)<br>Bit No.(b) |                           |      |
| Command Group    | CMDBn:m/b                                  | CMDB1:1/0 - CMDB255:127/7 |      |
| Reset Group Data | RSTb                                       | RST1 - RST255             |      |

 **NOTE**

- 1) Device address indicates the function code provided by controller, “n” represent command and “m” represent sub-command. The suffix of CMD represent the data length (B/W/D = Byte/Word/Double word). Please refer to Delta PLC user manual for the function code and select the corresponding data length. For example, to access function 12:01 select CMDB; and to access function 22:03 select CMDD.
- 2) The address of CMDB indicates certain bit of the function code when the data length for read/write is byte. RST is the sub command of Reset. The address of RST indicates the reset function code. For example, RST23 represents the function code 23, i.e. 128 (reset statistic) function.
- 3) Sub-command 0 usually supports the access to all data in the command group, but in this case it does not support the access since the required data length is not fixed. For the same reason, command 0 is not supported as well.
- 4) Since every function is independent, it does not support read “optimized” function.
- 5) Data length should set according to the function code since the require setting differ among each function. If CMDB or CMDW is selected, data length setting should be Word; if CMDD is selected, data length setting should be Double Word. For example, data length setting for CMDW12:05 must be Word otherwise error may occur.

## Emerson EC20 Series PLC

### HMI Factory Setting:

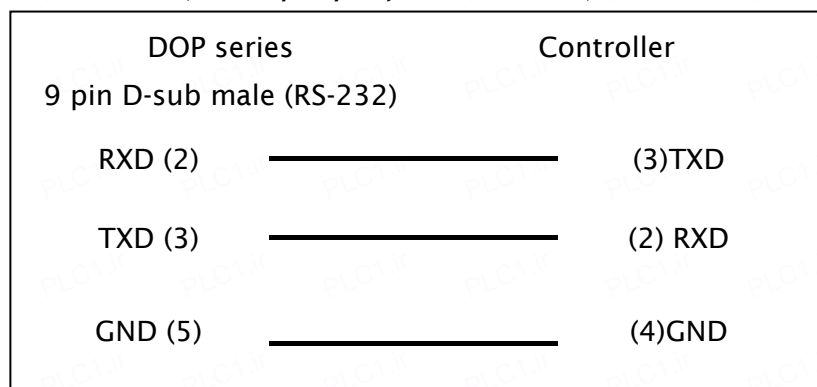
Baud rate: 19200, 8, Even, 1

Controller Station Number: 1

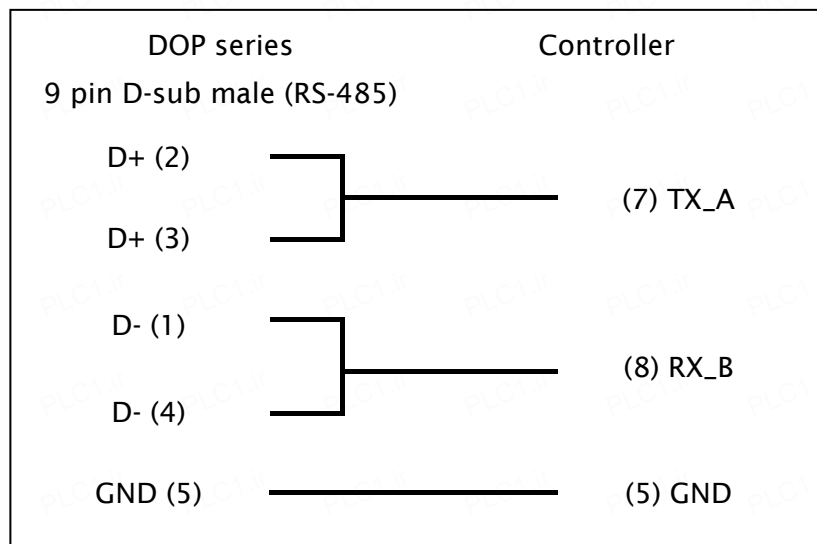
Control Area / Status Area: D0/D10

### Connection

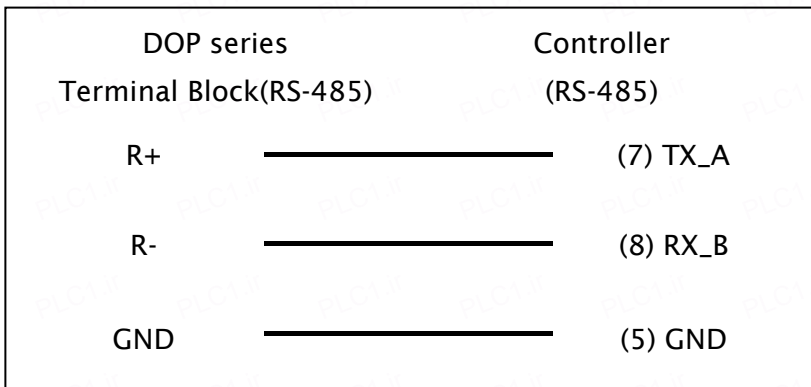
#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



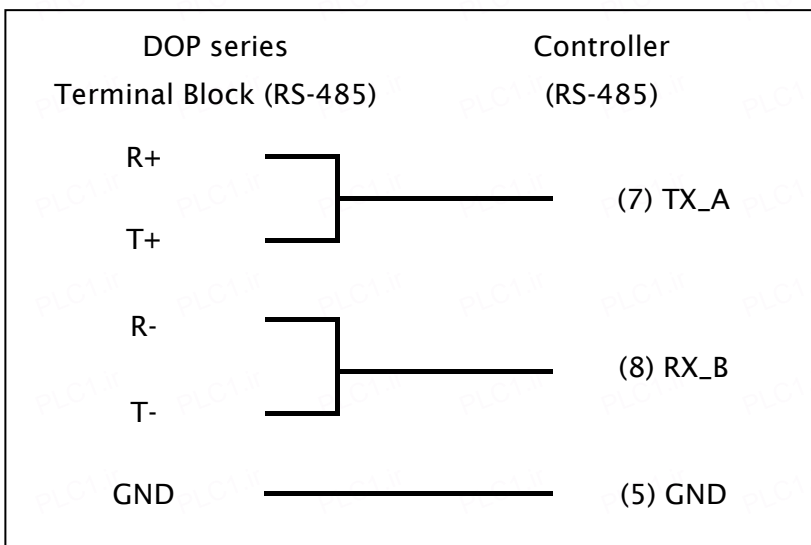
#### b. RS-485 (DOP-A/AE Series)



**c. RS-485 (DOP-AS57 Series)**



**d. RS-485 (DOP-AS35/AS38 Series)**



**e. RS-485 (DOP-B series)**





**Definition of PLC Read/Write Address**

**a. Registers**

| Type                             | Format       | Read/Write Range | Data Length | Note              |
|----------------------------------|--------------|------------------|-------------|-------------------|
|                                  | Word No. (n) |                  |             |                   |
| Data Word <b>D</b>               | Dn           | D0 - D7999       | Word        |                   |
| Special Data Word <b>SD</b>      | SDn          | SD0 - SD255      | Word        | <a href="#">3</a> |
| Data Word <b>Z</b>               | Zn           | Z0 - Z15         | Word        |                   |
| Timer <b>T</b>                   | Tn           | T0 - T255        | Word        |                   |
| Counter <b>C</b>                 | Cn           | C0 - C199        | Word        |                   |
| Double word Counter <b>CDW</b>   | CDWn         | CDW200 - CDW255  | Double Word |                   |
| Double word Data Word <b>DDW</b> | DDWn         | DDW0 - DDW7998   | Double Word |                   |

**b. Contacts**

| Type                             | Format      | Read/Write Range | Note              |
|----------------------------------|-------------|------------------|-------------------|
|                                  | Bit No. (b) |                  |                   |
| External Output Relay <b>Y</b>   | Yb          | Y0 - Y377        | Octal             |
| External Input Relay <b>X</b>    | Xb          | X0 - X377        | Octal             |
| Internal Relay <b>M</b>          | Mb          | M0 - M1999       |                   |
| Special Internal Relay <b>SM</b> | SMb         | SM0 - SM255      | <a href="#">3</a> |
| Status Relay <b>S</b>            | Sb          | S0 - S991        |                   |
| Timer <b>T</b>                   | Tb          | T0 - T255        |                   |
| Counter <b>C</b>                 | Cb          | C0 - C255        |                   |

 **NOTE**

- 1) Emerson EC20 series PLC has two communication ports, COM0 and COM1. They are provided for the communication protocol for connecting to PC, Modbus communication protocol and user-defined protocol. The default setting is COM0 to be enabled only, so the user needs to set the communication mode as Modbus RTU via PC software before using it.
- 2) COM1 supports RS-232 and RS-485.
- 3) Please note that not all of the addresses can be written when reading SM and SD device. We recommend the user not to set all of the addresses as write address except when setting parameters.

## Facon FB Series PLC

### HMI Factory Setting:

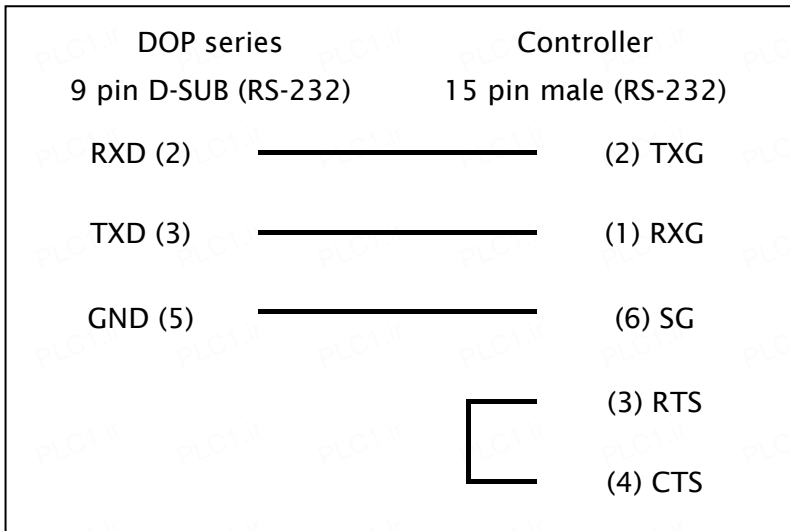
Baud rate: 9600, 7, Even, 1

Controller Station Number: 1

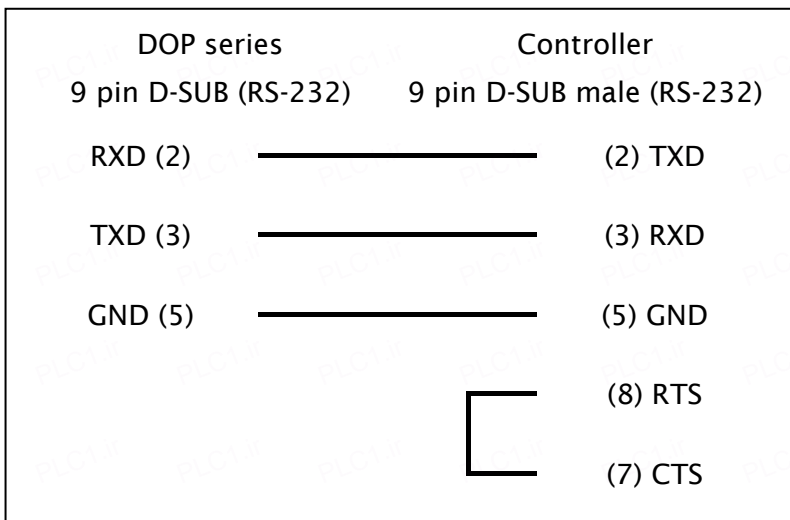
Control Area / Status Area: R0/R10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



#### b. RS-232 (DOP-A/AE/AS, DOP-B Series) CB(Communication Board)/ CM(Communication Module), FBs Series Port 1)



**c. RS-232: FBs Series Port 0 (DOP-A/AE/AS, DOP-B Series)**

| DOP series           |       | Controller                   |
|----------------------|-------|------------------------------|
| 9 pin D-SUB (RS-232) |       | 4 pin Mini DIN male (RS-232) |
| RXD (2)              | ————— | (4) TXD                      |
| TXD (3)              | ————— | (2) RXD                      |
| GND (5)              | ————— | (1) GND                      |
|                      |       | (3) +5V                      |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type                  | Format       | Read/Write Range | Data Length | Note              |
|-----------------------|--------------|------------------|-------------|-------------------|
|                       | Word No. (n) |                  |             |                   |
| Input Relay           | WXn          | WX0 - WX9992     | Byte        | <a href="#">1</a> |
| Output Relay          | WYn          | WY0 - WY9992     | Byte        | <a href="#">1</a> |
| Internal Relay        | WMn          | WM0 - WM9992     | Byte        | <a href="#">1</a> |
| Step Relay            | WSn          | WS0 - WS9992     | Byte        | <a href="#">1</a> |
| Data Register         | Rn           | R0 - R65534      | Word        |                   |
| Data Register         | Dn           | D0 - D65534      | Word        |                   |
| Timer Present Value   | RTn          | RT0 - RT9999     | Word        |                   |
| Counter Present Value | RCn          | RC0 - RC9999     | Word        |                   |
| Data Register         | DRCn         | DRC200 - DRC255  | Double Word |                   |

**b. Contacts**

| Type           | Format      | Read/Write Range | Note |
|----------------|-------------|------------------|------|
|                | Bit No. (b) |                  |      |
| Input Relay    | Xb          | X0 - X9999       |      |
| Output Relay   | Yb          | Y0 - Y9999       |      |
| Internal Relay | Mb          | M0 - M9999       |      |
| Step Relay     | Sb          | S0 - S9999       |      |
| Timer Flag     | Tb          | T0 - T9999       |      |
| Counter Flag   | Cb          | C0 - C9999       |      |

 **NOTE**

- 1) Device address must be a multiple of 8.

## Festo PLC

### HMI Factory Setting:

Baud rate: 9600, 8, None, 1

Controller Station Number: 0 (no PLC station number in protocol)

Control Area / Status Area: R0/R10

### Connection

PLC Communication Port: COM port

It needs to use the dedicated cable for FESTO controllers → Cable for transferring TTL to RS-232 and it is 6 pin RJ-12 connector at PLC side.

### Definition of PLC Read/Write Address

#### a. Registers

| Type           | Format       | Read/Write Range | Data Length | Note |
|----------------|--------------|------------------|-------------|------|
|                | Word No. (n) |                  |             |      |
| WORD_DEVICE_IW | Iwn          | IW0 - IW255      | Word        |      |
| WORD_DEVICE_OW | Own          | OW0 - OW255      | Word        |      |
| WORD_DEVICE_FW | FWn          | FW0 - FW9999     | Word        |      |
| WORD_DEVICE_TW | TWn          | TW0 - TW255      | Word        |      |
| WORD_DEVICE_CW | CWn          | CW0 - CW255      | Word        |      |
| WORD_DEVICE_R  | Rn           | R0 - R255        | Word        |      |
| WORD_DEVICE_TP | TPn          | TP0 - TP255      | Word        |      |
| WORD_DEVICE_CP | CPn          | CP0 - CP255      | Word        |      |

#### b. Contacts

| Type            | Format                      | Read/Write Range | Note |
|-----------------|-----------------------------|------------------|------|
|                 | Word No. (n)<br>Bit No. (b) |                  |      |
| BIT_DEVICE_I    | In.b                        | I0.0 - I255.15   |      |
| BIT_DEVICE_O    | On.b                        | O0.0 - O255.15   |      |
| BIT_DEVICE_F    | Fn.b                        | F0.0 - F9999.15  |      |
| BIT_DEVICE_T    | Tb                          | T0 - T255        |      |
| BIT_DEVICE_C    | Cb                          | C0 - C255        |      |
| BIT_DEVICE_TON  | TONb                        | TON0 - TON255    |      |
| BIT_DEVICE_TOFF | TOFFb                       | TOFF0 - TOFF255  |      |

 **NOTE**

1) Connectable PLC: FEC-FC Model

## FuFeng APC Controller

### HMI Factory Setting:

Baud rate: 115200, 8, None, 1

Controller Station Number: 0

Control Area / Status Area: D0/D10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP series                | Controller |
|---------------------------|------------|
| 9 pin D-sub male (RS-232) |            |
| RXD (2)                   | TXD(2)     |
| TXD (3)                   | RXD(3)     |
| GND (5)                   | GND(5)     |

### Definition of PLC Read/Write Address

#### a. Registers

| Type  | Format       | Read/Write Range | Data Length | Note              |
|---|--------------|------------------|-------------|-------------------|
|   | Word No. (n) |                  |             |                   |
| Timer Setting Value                               | TSn          | TS0 - TS127      | Word        |                   |
| Timer Present Value                               | TNn          | TN0 - TN127      | Word        | <a href="#">1</a> |
| Counter Setting Value                             | CSn          | CS0 - CS127      | Word        |                   |
| Counter Present Value                             | CNn          | CN0 - CN127      | Word        | <a href="#">1</a> |
| Data Memory                                       | Dn           | D0 - D999        | Word        |                   |
| Temperature Controller-<br>Temperature Setting    | KSn          | KS0 - KS15       | Word        |                   |
| Temperature Controller-<br>Present Value          | KNn          | KN0 - KN15       | Word        | <a href="#">1</a> |
| Temperature Controller-<br>Low-current Setting    | CLn          | CL0 - CL15       | Word        |                   |
| Temperature Controller-<br>High Temperature Alarm | Hn           | H0 - H15         | Word        |                   |
| Temperature Controller-<br>Low Temperature Alarm  | Ln           | L0 - L15         | Word        |                   |

| Type  | Format       | Read/Write Range | Data Length | Note              |
|---|--------------|------------------|-------------|-------------------|
|   | Word No. (n) |                  |             |                   |
| Temperature Controller - Present Value of Current | In           | I0 - I15         | Word        | <a href="#">1</a> |
| Temperature Controller- Cycle Setting             | Rn           | R0 - R15         | Word        |                   |

**b. Contacts**

| Type   | Format      | Read/Write Range | Note |
|--------|-------------|------------------|------|
|        | Bit No. (b) |                  |      |
| Node R | Rb          | R0 - R255        |      |
| Node X | Xb          | X0 - X239        |      |
| Node Y | Yb          | Y0 - Y159        |      |
| Node S | Sb          | S0 - S239        |      |
| Node K | Kb          | K0 - K127        |      |
| Node T | Tb          | T0 - K127        |      |
| Node C | Cb          | C0 - C127        |      |

 **NOTE**

- 1) This type of device is read only.



## Fuji Frenic Inverter

### HMI Factory Setting:

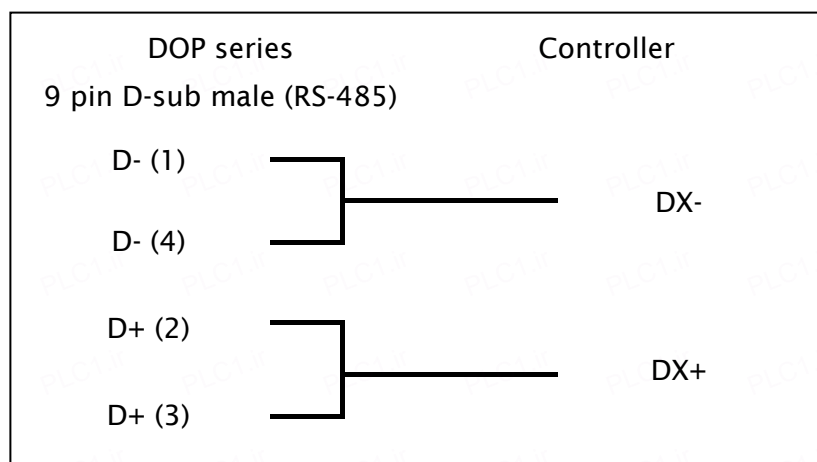
Baud rate: 9600, 8, None, 2

Controller Station Number: 1 ([Note1](#))

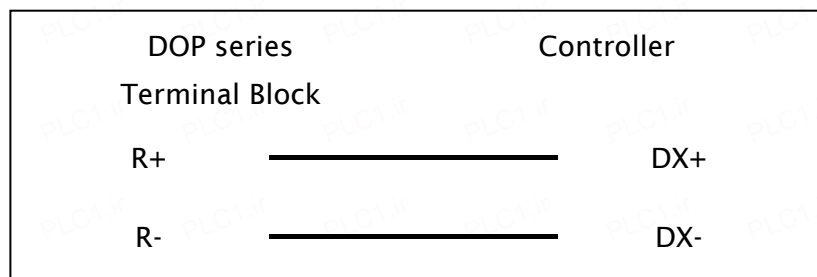
Control Area / Status Area: None/None

### Connection

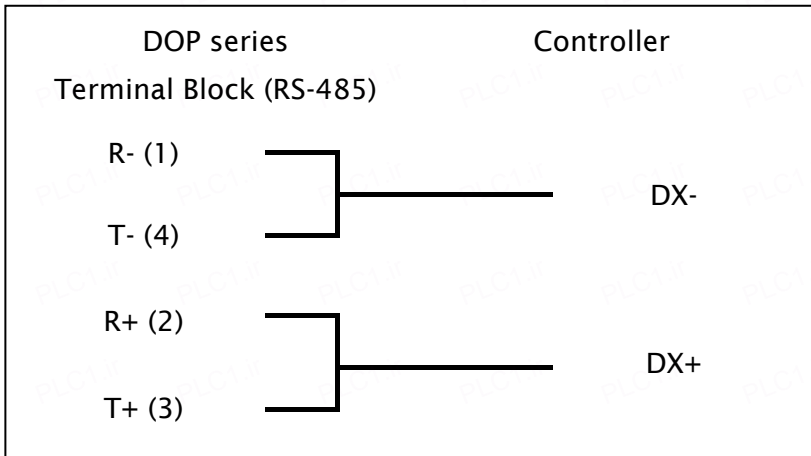
#### a. RS-485 (DOP-A/AE Series)



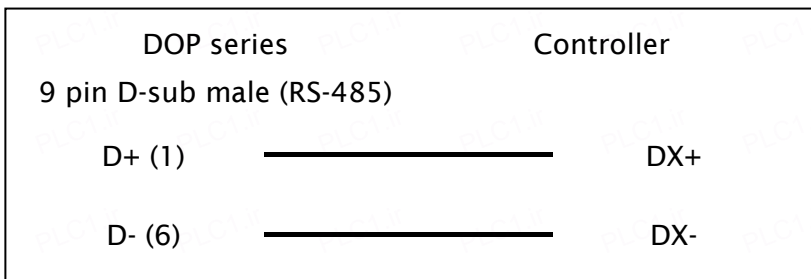
#### b. RS-485 (DOP-AS57 Series)



**c. RS-485 (DOP-AS35/AS38 Series)**



**d. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                           | Format         | Read/Write Range | Data Length | Note |
|--------------------------------|----------------|------------------|-------------|------|
|                                | Word No. (n)   |                  |             |      |
| Fundamental functions          | F <sub>n</sub> | F0 - F42         | Word        |      |
| Extension terminal functions   | E <sub>n</sub> | E1 - E47         | Word        |      |
| Control functions of frequency | C <sub>n</sub> | C1 - C33         | Word        |      |
| motor Parameters               | P <sub>n</sub> | P1 - P9          | Word        |      |
| High speed frequency           | H <sub>n</sub> | H3 - H39         | Word        |      |
| Alternative motor parameters   | A <sub>n</sub> | A1 - A18         | Word        |      |
| Optional functions             | O <sub>n</sub> | O1 - O29         | Word        |      |
| Setting data function          | S <sub>n</sub> | S1 - S12         | Word        |      |
| Monitoring data functions      | M <sub>n</sub> | M1 - M48         | Word        |      |

**b. Contacts**

| Type                           | Format                      | Read/Write Range     | Note |
|--------------------------------|-----------------------------|----------------------|------|
|                                | Word No. (n)<br>Bit No. (b) |                      |      |
| Fundamental functions          | <b>Fn.b</b>                 | <b>F0.0 - F42.15</b> |      |
| Extension terminal functions   | <b>En.b</b>                 | <b>E1.0 - E47.15</b> |      |
| Control functions of frequency | <b>Cn.b</b>                 | <b>C1.0 - C33.15</b> |      |
| motor Parameters               | <b>Pn.b</b>                 | <b>P1.0 - P9.15</b>  |      |
| High speed frequency           | <b>Hn.b</b>                 | <b>H3.0 - H39.15</b> |      |
| Alternative motor parameters   | <b>An.b</b>                 | <b>A1.0 - A18.15</b> |      |
| Optional functions             | <b>On.b</b>                 | <b>O1.0 - O29.15</b> |      |
| Setting data function          | <b>Sn.b</b>                 | <b>S1.0 - S12.15</b> |      |
| Monitoring data functions      | <b>Mn.b</b>                 | <b>M1.0 - M48.15</b> |      |

 **NOTE**

- 1) Controller Station Number range from 1 to 31, and Number 99 is for radio broadcast.
- 2) Not all address is applicable to radio broadcast. Please refer to Fuji Frenic Inverter manual for details on radio broadcast address.
- 3) Not all address can be read and write. Please refer to Fuji Frenic Inverter manual for details on read/ write characteristics.

## GE Fanuc 90 Series SNP PLC

### HMI Factory Setting:

Baud rate: 19200, 8, Odd, 1

Controller Station Number: 0 (no PLC station number in protocol, therefore, only 1(HMI) to 1(PLC) communication is allowed.)

Control Area / Status Area: %R1 / %R10

### Connection

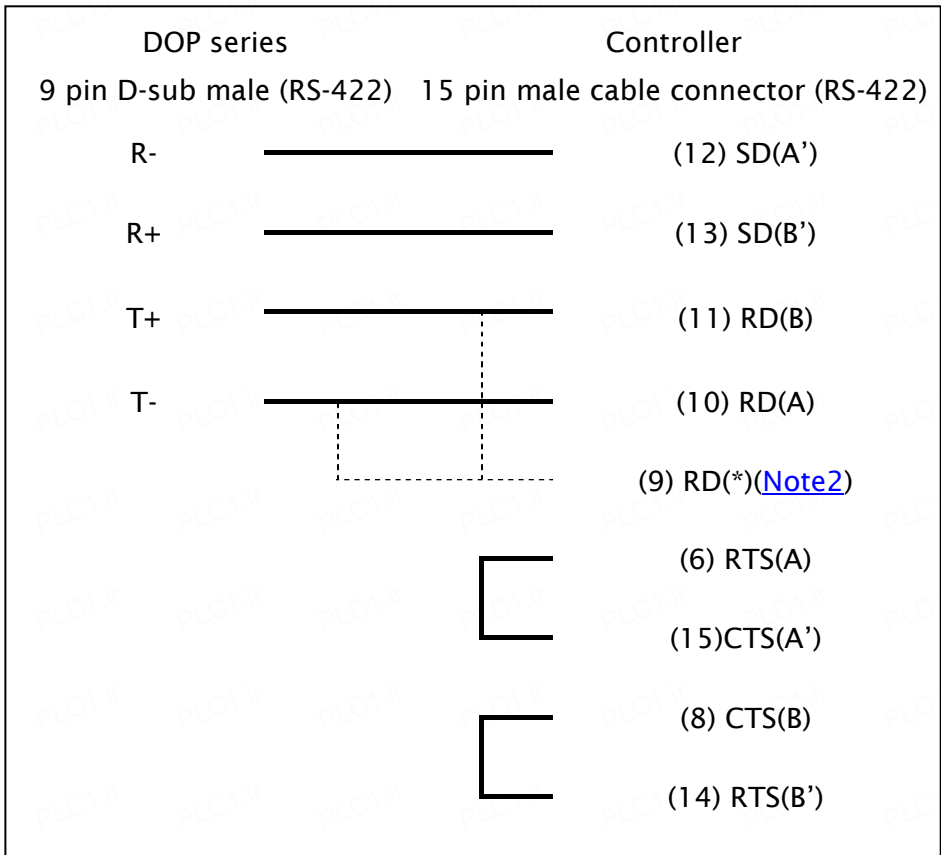
#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP series                |       | Controller     |
|---------------------------|-------|----------------|
| 9 pin D-sub male (RS-232) |       | RJ-45 (RS-232) |
| RXD (2)                   | ————— | (4) TXD        |
| TXD (3)                   | ————— | (3) RXD        |
| GND (5)                   | ————— | (8) GND        |

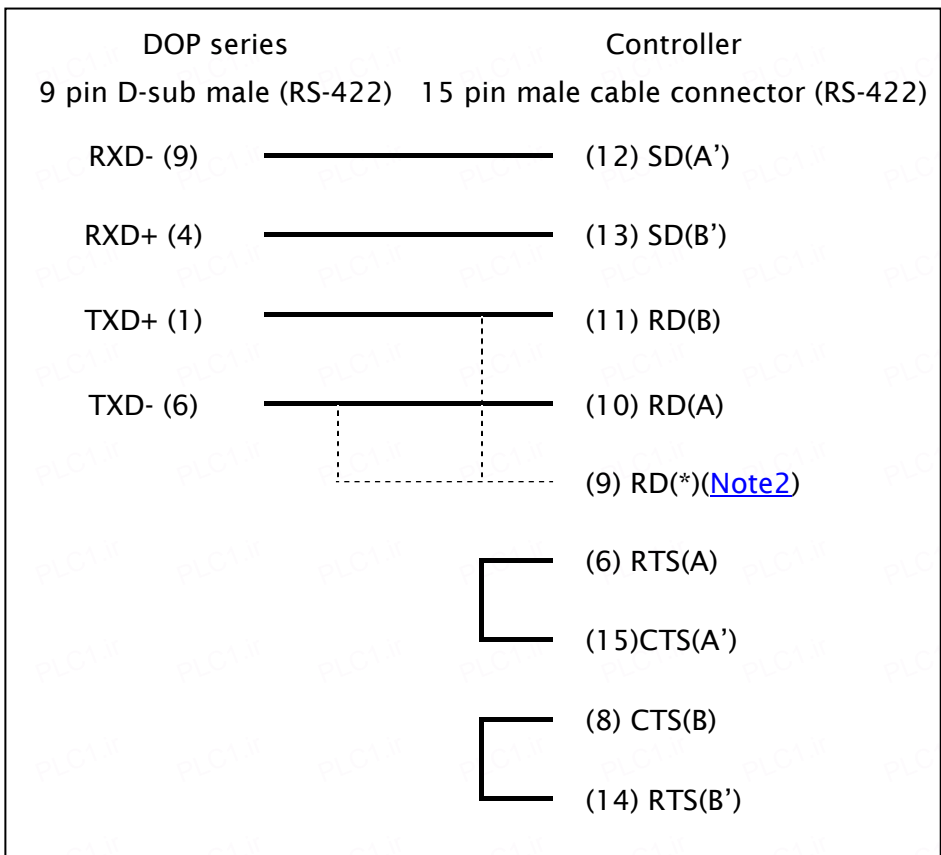
#### b. RS-422 (DOP-A/AE Series)

| DOP series                |       | Controller                           |
|---------------------------|-------|--------------------------------------|
| 9 pin D-sub male (RS-422) |       | 15 pin male cable connector (RS-422) |
| RXD- (1)                  | ————— | (12) SD(A')                          |
| RXD+ (2)                  | ————— | (13) SD(B')                          |
| TXD+ (3)                  | ————— | (11) RD(B)                           |
| TXD- (4)                  | ————— | (10) RD(A)                           |
|                           | ----- | (9) RD(*) <a href="#">(Note2)</a>    |
|                           | ┌───┐ | (6) RTS(A)                           |
|                           | └───┘ | (15) CTS(A')                         |
|                           | ┌───┐ | (8) CTS(B)                           |
|                           | └───┘ | (14) RTS(B')                         |

**c. RS-422 (DOP-AS35/AS38/AS57 Series)**



**d. RS-422 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

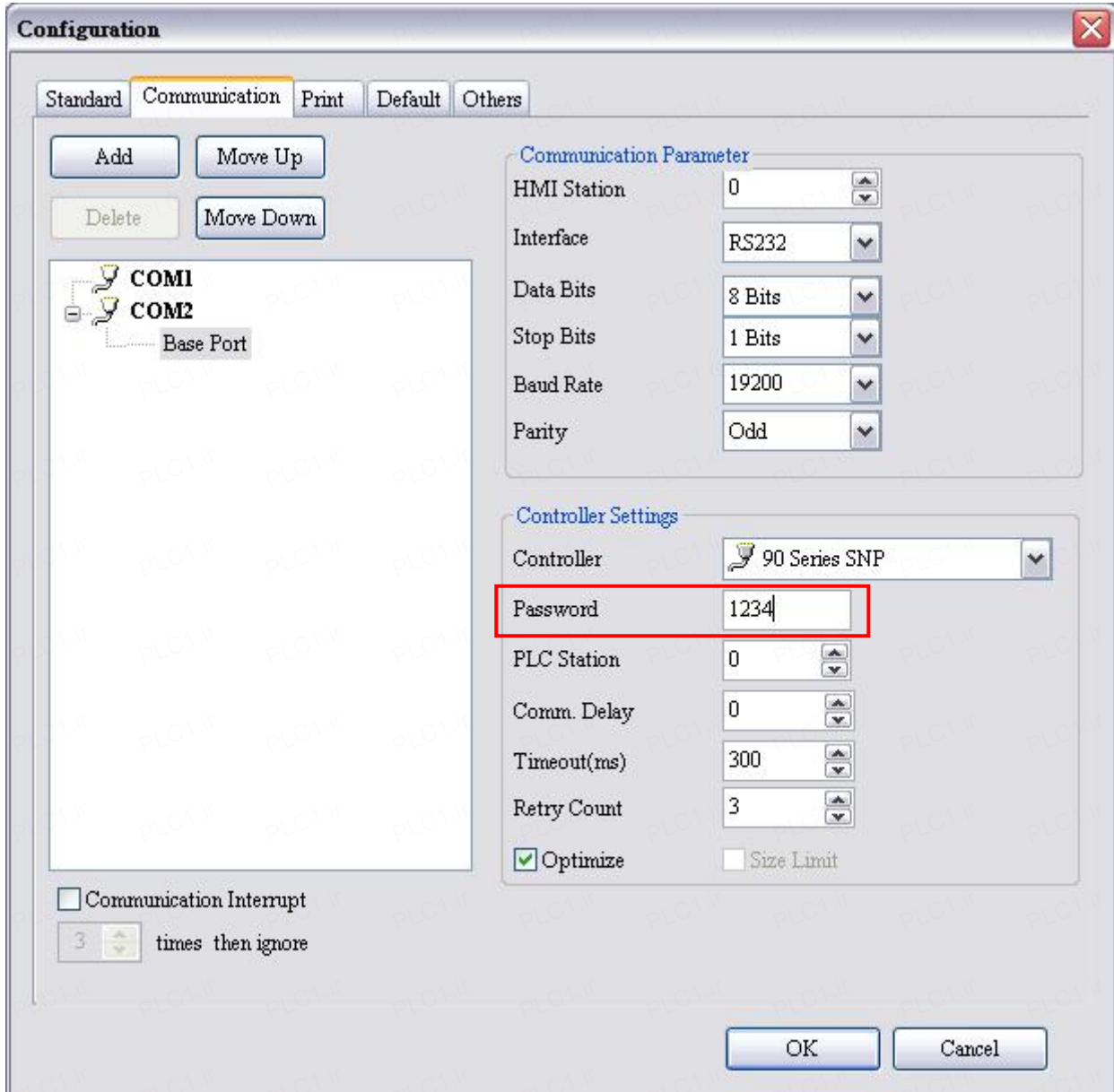
| Type                 | Format       | Read/Write Range | Data Length | Note              |
|----------------------|--------------|------------------|-------------|-------------------|
|                      | Word No. (n) |                  |             |                   |
| Discrete Inputs      | %In          | %I1 - %I12288    | Word        | <a href="#">3</a> |
| Discrete Outputs     | %Qn          | %Q1 - %Q12288    | Word        | <a href="#">3</a> |
| Discrete Temporaries | %Tn          | %T1 - %T256      | Word        | <a href="#">3</a> |
| Discrete Internals   | %Mn          | %M1 - %M12288    | Word        | <a href="#">3</a> |
| %SA Discretes        | %SAn         | %SA1 - %SA128    | Word        | <a href="#">3</a> |
| %SB Discretes        | %SBn         | %SB1 - %SB128    | Word        | <a href="#">3</a> |
| %SC Discretes        | %SCn         | %SC1 - %SC128    | Word        | <a href="#">3</a> |
| %S Discretes         | %S-n         | %S-1 - %S-128    | Word        | <a href="#">3</a> |
| Genius Global Data   | %Gn          | %G1 - %G7680     | Word        | <a href="#">3</a> |
| Registers            | %Rn          | %R1 - %R16384    | Word        |                   |
| Analog Inputs        | %AI n        | %AI1 - %AI8192   | Word        |                   |
| Analog Outputs       | %AQn         | %AQ1 - %AQ8192   | Word        |                   |

**b. Contacts**

| Type                 | Format      | Read/Write Range | Note |
|----------------------|-------------|------------------|------|
|                      | Bit No. (b) |                  |      |
| Discrete Inputs      | %Ib         | %I1 - %I12288    |      |
| Discrete Outputs     | %Qb         | %Q1 - %Q12288    |      |
| Discrete Temporaries | %Tb         | %T1 - %T256      |      |
| Discrete Internals   | %Mb         | %M1 - %M12288    |      |
| %SA Discretes        | %SAb        | %SA1 - %SA128    |      |
| %SB Discretes        | %SBb        | %SB1 - %SB128    |      |
| %SC Discretes        | %SCb        | %SC1 - %SC128    |      |
| %S Discretes         | %S-b        | %S-1 - %S-128    |      |
| Genius Global Data   | %Gb         | %G1 - %G7680     |      |

**NOTE**

- 1) If PLC has the “Password Detection” function, please enter 4 digits password under “password” in communication.



- 2) If PLC Series is 90-70 PLC IC697CPU731 and IC697CPU771 then (9) RD(\*) must connect with (11) RD(B). For other series RD(\*) must connect with (10) RD(A).
- 3) The device address must be a multiple of 16 + 1.

## Hitachi EH Series PLC

(Supports Communication Mode: Procedure 1, Procedure 2)

### HMI Factory Setting:

Baud rate: 19200, 7, Even, 1 (RS-232)

Controller Station Number: 0

Control Area / Status Area: W0 / W10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP series                |       | Controller                     |
|---------------------------|-------|--------------------------------|
| 9 pin D-sub male (RS-232) |       | RJ-45 cable connector (RS-232) |
| RXD (2)                   | ————— | (5) SD1                        |
| TXD (3)                   | ————— | (6) RD1                        |
| GND (5)                   | ————— | (1) SG1                        |
| RTS (7)                   | ————— | (7) DR1                        |
| CTS (8)                   | ————— | (8) RS1                        |

#### b. RS-422 (DOP-A/AE Series)

| DOP series                |       | Controller                     |
|---------------------------|-------|--------------------------------|
| 9 pin D-sub male (RS-422) |       | RJ-45 cable connector (RS-422) |
| RXD- (1)                  | ————— | (5) TXN                        |
| RXD+ (2)                  | ————— | (4) TX                         |
| TXD+ (3)                  | ————— | (6) RX                         |
| TXD- (4)                  | ————— | (7) RXN                        |
| GND (5)                   | ————— | (1) SG1                        |



**c. RS-422 (DOP-AS35/AS38/AS57 Series)**

| DOP series              |  | Controller                     |
|-------------------------|--|--------------------------------|
| Terminal Block (RS-422) |  | RJ-45 cable connector (RS-422) |
| R-                      |  | (5) TXN                        |
| R+                      |  | (4) TX                         |
| T+                      |  | (6) RX                         |
| T-                      |  | (7) RXN                        |
| GND                     |  | (1) SG1                        |

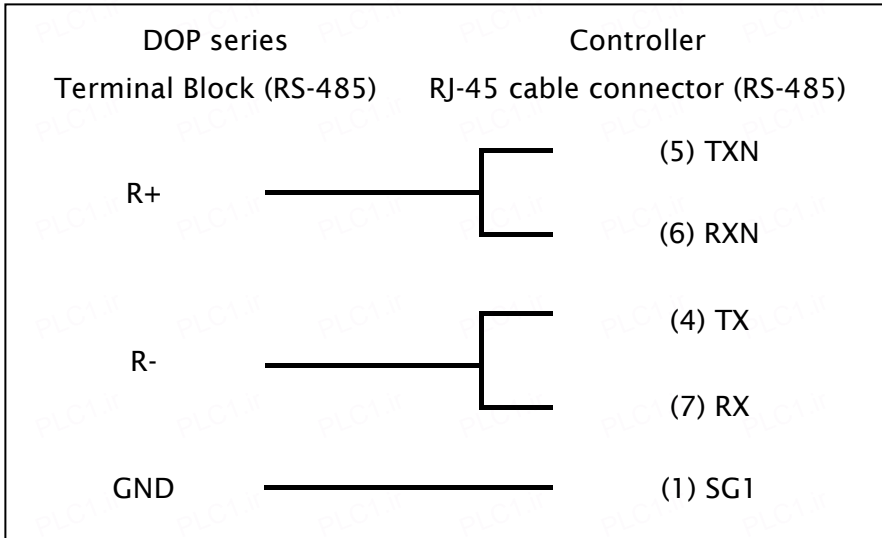
**d. RS-422 (DOP-B Series)**

| DOP series              |  | Controller                     |
|-------------------------|--|--------------------------------|
| Terminal Block (RS-422) |  | RJ-45 cable connector (RS-422) |
| RXD- (9)                |  | (5) TXN                        |
| RXD+ (4)                |  | (4) TX                         |
| TXD+ (1)                |  | (6) RX                         |
| TXD- (6)                |  | (7) RXN                        |
| GND (5)                 |  | (1) SG1                        |

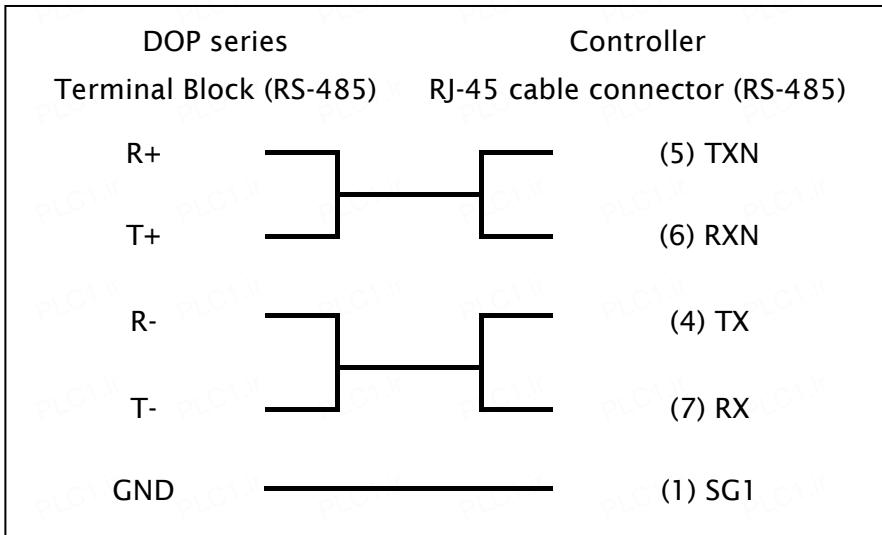
**e. RS-485 (DOP-A/AE Series)**

| DOP series                |  | Controller                     |
|---------------------------|--|--------------------------------|
| 9 pin D-sub male (RS-485) |  | RJ-45 cable connector (RS-485) |
| D+ (2)                    |  | (5) TXN                        |
| D+ (3)                    |  | (6) RXN                        |
| D- (1)                    |  | (4) TX                         |
| D- (4)                    |  | (7) RX                         |
| GND (5)                   |  | (1) SG1                        |

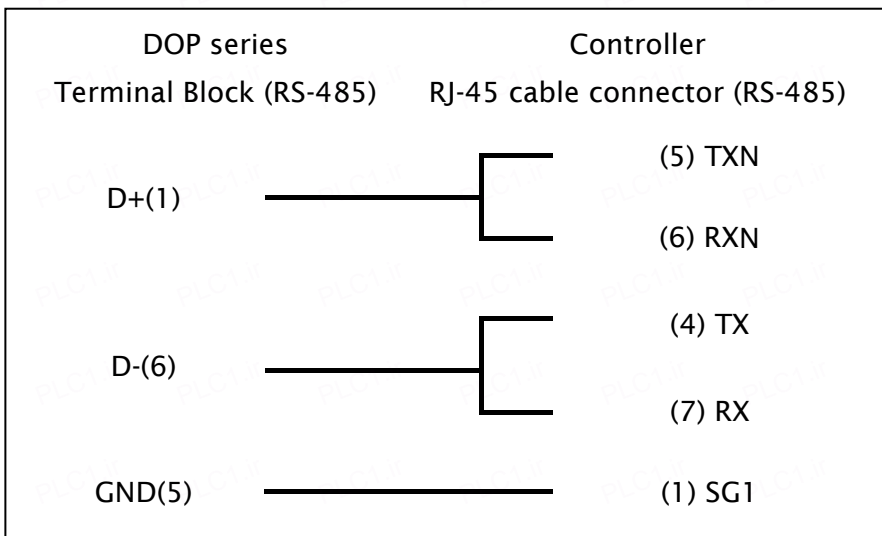
**f. RS-485 (DOP-AS57 Series)**



**g. RS-485 (DOP-AS35/AS38 Series)**



**h. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                    | Format   | Read/Write Range | Data Length | Note                                  |
|-------------------------|--|------------------|-------------|---------------------------------------|
|                         | Rank No.(r)<br>Unit No.(u)<br>Slot No.(s)<br>Word No.(n) |                  |             |                                       |
| External Input          | WXrusn   | WX0000 - WXA744  | Word        | <a href="#">3</a> , <a href="#">5</a> |
| External Output         | WYrusn   | WY0000 - WYA744  | Word        | <a href="#">3</a> , <a href="#">5</a> |
| Internal Output         | WRn  | WR0 - WRC3FF     | Word        |                                       |
| Special Internal Output | WRn  | WRF000 - WRF1FF  | Word        |                                       |
| Shared Internal Output  | WMn  | WM0 - WM3FF      | Word        |                                       |
| CPU Link Area 1         | WLn  | WL0 - WL3FF      | Word        | <a href="#">4</a>                     |
| CPU Link Area 2         | WLn  | WL1000 - WL13FF  | Word        | <a href="#">4</a>                     |
| Timer/Counter           | TCn  | TC0 - TC511      | Word        |                                       |

**b. Contacts**

| Type                        | Format   | Read/Write Range | Note                                  |
|-----------------------------|--|------------------|---------------------------------------|
|                             | Rank No.(r)<br>Unit No.(u)<br>Slot No.(s)<br>Word No.(n)<br>Bit No.(b) |                  |                                       |
| External Input              | Xrusb  | X0000 - X44495   | <a href="#">3</a> , <a href="#">5</a> |
| External Output             | Yrusb  | Y0000 - Y44495   | <a href="#">3</a> , <a href="#">5</a> |
| Internal Output             | Rb   | R0 - R7FF        |                                       |
| Shared Internal Output      | Mnb  | M00 - M3FFF      |                                       |
| CPU Link Area 1             | Lnb  | L00 - L3FFF      | <a href="#">4</a>                     |
| CPU Link Area 2             | Lnb  | L10000 - L13FFF  | <a href="#">4</a>                     |
| On Delay Timer              | TDb  | TD0 - TD255      |                                       |
| Single-shot Timer           | SSb  | SS0 - SS255      |                                       |
| Up Counter                  | CUb  | CU0 - CU511      |                                       |
| Up-down Counter up input    | CTUb   | CTU0 - CTU511    |                                       |
| Up-down Counter down input  | CTDb   | CTD0 - CTD511    |                                       |
| Up-down Counter down output | CTb  | CT0 - CT511      |                                       |

| Type                   | Format   | Read/Write Range | Note |
|------------------------|--|------------------|------|
|                        | Rank No.(r)<br>Unit No.(u)<br>Slot No.(s)<br>Word No.(n)<br>Bit No.(b) |                  |      |
| Progress Value Clear   | CLb  | CL0 - CL511      |      |
| Rising Edge Detection  | DIFb   | DIF0 - DIF511    |      |
| Falling Edge Detection | DFNb   | DFN0 - DFN511    |      |

 **NOTE**

- 1) In Hitachi EH series PLC, the user can select procedure 1 and procedure 2 via DIP switch and Special Internal Input (WR). Please refer to Hitachi EH PLC manual for more detail.
- 2) In Hitachi EH-150 series , only EH-CPU\*\*\*A/448/516/548 can use procedure 2.
- 3) EH PLC's External I/O (**WX, WY, X, Y**) data must be set up first before HMI can read and write the address. Please refer to Hitachi EH PLC for more detail.
- 4) This type of register is only supported by EH-150 series.
- 5) External I/O (**X, Y, WX, WY**)address rule
  - Symbol :
    - Rank No. : r , only supported by EH-150 series
    - Unit No. : u
    - Slot No : s
    - Word No. : n
    - Bit No. : b
  - Address Sample:
    - WX103** represents unit 1, word 3 of slot 0
    - X103** represents bit 3 of slot 1
    - X113** represents bit 13 of slot 1
    - Y2004** represents unit 2, bit 4 of slot 0
    - Y2104** represents unit 2, bit 4 of slot 1
- 6) EH-150 Setting
  - DIP5 should be set to ON.
  - If DIP5 is set to ON, PLC will determine the proper procedure (1 or 2) by the value of WRf037. When setting the address, the highest bit of write value must be 1 and then

PLC can write the value into other seven bits. The data will not be lost even when the power of PLC is cut off. Therefore,

- i. Write the value 0x8000 into the address. After restart PLC, the address value will become 0x0000 and perform communication by procedure 1.
  - ii. Write the value 0xC000 into the address. After restart PLC, the address value will become 0x4000 and perform communication by procedure 2.
- Use DIP3 and DIP4 to set the communication speed of port 1.
    - i. When DIP3 is ON and DIP4 is OFF, the communication speed is 19200bps.
  - Use DIP6, PHL to set the communication speed of port 2.
    - i. When DIP6 is ON and PHL is OFF, the communication speed is 19200bps.
    - ii. The EH-150 PLC is a “Base Unit” which has a built-in CPU module. This unit allows easy connection of extension module, such as “External I/O”.

7) MicroEH

- DIP5 is used to set communication speed.
  - i. When SW1 is ON, the communication speed is 19200bps. Please refer to Hitachi EH PLC manual for more detail.
- MicroEH PLC will determine the proper procedure (1 or 2) by the value of WRf01a. Different than EH-150, when setting the address, the highest bit of write value does not need to be 1. But the data will be lost even the power of PLC is cut off. However, if set the value of R7f6 to 1, the data of WRf01a will be saved into Flash memory.
  - i. 0x0000 for procedure 1.
  - ii. 0x8000 for procedure 2.
  - iii. If the PLC uses procedure 2 and saves the data into Flash memory, it cannot connect to the peripheral devices and programs (Ladder Editor) that only support procedure 1.
  - iv. Standard External I/O built in MicroEH PLC are listed as below:
    - Digital Type
      - slot 0: X48
      - slot 1: Y32
      - slot 2: empty16
    - Analog Type
      - slot 3: X4W
      - slot 4: Y4W

## HUST CNC

### HMI Factory Setting:

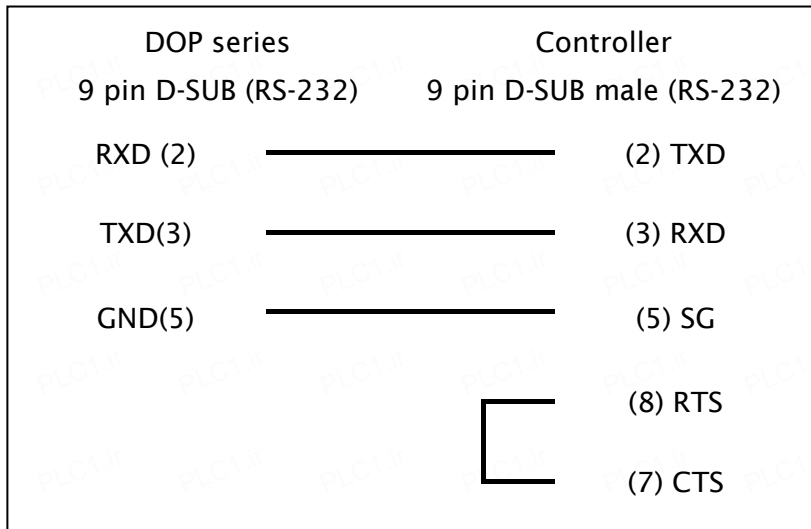
Baud rate: 9600, 7, Even, 2

Controller Station Number: 1

Control Area / Status Area: W0 / W10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type                 | Format       | Read/Write Range | Data Length | Note |
|----------------------|--------------|------------------|-------------|------|
|                      | Word No. (n) |                  |             |      |
| Word Register        | Wn           | W0 - W13500      | Word        |      |
| Double Word Register | Dn           | D0 - D13500      | Double Word |      |

#### b. Contacts

| Type         | Format                       | Read/Write Range | Note |
|--------------|------------------------------|------------------|------|
|              | Word No. (n)<br>Bits No. (b) |                  |      |
| BIT_DEVICE_B | Bn.b                         | B0.0 - B13500.31 |      |
| BIT_DEVICE_I | Ib                           | I0 - I255        | 8 DW |
| BIT_DEVICE_O | Ob                           | O0 - O255        | 8 DW |
| BIT_DEVICE_C | Cb                           | C0 - C255        | 8 DW |

| Type         | Format                       | Read/Write Range | Note  |
|--------------|------------------------------|------------------|-------|
|              | Word No. (n)<br>Bits No. (b) |                  |       |
| BIT_DEVICE_S | Sb                           | S0 - S255        | 8 DW  |
| BIT_DEVICE_A | Ab                           | A0 - A1023       | 32 DW |

## IDEC Micro Smart PLC

### HMI Factory Setting:

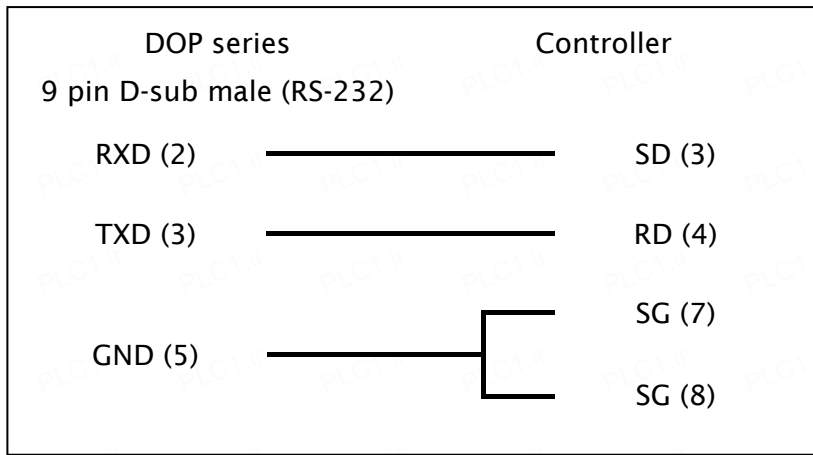
Baud rate: 9600. 7. Even. 1

Controller Station Number: 0 (0~31, 255)

Control Area / Status Area: D0/D10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type                      | Format       | Read/Write Range | Data Length | Note  |
|---------------------------|--------------|------------------|-------------|-------|
|                           | Word No. (n) |                  |             |       |
| input                     | Xn           | X0 - X290        | Word        |       |
| output                    | Yn           | Y0 - Y290        | Word        |       |
| internal relay (ordinary) | Mn           | M0 - M1260       | Word        |       |
| internal relay (special)  | Mn           | M8000 - M8140    | Word        |       |
| shift register            | Rn           | R0 - R112        | Word        | Octal |
| Timer(Preset value)       | TPn          | TP0 - TP99       | Word        |       |
| Timer(Current value)      | TCn          | TC0 - TC99       | Word        |       |
| Counter(Preset value)     | CPn          | CP0 - CP99       | Word        |       |
| Counter(Current value)    | CCn          | CC0 - CC99       | Word        |       |
| Data register             | Dn           | D0 - D1299       | Word        |       |
| Data register             | Dn           | D2000 - D7999    | Word        |       |
| Data register (special)   | Dn           | D8000 - D8199    | Word        |       |
| Calendar/clock            | Wn           | W0 - W6          | Word        |       |



**b. Contacts**

| Type                      | Format                      | Read/Write Range | Note              |
|---------------------------|-----------------------------|------------------|-------------------|
|                           | Word No. (n)<br>Bit No. (b) |                  |                   |
| input                     | Xnnb                        | X000 - X307      | <a href="#">1</a> |
| output                    | Ynnb                        | Y000 - Y307      | <a href="#">1</a> |
| internal relay (ordinary) | Mnnnb                       | M0000 - M1277    | <a href="#">1</a> |
| internal relay (special)  | Mnnnb                       | M8000 - M8157    | <a href="#">1</a> |
| shift register            | Rb                          | R0 - R127        |                   |
| Timer Status              | TSb                         | TS0 - TS99       | <a href="#">2</a> |
| Counter Status            | CSb                         | CS0 - CS99       | <a href="#">2</a> |

 **NOTE**

- 1) n represents decimal, b represents octal.
- 2) This type of device is for read only.
- 3) It supports MicroSmart / ONC (OpenNet Controller) / MICRO3 / MICRO3C.
- 4) **TSn / CSn** can only be used on MicroSmart / ONC (OpenNet Controller).

## Jetter JC Series PLC

### HMI Factory Setting:

Baud rate: 9600. 8. Even. (RS232)

Controller Station Number: 0 (no PLC station number in protocol, one on one connection)

Control Area / Status Area: WR0/WR10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP series           |       | Controller                   |
|----------------------|-------|------------------------------|
| 9 pin D-SUB (RS-232) |       | 8 pin Mini DIN male (RS-232) |
| RXD (2)              | ————— | (8) TXD                      |
| TXD (3)              | ————— | (4) RXD                      |
| GND (5)              | ————— | (2) GND                      |

### Definition of PLC Read/Write Address

#### a. Registers

| Type             | Format       | Read/Write Range | Data Length | Note |
|------------------|--------------|------------------|-------------|------|
|                  | Word No. (n) |                  |             |      |
| 16 Bits Register | WRn          | WR0 - WR32767    | 16 Bits     |      |
| 32 Bits Register | Rn           | R0 - R32767      | 24 Bits     |      |

#### b. Contacts

| Type         | Format                      | Read/Write Range | Note |
|--------------|-----------------------------|------------------|------|
|              | Word No. (n)<br>Bit No. (b) |                  |      |
| Input Relay  | Inbb                        | I101 - I3216     |      |
| Output Relay | Onbb                        | O101 - O3216     |      |
| Flag Relay   | Fb                          | F0 - F32767      |      |

## Jetter Nano Series PLC

### HMI Factory Setting:

Baud rate: 9600. 8. Even. 1(RS-232)

Controller Station Number: 0 (no PLC station number in protocol, one HMI to one PLC connection)

Control Area / Status Area: WR0/WR10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP series           |       | Controller                |
|----------------------|-------|---------------------------|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB male (RS-232) |
| RXD (2)              | ————— | (2) TXD                   |
| TXD (3)              | ————— | (3) RXD                   |
| GND (5)              | ————— | (7) GND                   |

### Definition of PLC Read/Write Address

#### a. Registers

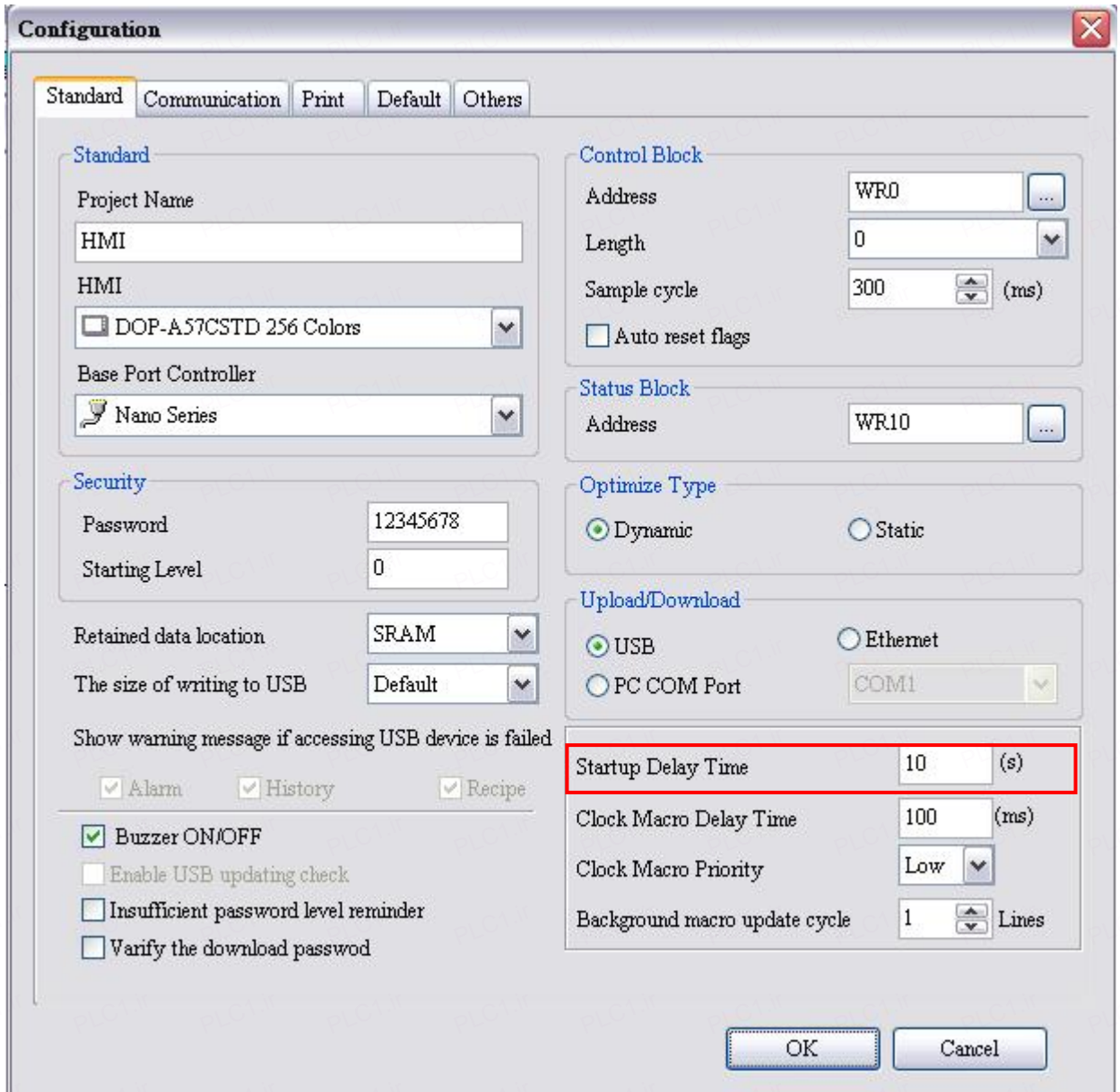
| Type             | Format       | Read/Write Range | Data Length | Note  |
|------------------|--------------|------------------|-------------|---|
|                  | Word No. (n) |                  |             |   |
| 16 Bits Register | WRn          | WR0 - WR32767    | 16 Bits     | <a href="#">5</a>   |
| 32 Bits Register | Rn           | R0 - R32767      | 24 Bits     | <a href="#">3</a> , <a href="#">6</a> , <a href="#">7</a> |

#### b. Contacts

| Type         | Format                      | Read/Write Range | Note |
|--------------|-----------------------------|------------------|------|
|              | Word No. (n)<br>Bit No. (b) |                  |      |
| Input Relay  | Inbb                        | I101 - I3208     |      |
| Output Relay | Onbb                        | O101 - O3208     |      |
| Flag Relay   | Fb                          | F0 - F32767      |      |

**NOTE**

- 1) In general, every register occupies a maximum 24 Bits. However, some registers occupies only 8 Bits.
- 2) Jetter Nano Series PLC requires longer time at initial start, therefore it is recommended to set startup delay time greater than 10 (s).



- 3) When the register R is used for Double Word device, please set the format as signed format. (The default format in Screen Editor is signed format.)
- 4) Please be aware the pin definition for RS232 in this PLC series is different than the standard RS232, do not mistake.
- 5) **WR** only occupies Bit0~Bit15 of every register.
- 6) **R** occupies 24 Bits of every register and Bit24~Bit31 set to 0 by default setting.

- 7) Decimal notation range from -8388608 to +8388607 ; hexadecimal notation range from 0x000000 to 0xFFFFFFFF.
- 8) The difference between WRn and Rn register:
  1. When using devices that the data length is in Word, only Bit 0 ~ 15 are valid for both of WRn and Rn registers.
  2. When using devices that the data length is in Double Word, if the read/write address format is set to WRn, the Bit 0 ~ 15 of WRn register is the low word of a read/write value, the Bit 0 ~ 15 of WRn+1 register is the high word of a read/write value. If the read/write address format is set to Rn, only Bit 0 ~ 23 are valid for Rn registers.  
**(Notice: As the Jetter controller is a 24-bit format controller, the valid setting range is 24 Bits (16777215). If setting exceeds this range, HMI will stop read/write operation and show “.....Value is Incorrect” on the screen.**
  3. When using devices that the data length is in m Words, if the read/write address format is set to WRn, the Bit 0 ~ 15 of WRn register is the lowest word of a read/write value and the Bit 0 ~ 15 of WRn+m-1 register is the highest word of a read/write value. If the read/write address format is set to Rn, the Bit 0 ~ 23 of Rn register is the lowest word of a read/write value and the Bit 0 ~ 23 of Rn+1 register is the highest word of a read/write value. Each register is regards as a “Double Word”. The value of Bit24 ~ Bit31 is 0.

## Keyence KV1000

### HMI Factory Setting:

Baud rate: 9600. 8. Even. (RS232)

Controller Station Number: 0 (no PLC station number in protocol, one on one connection)

Control Area / Status Area: DM-0/DM-10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP series                | Controller |
|---------------------------|------------|
| 9 pin D-sub male (RS-232) |            |
| RXD (2)                   | (5) SD     |
| TXD (3)                   | (3) RD     |
| GND (5)                   | (4) SG     |

### Definition of PLC Read/Write Address

#### a. Registers

| Type                  | Format       | Read/Write Range | Data Length | Note |
|-----------------------|--------------|------------------|-------------|------|
|                       | Word No. (n) |                  |             |      |
| Data Memory           | DM-n         | DM-0 ~ DM-65535  | Word        |      |
| Control Memory        | CM-n         | CM-0 ~ CM-11999  | Word        |      |
| Temporary Data Memory | TM-n         | TM-0 ~ TM-511    | Word        |      |
| Extended Data Memory  | EM-n         | EM-0 ~ EM-65535  | Word        |      |
| Extended Data Memory  | FM-n         | FM-0 ~ FM-32767  | Word        |      |
| Address Register      | Z-n          | Z-1 ~ Z-12       | Word        |      |
| Digital Trimmer       | AT-n         | AT-0 ~ AT-7      | Word        |      |
| High-speed Counter    | CTH-n        | CTH-0 ~ CTH-1    | Double Word |      |
| CTC Preset Value      | PCTC-n       | PCTC-0 ~ PCTC-3  | Double Word |      |
| Timer Preset Value    | PT-n         | PT-0 ~ PT-3999   | Double Word |      |
| Counter Preset Value  | PC-n         | PC-0 ~ PC-3999   | Double Word |      |

| Type                          | Format       | Read/Write Range | Data Length | Note |
|-------------------------------|--------------|------------------|-------------|------|
|                               | Word No. (n) |                  |             |      |
| High-speed Counter Comparator | CTC-n        | CTC-0 ~ CTC-3    | Double Word |      |
| Timer                         | T-n          | T-0 ~ T-3999     | Double Word |      |
| Counter                       | C-n          | C-0 ~ C-3999     | Double Word |      |

**b. Contacts**

| Type                          | Format                      | Read/Write Range  | Note |
|-------------------------------|-----------------------------|-------------------|------|
|                               | Word No. (n)<br>Bit No. (b) |                   |      |
| Control Relay                 | CR-nbb                      | CR-000 ~ CR-3915  |      |
| Internal Memory Relay         | MR-nbb                      | MR-000 ~ MR-99915 |      |
| Latch                         | LR-nbb                      | LR-000 ~ LR-99915 |      |
| Relay                         | R-nbb                       | R-000 ~ R-59915   |      |
| High-speed Counter comparator | CTC-b                       | CTC-0 ~ CTC-3     |      |
| Timer Contact                 | T-b                         | T-0 ~ T-3999      |      |
| Counter Contact               | C-b                         | C-0 ~ C-3999      |      |

## Keyence KV/KZ Series

### HMI Factory Setting:

Baud rate: 9600, 8, Even, 1 (RS-232)

Controller Station Number: 0 (no PLC station number in protocol, one on one connection)

Control Area / Status Area: DM-0 / DM-10

### Connection

#### a. RS-232 (DOP-A, DOP-B Series)

##### KV Series ([Note1](#))

| DOP series           |       | Controller     |
|----------------------|-------|----------------|
| 9 pin D-SUB (RS-232) |       | RJ-11 (RS-232) |
| RXD (2)              | ————— | (5) SD         |
| TXD (3)              | ————— | (3) RD         |
| GND (5)              | ————— | (4) SG         |

##### KZ Series ([Note1](#))

| DOP series           |       | Controller     |
|----------------------|-------|----------------|
| 9 pin D-SUB (RS-232) |       | RJ-11 (RS-232) |
| RXD (2)              | ————— | (5) SD         |
| TXD (3)              | ————— | (3) RD         |
| GND (5)              | ————— | (4) SG         |

### Definition of PLC Read/Write Address

#### a. Registers

| Type                          | Format       | Read/Write Range | Data Length | Note |
|-------------------------------|--------------|------------------|-------------|------|
|                               | Word No. (n) |                  |             |      |
| Timer                         | T-n          | T-0 - T-199      | Word        |      |
| Counter                       | C-n          | C-0 - C-199      | Word        |      |
| High-speed counter            | CTH-n        | CTH-0 - CTH-1    | Word        |      |
| High-speed counter comparator | CTC-n        | CTC-0 - CTC-3    | Word        |      |



| Type                  | Format       | Read/Write Range | Data Length | Note |
|-----------------------|--------------|------------------|-------------|------|
|                       | Word No. (n) |                  |             |      |
| Data memory           | DM-n         | DM-0 - DM-1999   | Word        |      |
| Temporary data memory | TM-n         | TM-0 - TM-31     | Word        |      |
| Timer preset value    | PT-n         | PT-0 - PT-199    | Word        |      |
| Counter preset value  | PC-n         | PC-0 - PC-199    | Word        |      |
| CTC preset value      | PCTC-n       | PCTC-0 - PCTC-3  | Word        |      |

**b. Contacts**

| Type                          | Format                      | Read/Write Range | Note     |
|-------------------------------|-----------------------------|------------------|----------|
|                               | Word No. (n)<br>Bit No. (b) |                  |          |
| Relay                         | R-nbb                       | R-000 - R-6915   |          |
| Timer                         | T-b                         | T-0 - T-199      | <u>1</u> |
| Counter                       | C-b                         | C-0 - C-199      | <u>1</u> |
| High-speed counter comparator | CTC-b                       | CTC-0 - CTC-3    |          |

 **NOTE**

- 1) Please be aware the pin definition of SD, RD is reversed in KZ-80T and KV series.  
This protocol regards PLC protocol in KV series, when communicates with KZ series PLC, the following divergence will occur.
  1. Readable Timer address is not continuous. For example:
    - T-0 ~ T-9 can be read
    - T10 cannot be read
    - T11 ~ T20 can be read
    - T21 ~ T50 cannot be read ...etc.
  2. Counter cannot be read. For example:
    - Registers: C-, CTH-, CTC-, PC-, PCTC- all cannot be read.
    - Contacts: C-, CTC- cannot be read as well.

## Koyo K-Sequence

### HMI Factory Setting:

Baud rate: 9600. 8. Odd. 1(RS-232)

Controller Station Number: 1

Control Area / Status Area: R1400/R1420

### Connection

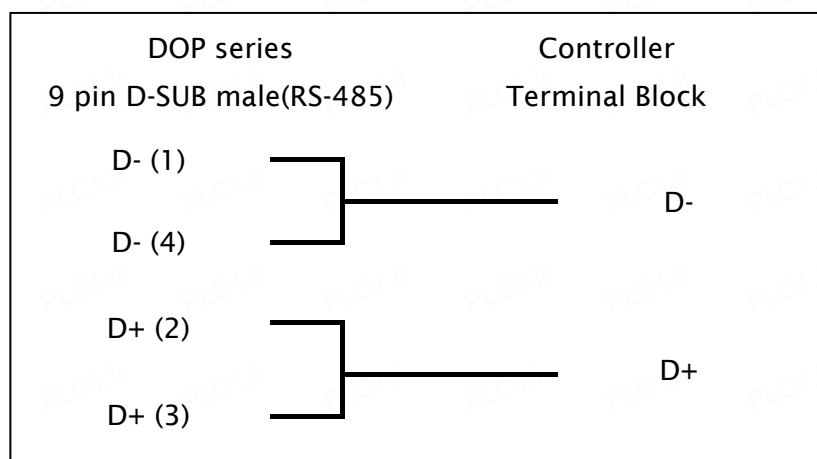
#### a. RS-232 (DOP-A/AE/AS, DOP-B Series) Port 0 communication line

| DOP series           |       | Controller                       |
|----------------------|-------|----------------------------------|
| 9 pin D-SUB (RS-232) |       | RJ-11 (RS-232)                   |
| RXD (2)              | ————— | (4) TXD                          |
| TXD (3)              | ————— | (3) RXD                          |
| GND (5)              | ————— | (1) GND                          |
|                      |       | (6) GND( <a href="#">Note3</a> ) |

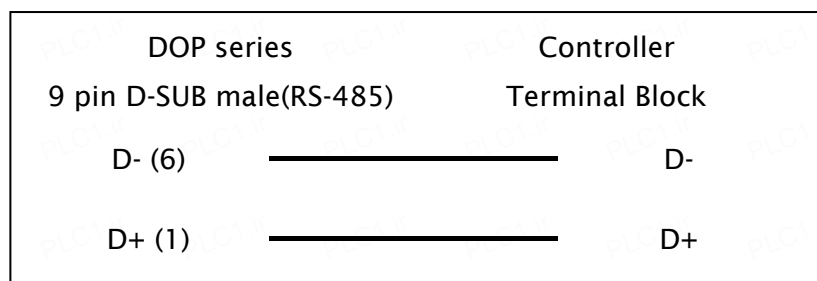
#### b. RS-232 (DOP-A/AE/AS, DOP-Series)

| DOP series           |       | Controller     |
|----------------------|-------|----------------|
| 9 pin D-SUB (RS-232) |       | RJ-11 (RS-232) |
| RXD (2)              | ————— | (3) TXD        |
| TXD (3)              | ————— | (2) RXD        |
| GND (5)              | ————— | (5) SG         |

**c. RS-485 (DOP-A/AE Series) Port1 communication line**



**d. RS-485 (DOP-B Series) Port1 communication line**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type            | Format       | Read/Write Range | Data Length | Note                     |
|-----------------|--------------|------------------|-------------|--------------------------|
|                 | Word No. (n) |                  |             |                          |
| Input Status    | Xn           | X0 - X1760       | Word        | Octal, <a href="#">2</a> |
| Output Status   | Yn           | Y0 - Y1760       | Word        | Octal, <a href="#">2</a> |
| Link Relays     | GXn          | GX0 - GX3760     | Word        | Octal, <a href="#">2</a> |
| Relays          | GQn          | GQ0 - GQ3760     | Word        | Octal, <a href="#">2</a> |
| Relays          | Mn           | M0 - M3760       | Word        | Octal, <a href="#">2</a> |
| Stage           | Sn           | S0 - S1760       | Word        | Octal, <a href="#">2</a> |
| Timer Status    | Tn           | T0 - T360        | Word        | Octal, <a href="#">2</a> |
| Control Relays  | Cn           | C0 - C360        | Word        | Octal, <a href="#">2</a> |
| Special Relay 1 | SPn          | SP0 - SP760      | Word        | Octal, <a href="#">2</a> |
| Register        | Rn           | R0 - R41237      | Word        | Octal                    |
| Register        | Pn           | P0 - P37777      | Word        | Octal                    |

**b. Contacts**

| Type            | Format      | Read/Write Range | Note  |
|-----------------|-------------|------------------|-------|
|                 | Bit No. (b) |                  |       |
| Input Status    | Xb          | X0 - X1777       | Octal |
| Output Status   | Yb          | Y0 - Y1777       | Octal |
| Link Relays     | GXb         | GX0 - GX3777     | Octal |
| Relays          | GQb         | GQ0 - GQ3777     | Octal |
| Control Relays  | Mb          | M0 - M3777       | Octal |
| Stage           | Sb          | S0 - S1777       | Octal |
| Timer Status    | Tb          | T0 - T377        | Octal |
| Counter Status  | Cb          | C0 - C377        | Octal |
| Special Relay 1 | SPb         | SP0 - SP777      | Octal |

 **NOTE**

- 1) When read & write action exceed valid address range, HMI will show an error message “...Error 6.... Command Can Not be Executed...”
- 2) Device address must be the multiple of 16.
- 3) If using SM-24R series PLC, pin6 must be grounded (GND).
- 4) The correspondence relationship of address between CCM2 communication protocol and the register of K-Sequence communication protocol.

| CCM2 | K sequence | SN32DRA |
|------|------------|---------|
| V    | R          | R       |
| X    | X          | I       |
| Y    | Y          | Q       |
| C    | M          | M       |
| S    | S          | S       |
| T    | T          | T       |
| CT   | C          | C       |
| SP   | SP         | SP      |

## Koyo SU/DL Series

### HMI Factory Setting:

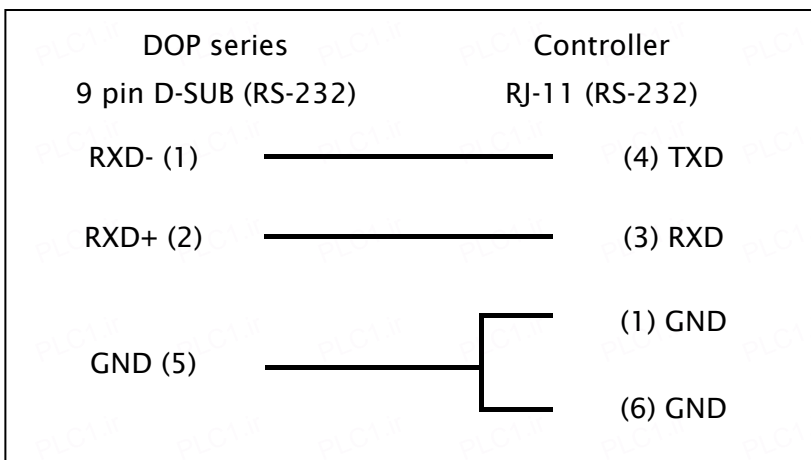
Baud rate: 9600. 8. Odd. 1(RS-232)

Controller Station Number: 1

Control Area / Status Area: V1400/V1420

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type                | Format       | Read/Write Range | Data Length | Note  |
|---------------------|--------------|------------------|-------------|-------|
|                     | Word No. (n) |                  |             |       |
| Timer Accumulated   | Vn           | V0 - V177        | Word        | Octal |
| Counter Accumulated | Vn           | V1000 - V1177    | Word        | Octal |
| V Memory            | Vn           | V1400 - V7777    | Word        | Octal |
| Linker Relays       | Vn           | V40000 - V40037  | Word        | Octal |
| Input Status        | Vn           | V40400 - V40423  | Word        | Octal |
| Output Status       | Vn           | V40500 - V40523  | Word        | Octal |
| Control Relays      | Vn           | V40600 - V40635  | Word        | Octal |
| Stage               | Vn           | V41000 - V41027  | Word        | Octal |
| Timer Status        | Vn           | V41100 - V41107  | Word        | Octal |
| Counter Status      | Vn           | V41140 - V41147  | Word        | Octal |
| Spec. Relay 1       | Vn           | V41200 - V41205  | Word        | Octal |
| Spec. Relay 2       | Vn           | V41216 - V41230  | Word        | Octal |

**b. Contacts**

| Type           | Format      | Read/Write Range | Note  |
|----------------|-------------|------------------|-------|
|                | Bit No. (b) |                  |       |
| Linker Relays  | GXb         | GX0 - GX777      | Octal |
| Input Status   | Xb          | X0 - X477        | Octal |
| Output Status  | Yb          | Y0 - Y477        | Octal |
| Control Relays | Cb          | C0 - C737        | Octal |
| Stage          | Sb          | S0 - S577        | Octal |
| Timer Status   | Tb          | T0 - T177        | Octal |
| Counter Status | CTb         | CT0 - CT177      | Octal |
| Spec. Relay 1  | SPb         | SP0 - SP137      | Octal |
| Spec. Relay 2  | SPb         | SP320 - SP617    | Octal |

## Lenze LECOM-A/B protocol

( Supports 82XX frequency inverters and 93XX servo inverters )

### HMI Factory Setting:

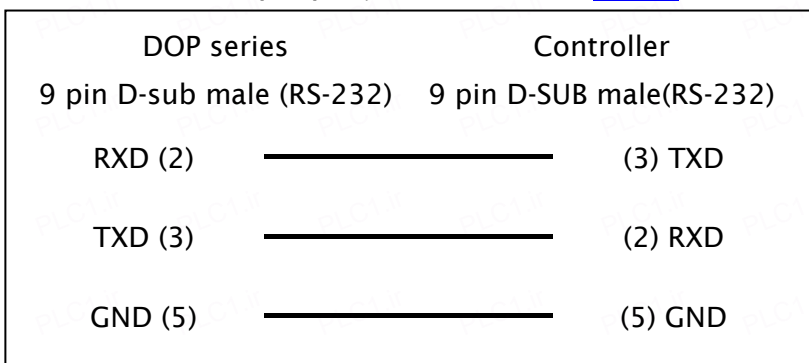
Baud rate: 9600, 7, Even, 1

Controller Station Number: 1 (1~99)[\(Note 5\)](#)

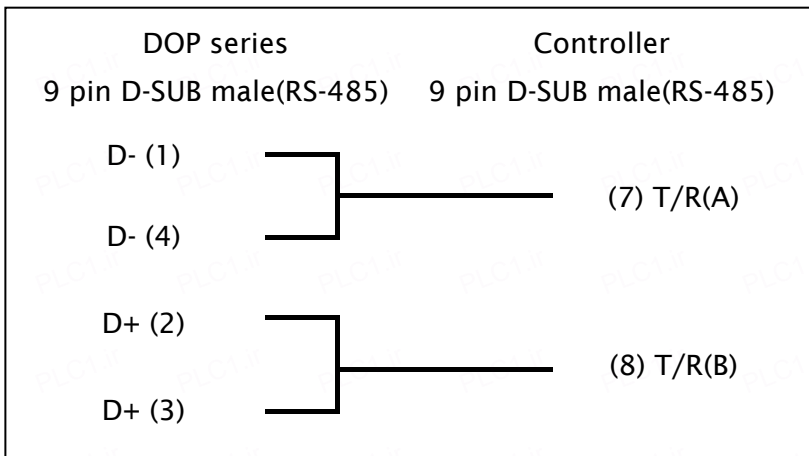
Control Area / Status Area: None/None

### Connection

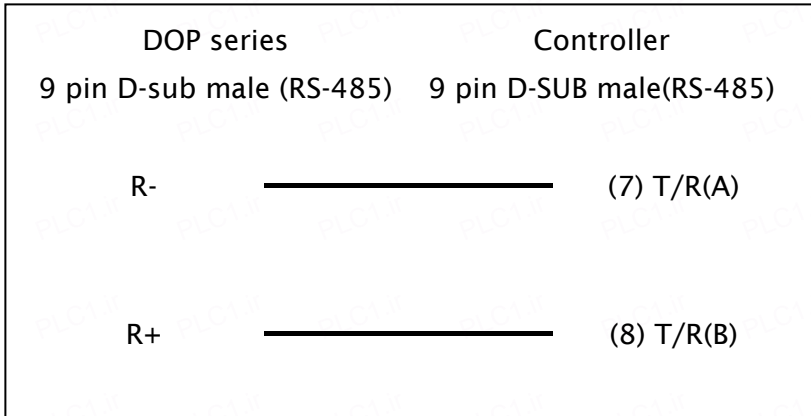
#### a. RS-232 (DOP-A/AE/AS, DOP-B Series) [\(Note1\)](#)



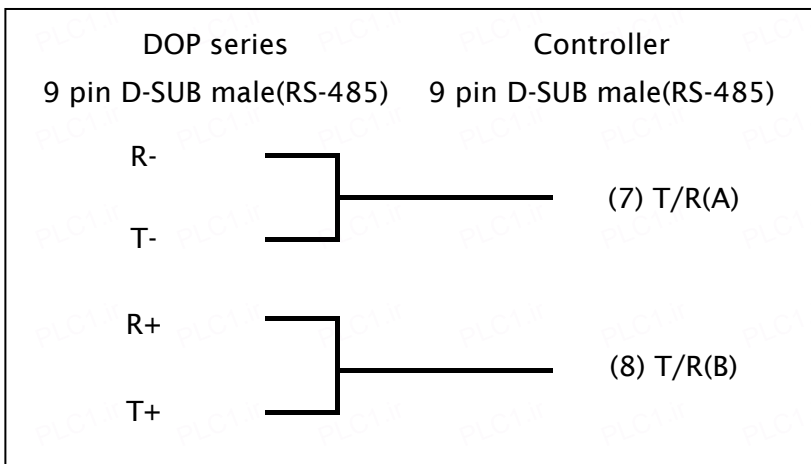
#### b. RS-485 (DOP-A/AE Series)



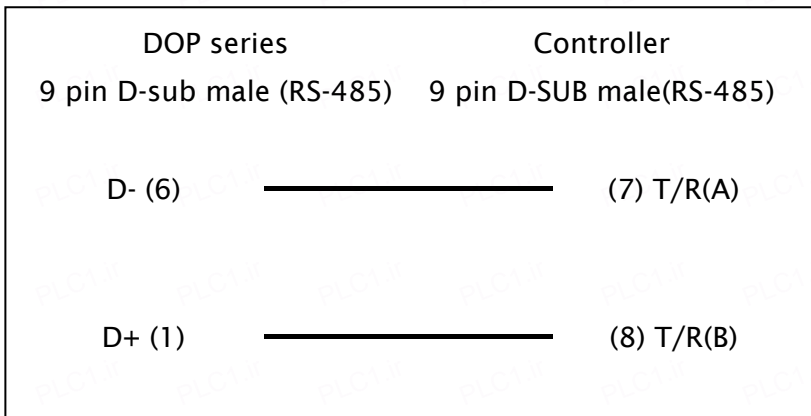
**c. RS-485 (DOP-AS57 Series)**



**d. RS-485 (DOP-AS35/AS38 Series)**



**e. RS-485 (DOP-B Series)**





**Definition of PLC Read/Write Address**

**a. Registers**

| Type                   | Format                                 | Read/Write Range         | Data Length | Note                                  |
|------------------------|--|--------------------------|-------------|---------------------------------------|
|                        | Word No.(n)<br>Format(m)<br>Subcode(y) |                          |             |                                       |
| Parameter w/o subcode  | CWn                                    | CW1 - CW10000            | Word        |                                       |
|                        | CWn.m                                  | CW1.0 - CW10000.23       | Word        | <a href="#">2</a> , <a href="#">4</a> |
| Parameter with subcode | CWn/y                                  | CW1/1 - CW10000/255      | Word        |                                       |
|                        | CWn/y.m                                | CW1/1.0 - CW10000/255.23 | Word        | <a href="#">2</a> , <a href="#">4</a> |
| Parameter w/o subcode  | CDn                                    | CD1 - CD10000            | Double Word |                                       |
|                        | CDn.m                                  | CD1.0 - CD10000.23       |             | <a href="#">2</a> , <a href="#">4</a> |
| Parameter with subcode | CDn/y                                  | CD1/1 - CD10000/255      | Double Word |                                       |
|                        | CDn/y.m                                | CD1/1.0 - CD10000/255.23 |             | <a href="#">2</a> , <a href="#">4</a> |

**b. Contacts**

| Type                   | Format                                  | Read/Write Range         | Note                                  |
|------------------------|---|--------------------------|---------------------------------------|
|                        | Word No.(n)<br>Subcode(y)<br>Bit No.(b) |                          |                                       |
| Parameter w/o subcode  | CBn.b                                   | CB1.0 - CB10000.31       | <a href="#">3</a> , <a href="#">4</a> |
| Parameter with subcode | CBn/y.b                                 | CB1/1.0 - CB10000/255.31 | <a href="#">3</a> , <a href="#">4</a> |

 **NOTE**

- 1) If communication is using RS232, please NOT to use general RS232 pin-cable. For more information of pin definition, please refers to [cable connections \(Connector Pinouts\)](#) in in Lenze LECOM A/B Protocol controller.
- 2) m represent HMI communication data forma. Different set of value represents different data format as following?:

|           |  |
|-----------|--|
| m = 0 ~10 | <ul style="list-style-type: none"> <li>• unsigned, ASCII decimal format (VD).</li> </ul> <p>m represents decimal place, For example:<br/>                     m=0 → no decimal place<br/>                     m=1 → one decimal place (tenth)<br/>                     m=2 → two decimal place (hundredth)</p> |
|-----------|--|

|              |  |
|--------------|--|
| m = 11 ~20   | <ul style="list-style-type: none"> <li>signed, ASCII decimal format (VD).<br/>m represents decimal place, For example:<br/>m=11 → one decimal place (tenth)<br/>m=12 → two decimal place (hundredth)</li> </ul>  |
| m = 21       | <ul style="list-style-type: none"> <li>signed, ASCII decimal format (VD).<br/>without decimal place</li> </ul>   |
| m = 22       | <ul style="list-style-type: none"> <li>ASCII hexadecimal format (VH). 2 numbers.<br/>when using this format, the write value will be limited within the range of 0~0xFF (low byte).<br/>For example: when entering 0x1234 during communication, the actual write value is 0x34, not 0x1234.</li> </ul> |
| m >= 23      | <ul style="list-style-type: none"> <li>ASCII hexadecimal format (VH). (4 or 8 numbers.)</li> </ul>   |
| No m setting | Same as above  |

- 3) Only VH type parameter supports bit read & write function.
- 4) Data format of LenzeLECOM-A/B protocol is categorized:

1. VS (String format)
2. VO (Octet string format data blocks)
3. VH (ASCII hexadecimal format)(1, 2, 4 bytes)
4. VD (ASCII decimal format)(positive number, negative number, decimal number.)

Different communication format is not compatible, therefore, it is needed to ensure the HMI communication data format is correct, or an error may occur. For more detail, please refers to Lenze user manual.

1. The settings of ASCII hexadecimal format (VH) and ASCII decimal format (VD) must be correct. If the write value is incorrect the HMI will show "...Write .... Command Can Not be Executed" or "Can not be write".
2. The decimal place of ASCII decimal format (VD) should be set correctly, or the write value will be incorrect.
3. ASCII hexadecimal format (VH), 2 numbers (m = 22). The value is limited to 2 numbers. Using this format the write value will be limited within the range of 0 ~ 0xFF (low byte) automatically.
4. Length of data varies upon different communication address. Use register CW to read/write the address with data length as Word format. Use register CD to read/write the address with data length as Double Word format. Please refer to Lenze user manual for more detail on communication address.

Contacts: only can read/write the data of ASCII hexadecimal format (VH). Read the following information:

1. Do not write the inexistent Bit address, or HMI will show “...Write .... Command Can Not be Executed” on the screen. For example: CW470/1. The valid value of CW470/1 is within the range of 0 ~ 0xFF. Therefore, Bit 8 ~31 is not existed. Although HMI will show the value of Bit 8 ~31 is 0, the user can not write or set the value.

5) The valid station number is from 0 to 99 and also supports broadcast function, setting detail as following:

| Controller Station Number | Broadcast Station Range |
|---------------------------|-------------------------|
| 0                         | 1 - 99                  |
| 10                        | 11 - 19                 |
| 20                        | 21 - 29                 |
| 30                        | 31 - 39                 |
| 40                        | 41 - 49                 |
| 50                        | 51 - 59                 |
| 60                        | 61 - 69                 |
| 70                        | 71 - 79                 |
| 80                        | 81 - 89                 |
| 90                        | 91 - 99                 |

## LG Glofa GM6 CNET

### HMI Factory Setting:

Baud rate: 19200, 8, None, 1 (RS-232)

Controller Station Number: 1

Control Area / Status Area: %MW0 / %MW10

### Connection

#### a. Applicable to RS-232 (DOP-A/AE/AS, DOP-B Series)

via CPU Port

| DOP Series           |       | Controller                |
|----------------------|-------|---------------------------|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB male (RS-232) |
| RXD (2)              | ————— | (7) TXD                   |
| TXD (3)              | ————— | (4) RXD                   |
| GND (5)              | ————— | (5) GND                   |

#### b. Applicable to RS-422 (DOP-A/AE Series)

via G6L-CUEC CNET Communication Module (0H [Note1](#))

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-SUB male (RS-422) |       | (RS-422)   |
| RXD+ (2)                  | ————— | SDA        |
| RXD- (1)                  | ————— | SDB        |
| TXD- (4)                  | ————— | RDB        |
| TXD+ (3)                  | ————— | RDA        |
| GND (5)                   | ————— | SG         |

**c. Applicable to RS-422 (DOP-AS35/AS38/AS57 Series)**

via G6L-CUEC CNET Communication Module (1H [Note1](#))

| DOP Series<br>Terminal Block (RS-422) |       | Controller<br>(RS-422) |
|---------------------------------------|-------|------------------------|
| R+                                    | _____ | SDA                    |
| R-                                    | _____ | SDB                    |
| T-                                    | _____ | RDB                    |
| T+                                    | _____ | RDA                    |
| GND                                   | _____ | SG                     |

**d. Applicable to RS-422 (DOP-B Series)**

via G6L-CUEC CNET Communication Module (2H [Note1](#))

| DOP Series<br>9 pin D-SUB male (RS-422) |       | Controller<br>(RS-422) |
|---|-------|------------------------|
| RXD+ (4)                                | _____ | SDA                    |
| RXD- (9)                                | _____ | SDB                    |
| TXD- (6)                                | _____ | RDB                    |
| TXD+ (1)                                | _____ | RDA                    |
| GND (5)                                 | _____ | SG                     |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type         | Format                                    | Read/Write Range  | Data Length | Note |
|--------------|---|-------------------|-------------|------|
|              | Word No.(n)<br>Slot No.(s)<br>Base No.(b) |                   |             |      |
| Input Image  | IWb.s.n                                   | IW0.0.0 - IW1.7.3 | Word        |      |
| Input Image  | IDb.s.n                                   | ID0.0.0 - ID1.7.1 | Double Word |      |
| Output Image | QWb.s.n                                   | QW0.0.0 - QW1.7.3 | Word        |      |

| Type            | Format                                    | Read/Write Range  | Data Length | Note |
|-----------------|---|-------------------|-------------|------|
|                 | Word No.(n)<br>Slot No.(s)<br>Base No.(b) |                   |             |      |
| Output Image    | QDb.s.n                                   | QD0.0.0 - QD1.7.1 | Double Word |      |
| Internal Memory | MWn                                       | MW0 - MW4095      | Word        |      |
| Internal Memory | MDn                                       | MD0 - MD2047      | Double Word |      |

**b. Contacts**

| Type            | Format                                   | Read/Write Range   | Note |
|-----------------|--|--------------------|------|
|                 | Bit No.(n)<br>Slot No.(s)<br>Base No.(b) |                    |      |
| Input Image     | IXb.s.n                                  | IX0.0.0 - IX1.7.63 |      |
| Output Image    | QXb.s.n                                  | QX0.0.0 - QX1.7.63 |      |
| Internal Memory | MXn                                      | MX0 - MX65535      |      |

 **NOTE**

- 1) HMI default setting is predefined for CPU Port. If the user want to connect to CNET communication module, the baud rate should be changed to 38400, 8, None, 1. (RS-422 / RS-485).

## LG Master K120S/200S

### HMI Factory Setting:

Baud rate: 38400, 8, None, 1 (RS-232)

Controller Station Number: 0 (no PLC station number in protocol, therefore, only 1(HMI) to 1(PLC) communication is allowed.)

Control Area / Status Area: DW0/DW10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP Series<br>9 pin D-SUB (RS-232) | Controller 9 pin D-SUB male<br>(RS-232 for LG K120S/200S) |
|------------------------------------|---|
| RXD (2)                            | (3) TXD   |
| TXD (3)                            | (2) RXD   |
| GND (5)                            | (5) GND   |

### Definition of PLC Read/Write Address

#### a. Registers

| Type           | Format          | Read/Write Range | Data Length | Note |
|----------------|-----------------|------------------|-------------|------|
|                | Word No. (n)    |                  |             |      |
| WORD_DEVICE_PW | PW <sub>n</sub> | PW0 - PW15       | Word        |      |
| WORD_DEVICE_MW | MW <sub>n</sub> | MW0 - MW191      | Word        |      |
| WORD_DEVICE_KW | KW <sub>n</sub> | KW0 - KW31       | Word        |      |
| WORD_DEVICE_LW | LW <sub>n</sub> | LW0 - LW63       | Word        |      |
| WORD_DEVICE_FW | FW <sub>n</sub> | FW0 - FW63       | Word        |      |
| WORD_DEVICE_TW | TW <sub>n</sub> | TW0 - TW255      | Word        |      |
| WORD_DEVICE_CW | CW <sub>n</sub> | CW0 - CW255      | Word        |      |
| WORD_DEVICE_DW | DW <sub>n</sub> | DW0 - DW9999     | Word        |      |

**b. Contacts**

| Type         | Format                      | Read/Write Range | Note |
|--------------|-----------------------------|------------------|------|
|              | Word No. (n)<br>Bit No. (b) |                  |      |
| BIT_DEVICE_P | Pnb                         | P00 - P15F       |      |
| BIT_DEVICE_M | Mnb                         | M00 - M191F      |      |
| BIT_DEVICE_K | Knb                         | K00 - K31F       |      |
| BIT_DEVICE_L | Lnb                         | L00 - L63F       |      |
| BIT_DEVICE_F | Fnb                         | F00 - F63F       |      |
| BIT_DEVICE_T | Tb                          | T0 - T255        |      |
| BIT_DEVICE_C | Cb                          | C0 - C255        |      |

 **NOTE**

- 1) If connecting to Pin 4 (RXD), Pin 7 (TXD) and Pin 5 (SG), it indicates that CNet protocol is used (Please refer to the section "[LG Master-K CNET](#)"). 120S/200S protocol and CNet protocol cannot be used simultaneously. The users only can select either 120S/200S protocol or CNet protocol.



## LG Master-K CNET

### HMI Factory Setting ([Note1](#)):

Baud rate: 38400, 8, None, 1 (RS-422)

Controller Station Number: 0

Control Area / Status Area: DW0/DW10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series) LG 120S PLC (Master K)

| DOP Series           |       | Controller                |
|----------------------|-------|---------------------------|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB male (RS-232) |
| RXD (2)              | ————— | (7) TXD                   |
| TXD (3)              | ————— | (4) RXD                   |
| GND (5)              | ————— | (5) GND                   |

#### b. RS-422 (DOP-A/AE Series) via G6L-CUEC CNET Communication Module

| DOP Series                 |       | Controller |
|----------------------------|-------|------------|
| 99 pin D-SUB male (RS-422) |       | (RS-422)   |
| RXD+ (2)                   | ————— | SDA        |
| RXD- (1)                   | ————— | SDB        |
| TXD- (4)                   | ————— | RDB        |
| TXD+ (3)                   | ————— | RDA        |
| GND (5)                    | ————— | SG         |

**c. RS-422 (DOP-AS35/AS38/AS57 Series) via G6L-CUEC CNET Communication Module**

| DOP Series                 |       | Controller |
|----------------------------|-------|------------|
| 99 pin D-SUB male (RS-422) |       | (RS-422)   |
| R+                         | ————— | SDA        |
| R-                         | ————— | SDB        |
| T-                         | ————— | RDB        |
| T+                         | ————— | RDA        |
| GND                        | ————— | SG         |

**d. RS-422 (DOP-B Series) via G6L-CUEC CNET Communication Module**

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-SUB male (RS-422) |       | (RS-422)   |
| RXD+ (4)                  | ————— | SDA        |
| RXD- (9)                  | ————— | SDB        |
| TXD- (6)                  | ————— | RDB        |
| TXD+ (1)                  | ————— | RDA        |
| GND (5)                   | ————— | SG         |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type                | Format       | Read/Write Range | Data Length | Note      |
|---------------------|--------------|------------------|-------------|-----------|
|                     | Word No. (n) |                  |             |           |
| I/O Relay           | PWn          | PW0 - PW31       | Word        |           |
| Auxiliary Relay     | MWn          | MW0 - MW191      | Word        |           |
| Keep Relay          | KWn          | KW0 - KW31       | Word        |           |
| Link Relay          | LWn          | LW0 - LW63       | Word        |           |
| Special Relay       | FWn          | FW0 - FW63       | Word        | Read Only |
| Timer Elapsed Value | TWn          | TW0 - TW255      | Word        |           |

| Type                  | Format       | Read/Write Range | Data Length | Note |
|-----------------------|--------------|------------------|-------------|------|
|                       | Word No. (n) |                  |             |      |
| Counter Elapsed Value | CWn          | CW0 - CW255      | Word        |      |
| Data Register         | DWn          | DW0 - DW9999     | Word        |      |

**b. Contacts**

| Type                  | Format                      | Read/Write Range | Note |
|-----------------------|-----------------------------|------------------|------|
|                       | Word No. (n)<br>Bit No. (b) |                  |      |
| I/O Relay             | PXnb                        | PX00 - PX31F     |      |
| Auxiliary Relay       | MXnb                        | MX00 - MX191F    |      |
| Keep Relay            | KXnb                        | KX00 - KX31F     |      |
| Link Relay            | LXnb                        | LX00 - LX63F     |      |
| Special Relay         | FXnb                        | FX00 - FX63F     |      |
| Timer Contact Relay   | TXb                         | TX0 - TX255      |      |
| Counter Contact Relay | CXb                         | CX0 - CX255      |      |

 **NOTE**

- 1) HMI default setting is predefined for G6L-CUEC CNET communication module.

## LG XGT CNET

( Supports LG CNET communication module XG-CH2A)

### HMI Factory Setting:

Baud rate: 9600, 8, None, 1

Controller Station Number: 0

Control Area / Status Area: DW0 / DW10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series) XGL-CH2A CNET Communication Module (Channel 1)

| DOP Series                |       | Controller                |
|---------------------------|-------|---------------------------|
| 9 pin D-sub male (RS-232) |       | 9 pin D-SUB male (RS-232) |
| RXD (2)                   | ————— | (3) TXD                   |
| TXD (3)                   | ————— | (2) RXD                   |
| GND (5)                   | ————— | (5) GND                   |

#### b. RS-422 (DOP-A/AE Series) XGL-CH2A CNET Communication Module (Channel 2)

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-422) |       | (RS-422)   |
| RXD- (1)                  | ————— | TX-        |
| RXD+ (2)                  | ————— | TX+        |
| TXD+ (3)                  | ————— | RX+        |
| TXD- (4)                  | ————— | RX-        |
| GND (5)                   | ————— | GND        |

**c. RS-422 (DOP-AS35/AS38/AS57 Series) XGL-CH2A CNET Communication Module (Channel 2)**

| DOP Series              |       | Controller |  |
|-------------------------|-------|------------|--|
| Terminal Block (RS-422) |       | (RS-422)   |  |
| R-                      | _____ | TX-        |  |
| R+                      | _____ | TX+        |  |
| T+                      | _____ | RX+        |  |
| T-                      | _____ | RX-        |  |
| GND (5)                 | _____ | GND        |  |

**d. RS-422 (DOP-A/AE Series) XGL-CH2A CNET Communication Module (Channel 2)**

| DOP Series                |       | Controller |  |
|---------------------------|-------|------------|--|
| 9 pin D-sub male (RS-422) |       | (RS-422)   |  |
| RXD- (9)                  | _____ | TX-        |  |
| RXD+ (4)                  | _____ | TX+        |  |
| TXD+ (1)                  | _____ | RX+        |  |
| TXD- (6)                  | _____ | RX-        |  |
| GND (5)                   | _____ | GND        |  |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type                | Format       | Read/Write Range | Data Length | Note      |
|---------------------|--------------|------------------|-------------|-----------|
|                     | Word No. (n) |                  |             |           |
| I/O Relay           | PWn          | PW0 - PW2047     | Word        |           |
| Auxiliary Relay     | MWn          | MW0 - MW2047     | Word        |           |
| Keep Relay          | KWn          | KW0 - KW2047     | Word        |           |
| Link Relay          | LWn          | LW0 - LW11263    | Word        |           |
| Special Relay       | FWn          | FW0 - FW2047     | Word        | Read only |
| Timer Elapsed Value | TWn          | TW0 - TW2047     | Word        |           |

| Type                  | Format       | Read/Write Range | Data Length | Note |
|-----------------------|--------------|------------------|-------------|------|
|                       | Word No. (n) |                  |             |      |
| Counter Elapsed Value | CWn          | CW0 - CW2047     | Word        |      |
| Data Register         | DWn          | DW0 - DW32767    | Word        |      |

**b. Contacts**

| Type                  | Format                    | Read/Write Range  | Note |
|-----------------------|---------------------------|-------------------|------|
|                       | Word No.(n)<br>Bit No.(b) |                   |      |
| I/O Relay             | PXnb                      | PX0.0 - PX2047.F  |      |
| Auxiliary Relay       | MXnb                      | MX0.0 - MX2047.F  |      |
| Keep Relay            | KXnb                      | KX0.0 - KX2047.F  |      |
| Link Relay            | LXnb                      | LX0.0 - LX11263.F |      |
| Special Relay         | FXnb                      | FX0.0 - FX2047.F  |      |
| Timer Contact Relay   | TXb                       | TX0 - TX2047      |      |
| Counter Contact Relay | CXb                       | CX0 - CX2047      |      |
| Data Relay            | DXn.b                     | DX0.0 - DX32767.F |      |

## LIYAN LYPLC EX

### HMI Factory Setting

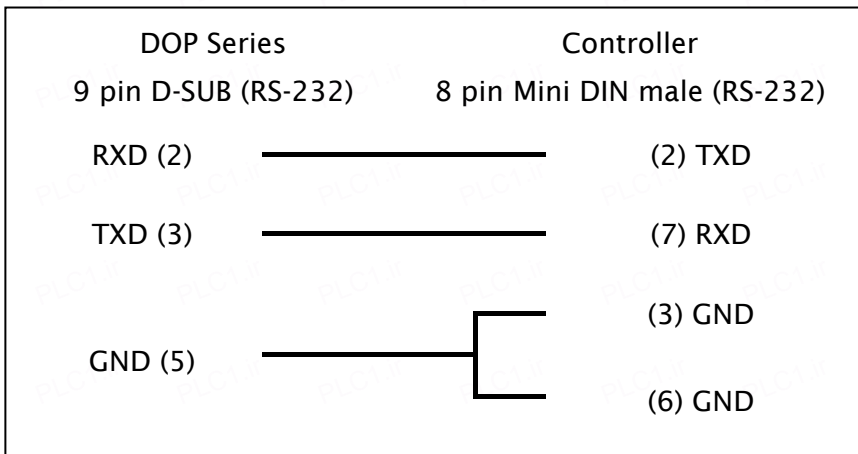
Baud rate: 9600, 7, Even, 1

Controller Station Number: 0

Control Area / Status Area: D0 / D10

### Connection

#### a. Applicable to RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type                    | Format       | Read/Write Range | Data Length | Note                     |
|-------------------------|--------------|------------------|-------------|--------------------------|
|                         | Word No. (n) |                  |             |                          |
| Auxiliary Relay         | Mn           | M0 - M3064       | Byte        | <a href="#">1</a>        |
| Special Auxiliary Relay | Mn           | M8000 - M8248    | Byte        | <a href="#">1</a>        |
| Status Relay            | Sn           | S0 - S992        | Byte        | <a href="#">1</a>        |
| Input Relay             | Xn           | X0 - X360        | Byte        | Octal, <a href="#">1</a> |
| Output Relay            | Yn           | Y0 - Y360        | Byte        | Octal, <a href="#">1</a> |
| Timer PV                | Tn           | T0 - T255        | Word        |                          |
| 16-bit Counter PV       | Cn           | C0 - C199        | Word        |                          |
| 32-bit Counter PV       | Cn           | C200 - C255      | Double Word |                          |
| Data Register           | Dn           | D0 - D7999       | Word        |                          |
| Special Data Register   | Dn           | D8000 - D8255    | Word        |                          |

**b. Contacts**

| Type                    | Format      | Read/Write Range | Note  |
|-------------------------|-------------|------------------|-------|
|                         | Bit No. (b) |                  |       |
| Auxiliary Relay         | Mb          | M0 - M3071       |       |
| Special Auxiliary Relay | Mb          | M8000 - M8255    |       |
| Status Relay            | Sb          | S0 - S999        |       |
| Input Relay             | Xb          | X0 - X377        | Octal |
| Output Relay            | Yb          | Y0 - Y377        | Octal |
| Timer Flag              | Tb          | T0 - T255        |       |
| Counter Flag            | Cb          | C0 - C255        |       |

 **NOTE**

- 1) Device address must be the multiple of 8.



## M2i Master

### HMI Factory Setting

Baud rate: 38400, 8, None, 1

Controller Station Number: 1

Control Area / Status Area: SB0 / SB10

### Definition of PLC Read/Write Address

#### a. Registers

| Type         | Format       | Read/Write Range | Data Length | Note        |
|--------------|--------------|------------------|-------------|-------------|
|              | Word No. (n) |                  |             |             |
| Word Address | SBn          | SB0000 - SBFFFF  | Word        | Hexadecimal |

#### b. Contacts

| Type        | Format                      | Read/Write Range    | Note        |
|-------------|-----------------------------|---------------------|-------------|
|             | Word No. (n)<br>Bit No. (b) |                     |             |
| Bit Address | SBn.b                       | SB0000.0 - SBFFFF.F | Hexadecimal |

## M2i Slave

### HMI Factory Setting:

Baud rate: 38400, 8, None, 1

Controller Station Number: 1 (no PLC station number in protocol, therefore, only 1(HMI) to 1(PLC) communication is allowed.)

Control Area / Status Area: SB0 / SB10

### Connection

Regarding DOP pin definition, please refers to “Pin Definition of Serial Communication” for more detail.

### Definition of PLC Read/Write Address

#### a. Registers

| Type         | Format       | Read/Write Range | Data Length | Note        |
|--------------|--------------|------------------|-------------|-------------|
|              | Word No. (n) |                  |             |             |
| Word Address | SBn          | SB0000 - SBFFFF  | Word        | Hexadecimal |

#### b. Contacts

| Type        | Format                      | Read/Write Range    | Note        |
|-------------|-----------------------------|---------------------|-------------|
|             | Word No. (n)<br>Bit No. (b) |                     |             |
| Bit Address | SBn.b                       | SB0000.0 - SBFFFF.F | Hexadecimal |

### NOTE

- 1) HMI station number is Slave station number. (default setting is 0)
- 2) The relation between M2i communication address and HMI internal registers.

| Modbus address  |   | Data definition in HMI |
|-----------------|---|------------------------|
| SB0000 ~ SB7FFF | → | \$0 ~ \$32767          |
| SB8000 ~ SB83FF | → | \$M0 ~ \$M1023         |
| SB8400          | → | RCPNO                  |
| SB8500 ~ SBFFFF | → | RCP0 ~ RCP31487        |

## Matsushita FP PLC

### HMI Factory Setting:

Baud rate: 9600, 8, Odd, 1

Controller Station Number: 238([Note 1](#))

Control Area / Status Area: DT0 / DT10

### Connection

#### a. RS-232 for FP0 (DOP-A/AE/AS, DOP-B Series)

| DOP Series           |       | Controller                          |
|----------------------|-------|-------------------------------------|
| 9 pin D-SUB (RS-232) |       | 5 pin Mini DIN male(RS-232 for FP0) |
| RXD (2)              | ————— | (2) TXD                             |
| TXD (3)              | ————— | (3) RXD                             |
| GND (5)              | ————— | (1) SG                              |

#### b. RS-232 for FP1 (DOP-A/AE/AS, DOP-B Series)

| DOP Series           |       | Controller                       |
|----------------------|-------|----------------------------------|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB male(RS-232 for FP1) |
| RXD- (2)             | ————— | (2) TXD                          |
| RXD+ (3)             | ————— | (3) RXD                          |
| TXD+ (5)             | ————— | (7) GND                          |
|                      | ┌     | (4) RTS                          |
|                      | └     | (5) CTS                          |

## Definition of PLC Read/Write Address

### a. Registers

| Type                   | Format       | Read/Write Range              | Data Length | Note              |
|------------------------|--------------|-------------------------------|-------------|-------------------|
|                        | Word No. (n) |                               |             |                   |
| Internal Relay         | WRn          | WR0 - WR886,<br>WR900 - WR910 | Word        |                   |
| Special Internal Relay |              |                               |             |                   |
| Link Relay             | WLn          | WL0 - WL639                   | Word        |                   |
| External Input Relay   | WXn          | WX0 - WX511                   | Word        |                   |
| External Output Relay  | WYn          | WY0 - WY511                   | Word        |                   |
| Timer/Counter P.V.     | EVn          | EV0 - EV3071                  | Word        |                   |
| Timer/Counter S.V.     | SVn          | SV0 - SV3071                  | Word        |                   |
| Data Register          | DTn          | DT0 - DT32764                 | Word        |                   |
| Link Data Register     | LDn          | LD0 - LD8447                  | Word        |                   |
| File Register          | FLn          | FL0 - FL32764                 | Word        |                   |
| Speical Data Register  | DT9_n        | DT9_0 - DT9_511               | Word        | <a href="#">2</a> |

### b. Contacts

| Type                   | Format                      | Read/Write Range | Note |
|------------------------|-----------------------------|------------------|------|
|                        | Word No. (n)<br>Bit No. (b) |                  |      |
| Internal Relay         | Rnb                         | Rn00 - Rn886F    |      |
| Special Internal Relay | Rnb                         | Rn9000 - Rn910F  |      |
| Link Relay             | Lnb                         | Ln00 - Ln639F    |      |
| External Input Relay   | Xnb                         | Xn00 - Xn511F    |      |
| External Output Relay  | Ynb                         | Yn00 - Yn511F    |      |
| Timer Flag Contact     | Tb                          | T0 - T3071       |      |
| Counter Flag Contact   | Cb                          | C0 - C3071       |      |

### NOTE

- 1) PLC default setting is 238. It supports the external device connections of all station number. To change the setting, PLC supports station number range from 0 to 99. For more detail on PLC station number, please refer to PLC user manual.
- 2) Special data register (DT9\_n) is applicable to FP0 T32C, FP2, FP2SH, FP10SH modules. The actual transmitted address of DT9\_n is DT 90000 + n.  
For example, the actual transmitted address of DT9\_0 is DT90001, the actual transmitted address of DT9\_1 is DT90001, the actual transmitted address of DT9\_2 is DT90002 and so on.

## Mirle FAMA SC

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1

Controller Station Number: 0

Control Area / Status Area: 40100 / 40200

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP Series           |       | Controller                |  |
|----------------------|-------|---------------------------|--|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB male (RS-232) |  |
| RXD (2)              | ————— | (3) TXD                   |  |
| TXD (3)              | ————— | (2) RXD                   |  |
| GND (5)              | ————— | (5) SG                    |  |

### Definition of PLC Read/Write Address

#### a. Registers

| Type             | Format       | Read/Write Range | Data Length | Note      |
|------------------|--------------|------------------|-------------|-----------|
|                  | Word No. (n) |                  |             |           |
| Output Registers | Wn           | W40001 - W50000  | Word        |           |
| Input Registers  | Wn           | W30001 - W40000  | Word        | Read Only |

#### b. Contacts

| Type             | Format      | Read/Write Range | Note      |
|------------------|-------------|------------------|-----------|
|                  | Bit No. (b) |                  |           |
| Discrete Outputs | Bb          | B1 - B10000      |           |
| Discrete Inputs  | Bb          | B10001 - B20000  | Read Only |

## Mitsubishi A Series (CPU Port)

(Supporting A2A, A2AS, A2USH, A1SH, A3N, A2ASH(CPU-S1) Series)

### HMI Factory Setting:

Baud rate: 9600, 8, ODD, 1

Controller Station Number: 0 (no PLC station number in protocol, therefore, only 1(HMI) to 1(PLC) communication is allowed.)


Control Area / Status Area: D0/D10

### Connection


#### a. RS-422 (DOP-A/AE Series)

| DOP Series                |       | Controller                |  |
|---------------------------|-------|---------------------------|--|
| 9 pin D-SUB male (RS-422) |       | 25 pin D-SUB male(RS-422) |  |
| RXD+ (2)                  | ————— | (3) SDB (TXD+)            |  |
| RXD- (1)                  | ————— | (16) SDA (TXD-)           |  |
| TXD- (4)                  | ————— | (15) RDA (RXD-)           |  |
| TXD+ (3)                  | ————— | (2) RDB (RXD+)            |  |
| RTS+ (7)                  | ————— | (4) CTS+                  |  |
| CTS+ (8)                  | ————— | (5) RTS+                  |  |
| RTS- (6)                  | ————— | (17) CTS-                 |  |
| CTS- (9)                  | ————— | (18) RTS-                 |  |
|                           |       | (20)                      |  |
|                           |       | (21)                      |  |

**b. RS-422 (DOP-AS57 Series)**

| DOP Series                |   | Controller                |
|---------------------------|---|---------------------------|
| 9 pin D-SUB male (RS-422) |   | 25 pin D-SUB male(RS-422) |
| R+(COM2)                  | —————   | (3) SDB (TXD+)            |
| R-(COM2)                  | —————   | (16) SDA (TXD-)           |
| T-(COM2)                  | —————   | (15) RDA (RXD-)           |
| T+(COM2)                  | —————   | (2) RDB (RXD+)            |
| T+(COM3)                  | —————   | (4) CTS+                  |
| R+(COM3)                  | —————   | (5) RTS+                  |
| T-(COM3)                  | —————   | (17) CTS-                 |
| R-(COM3)                  | —————   | (18) RTS-                 |
|                           |   | (20)                      |
|                           |  | (21)                      |

**c. RS-422 (DOP-B Series)**

| DOP Series                |   | Controller                |
|---------------------------|---|---------------------------|
| 9 pin D-SUB male (RS-422) |   | 25 pin D-SUB male(RS-422) |
| RXD+ (COM2-4)             | —————   | (3) SDB (TXD+)            |
| RXD- (COM2-9)             | —————   | (16) SDA (TXD-)           |
| TXD- (COM2-6)             | —————   | (15) RDA (RXD-)           |
| TXD+ (COM2-1)             | —————   | (2) RDB (RXD+)            |
| RTS+ (COM3-1)             | —————   | (4) CTS+                  |
| CTS+ (COM3-4)             | —————   | (5) RTS+                  |
| RTS- (COM3-6)             | —————   | (17) CTS-                 |
| CTS- (COM3-9)             | —————   | (18) RTS-                 |
|                           |  | (20)                      |
|                           |   | (21)                      |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type                   | Format       | Read/Write Range | Data Length | Note   |
|------------------------|--------------|------------------|-------------|--|
|                        | Word No. (n) |                  |             |  |
| Input                  | Xn           | X0 - X7FF        | Word        | Hexadecimal, <a href="#">1</a> , <a href="#">4</a> |
| Output                 | Yn           | Y0 - Y7FF        | Word        | Hexadecimal, <a href="#">1</a>                     |
| Link Relay             | Bn           | B0 - BFFF        | Word        | Hexadecimal, <a href="#">1</a>                     |
| Internal Relay         | Mn           | M0 - M8191       | Word        | <a href="#">1</a>                                  |
| Special Internal Relay | SMn          | SM9000 - SM9255  | Word        | <a href="#">2</a>                                  |
| Latch Relay            | Ln           | L0 - L8191       | Word        | <a href="#">1</a>                                  |
| Annunciator            | Fn           | F0 - F2047       | Word        | <a href="#">1</a>                                  |
| Timer Value            | TNn          | TN0 - TN2047     | Word        |  |
| Counter Value          | CNn          | CN0 - CN1023     | Word        |  |



| Type                  | Format       | Read/Write Range | Data Length | Note  |
|-----------------------|--------------|------------------|-------------|---|
|                       | Word No. (n) |                  |             |   |
| Data Register         | Dn           | D0 - D8191       | Word        |   |
| Special Data Register | SDn          | SD9000 - SD9255  | Word        |   |
| File Register         | Rn           | R0 - R8191       | Word        |   |
| Link Register         | Wn           | W0 - WFFF        | Word        | Hexadecimal   |
| Input Card Register   | PXn          | PX0 - PX7FF      | Word        | Hexadecimal,<br><a href="#">1</a> , <a href="#">4</a> |

**b. Contacts**

| Type                   | Format      | Read/Write Range | Note                              |
|------------------------|-------------|------------------|-----------------------------------|
|                        | Bit No. (b) |                  |                                   |
| Input                  | Xb          | X0 - X7FF        | Hexadecimal,<br><a href="#">4</a> |
| Output                 | Yb          | Y0 - Y7FF        | Hexadecimal                       |
| Link Relay             | Bb          | B0 - BFFF        | Hexadecimal                       |
| Internal Relay         | Mb          | M0 - M8191       |                                   |
| Special Internal Relay | SMb         | SM9000 - SM9255  |                                   |
| Latch Relay            | Lb          | L0 - L2047       |                                   |
| Annunciator            | Fb          | F0 - F2047       |                                   |
| Timer Contact          | TSb         | TS0 - TS2047     |                                   |
| Timer Coil             | TCb         | TC0 - TC2047     |                                   |
| Counter Contact        | CSb         | CS0 - CS1023     |                                   |
| Counter Coil           | CCb         | CC0 - CC1023     |                                   |
| Input Card Register    | PXb         | PX0 - PX7FF      | Hexadecimal,<br><a href="#">4</a> |

 **NOTE**

- 1) Device address must be the multiple of 16.
- 2) Device address must be 9000 plus the multiple of 16.
- 3) If the PLC station number is set as 0 and a read/write register error occurs on HMI, please reset the PLC station number to 255.
- 4) If a read/ write register X error occurs on HMI, please use register PX.
- 5) R address would vary upon the FILE REGISTER of PLC setting.

For Example : A2USH

1K : 3800-4000H

2K : 3000-4000H

3K : 2800-4000H

4K : 2000-4000H

5K~8K : ...

FILE REGISTER : PLC must be on or Read/Write will be incorrect..

6) How to set File Register (R) for Mitsubishi A serial PLC:

1. Startup MELSOFT series GX Developer.
2. Open "Project Data List" windows. ("View" Option)
3. Double click Parameter \ PLC Parameter, and open "Setting" window.
4. Set Memory Capacity \ File Register (0 ~8).
5. Press "End" button on the bottom and complete the setting.
6. Execute OnLine\Write to PLC.
7. Enable the "Parameter \ PLC/Network" and "File register \ Main" option (check the check box next to "Parameter \ PLC/Network" and "File register \ Main").
8. Press "Execute" button.
9. Complete

## Mitsubishi A Series/J71UC24 Computer Link

### HMI Factory Setting:

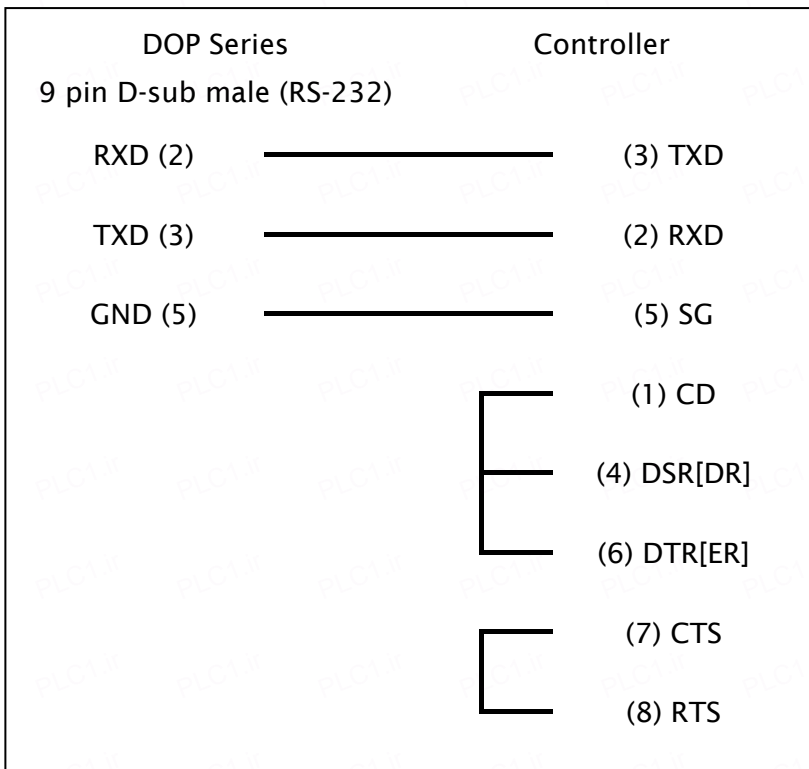
Baud rate: 9600, 8, ODD, 1

Controller Station Number: 0 ([Note 1](#))

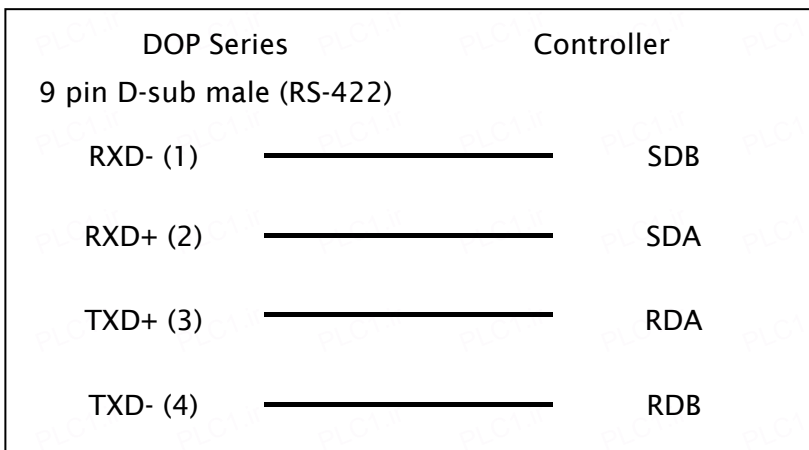
Control Area / Status Area: D0/D10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



#### b. RS-422 (DOP-A/AE Series)







**c. RS-422 (DOP-AS35/AS38/AS57 Series)**

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-422) |       |            |
| R-                        | ————— | SDB        |
| R+                        | ————— | SDA        |
| T+                        | ————— | RDA        |
| T-                        | ————— | RDB        |

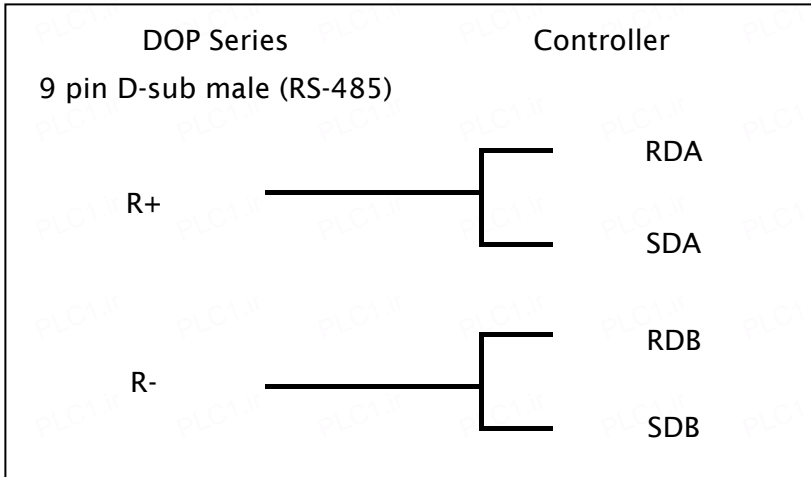
**d. RS-422 (DOP-B Series)**

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-422) |       |            |
| RXD- (9)                  | ————— | SDB        |
| RXD+ (4)                  | ————— | SDA        |
| TXD+ (1)                  | ————— | RDA        |
| TXD- (6)                  | ————— | RDB        |

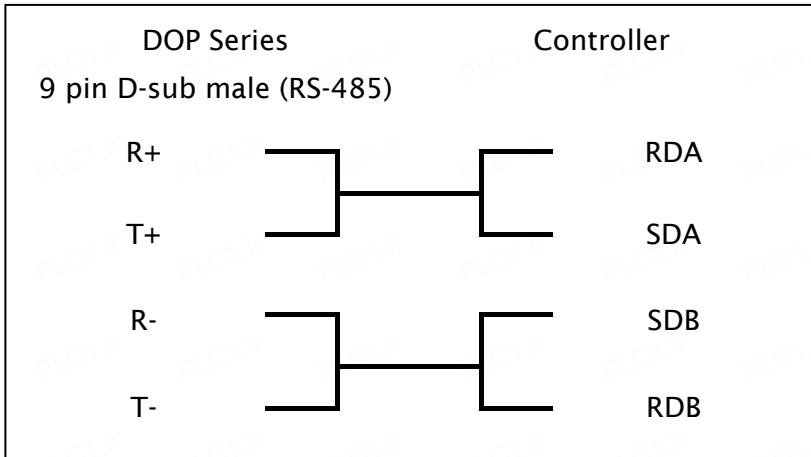
**e. RS-485 (DOP-A/AE Series)**

| DOP Series                |   | Controller |
|---------------------------|---|------------|
| 9 pin D-sub male (RS-485) |   |            |
| TXD+ (3)                  |  | RDA        |
| RXD+ (2)                  |  | SDA        |
| RXD- (1)                  |  | SDB        |
| TXD- (4)                  |  | RDB        |

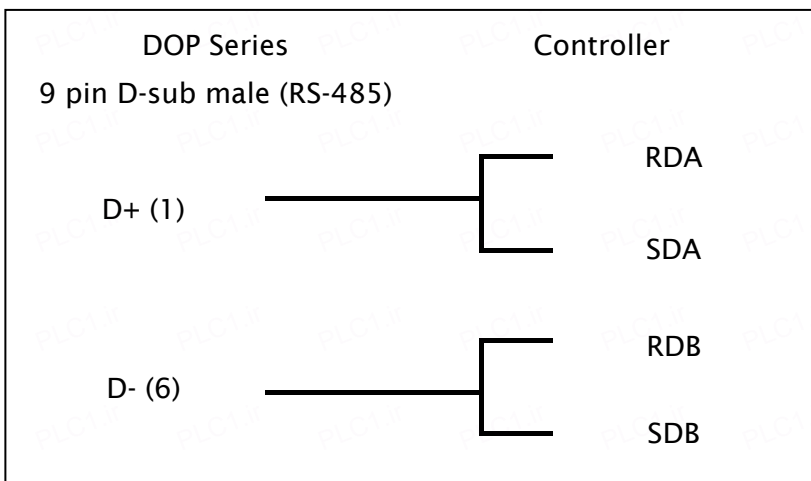
**f. RS-485 (DOP-AS57 Series)**



**g. RS-485 (DOP-AS35/AS38 Series)**



**h. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                   | Format       | Read/Write Range | Data Length | Note              |
|------------------------|--------------|------------------|-------------|-------------------|
|                        | Word No. (n) |                  |             |                   |
| Input                  | Xn           | X0 - X7FF        | Word        | <a href="#">3</a> |
| Output                 | Yn           | Y0 - X7FF        | Word        | <a href="#">3</a> |
| Link Relay             | Bn           | B0 - BFFF        | Word        | <a href="#">3</a> |
| Internal Relay         | Mn           | M0 - M8176       | Word        | <a href="#">3</a> |
| Special Internal Relay | SMn          | SM9000 - SM9240  | Word        | <a href="#">4</a> |
| Latch Relay            | Ln           | L0 - L2032       | Word        | <a href="#">3</a> |
| Annunciator            | Fn           | F0 - F2032       | Word        | <a href="#">3</a> |
| Timer Value            | TNn          | TN0 - TN999      | Word        |                   |
| Counter Value          | CNn          | CN0 - CN999      | Word        |                   |
| Data Register          | Dn           | D0 - D8191       | Word        |                   |
| Special Data Register  | SDn          | SD9000 - SD9255  | Word        |                   |
| File Register          | Rn           | R0 - R8191       | Word        |                   |
| Link Register          | Wn           | W0 - WFFF        | Word        |                   |

**b. Contacts**

| Type                   | Format      | Read/Write Range | Note |
|------------------------|-------------|------------------|------|
|                        | Bit No. (b) |                  |      |
| Input                  | Xb          | X0 - X7FF        |      |
| Output                 | Yb          | Y0 - Y7FF        |      |
| Link Relay             | Bb          | B0 - BFFF        |      |
| Internal Relay         | Mb          | M0 - M8191       |      |
| Special Internal Relay | SMb         | SM9000 - SM9255  |      |
| Latch Relay            | Lb          | L0 - L2047       |      |
| Annunciator            | Fb          | F0 - F2047       |      |
| Timer Contact          | TSb         | TS0 - TS999      |      |
| Timer Coil             | TCb         | TC0 - TC999      |      |
| Counter Contact        | CSb         | CS0 - CS999      |      |
| Counter Coil           | CCb         | CC0 - CC999      |      |

 **NOTE**

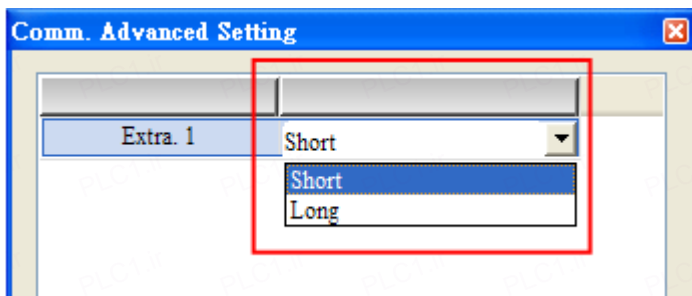
- 1) a. The mode switch setting of AJ71UC24-R2 communication is 4 (Form 4), station number can only be 0.

b. The mode switch setting of AJ71UC24-R4 communication is 8 (Form 4), station number can be determined by switch setting X1/X10.

After PLC communication mode switch is set, please re-activate the PLC.

The protocol is CheckSum and PLC Mode is Form 4. For switch setting of other communication parameter, please refers to Mitsubishi user manual.

- 2) Parameter is set by the programming software GX Developer, please refers to PLC user manual for set up instruction.
- 3) Device address should be the multiple of 16.
- 4) Device address should be the multiple of 16 plus 9000.
- 5) When certain Output Relay (Y) and Special Data Relay (SM) are set as 1, PLC will stop function. Please RESET the PLC for re-activation.
- 6) Though the default setting is in short communication address, this protocol supports both Short/ Long communication address. If only certain type of address is suitable to your device, address format can be changed in special parameter under the setting menu.



## Mitsubishi FX3U

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1

Controller Station Number: 0 (no PLC station number in protocol, therefore, only 1(HMI) to 1(PLC) communication is allowed.)

Control Area / Status Area: D0 / D10

### Connection

#### a. RS-422 (DOP-A/AE Series)

| DOP Series       |       | Controller |
|------------------|-------|------------|
| 9 pin D-sub male |       |            |
| RXD- (1)         | ————— | TXD- (4)   |
| RXD+ (2)         | ————— | TXD+ (7)   |
| TXD+ (3)         | ————— | RXD+(2)    |
| TXD- (4)         | ————— | RXD-(1)    |
| GND (5)          | ————— | SG (3)     |

#### b. RS-422 (DOP-AS35/AS38/AS57 Series)

| DOP Series       |       | Controller |
|------------------|-------|------------|
| 9 pin D-sub male |       |            |
| R-               | ————— | TXD- (4)   |
| R+               | ————— | TXD+ (7)   |
| T+               | ————— | RXD+(2)    |
| T-               | ————— | RXD-(1)    |
| GND (5)          | ————— | SG (3)     |



**c. RS-422 (DOP-B Series)**

| DOP Series       |       | Controller |
|------------------|-------|------------|
| 9 pin D-sub male |       |            |
| RXD- (9)         | ————— | TXD- (4)   |
| RXD+ (4)         | ————— | TXD+ (7)   |
| TXD+ (1)         | ————— | RXD+(2)    |
| TXD- (6)         | ————— | RXD-(1)    |
| GND (5)          | ————— | SG (3)     |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type                    | Format       | Read/Write Range | Data Length | Note                     |
|-------------------------|--------------|------------------|-------------|--------------------------|
|                         | Word No. (n) |                  |             |                          |
| Auxiliary Relay         | Mn           | M0 - M7664       | Word        | <a href="#">1</a>        |
| Special Auxiliary Relay | Mn           | M8000 - M8496    | Word        | <a href="#">1</a>        |
| Status Relay            | Sn           | S0 - S4080       | Word        | <a href="#">1</a>        |
| Input Relay             | In           | I0 - I360        | Word        | Octal, <a href="#">1</a> |
| Output Relay            | On           | O0 - O360        | Word        | Octal, <a href="#">1</a> |
| Timer PV                | Tn           | T0 - T255        | Word        |                          |
| 16-bit Counter PV       | Cn           | C0 - C199        | Word        |                          |
| 32-bit Counter PV       | Cn           | C200 - C255      | Double Word |                          |
| Data Register           | Dn           | D0 - D7999       | Word        |                          |
| Special Data Register   | Dn           | D8000 - D8511    | Word        |                          |
| Extension Register      | Rn           | R0 - R32767      | Word        |                          |

**b. Contacts**

| Type                    | Format      | Read/Write Range | Note  |
|-------------------------|-------------|------------------|-------|
|                         | Bit No. (b) |                  |       |
| Auxiliary Relay         | Mb          | M0 - M7679       |       |
| Special Auxiliary Relay | Mb          | M8000 - M8511    |       |
| Status Relay            | Sb          | S0 - S4095       |       |
| Input Relay             | Ib          | I0 - I377        | Octal |

| Type         | Format      | Read/Write Range | Note  |
|--------------|-------------|------------------|-------|
|              | Bit No. (b) |                  |       |
| Output Relay | <b>O</b> b  | <b>O0 - O377</b> | Octal |
| Timer Flag   | <b>T</b> b  | <b>T0 - T255</b> |       |
| Counter Flag | <b>C</b> b  | <b>C0 - C255</b> |       |

 **NOTE**

- 1) The device address must be the multiple of 16.

## Mitsubishi FX Series Computer Link

### HMI Factory Setting:

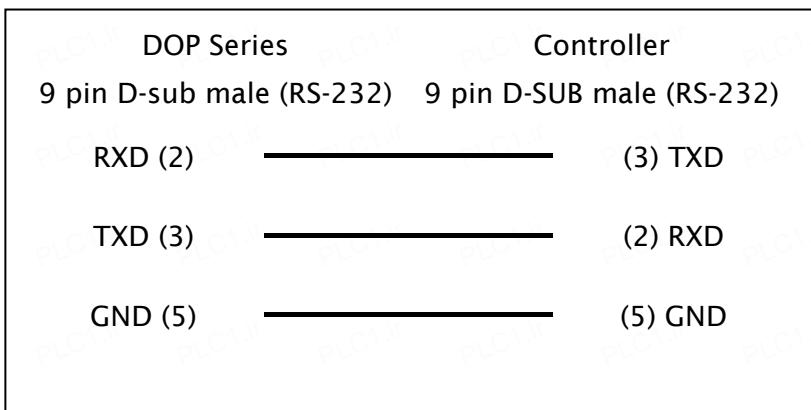
Baud rate: 9600, 7, Even, 1

Controller Station Number: 1

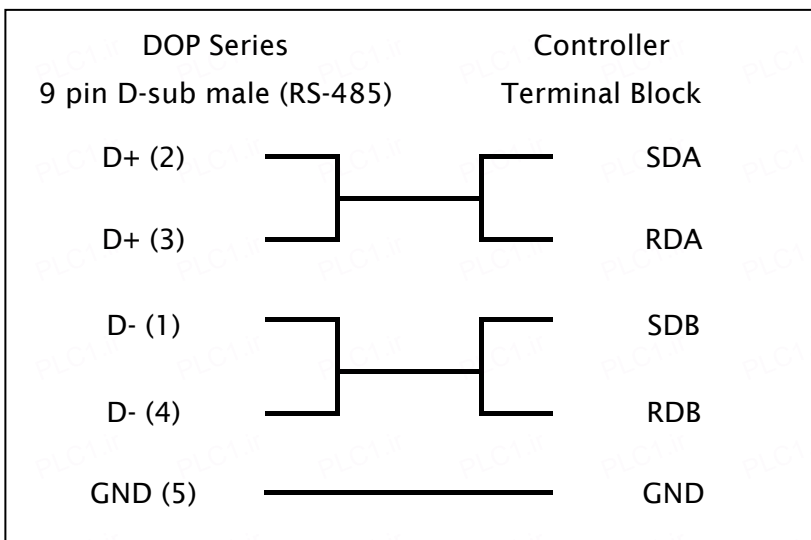
Control Area / Status Area: D0 / D10

### Connection

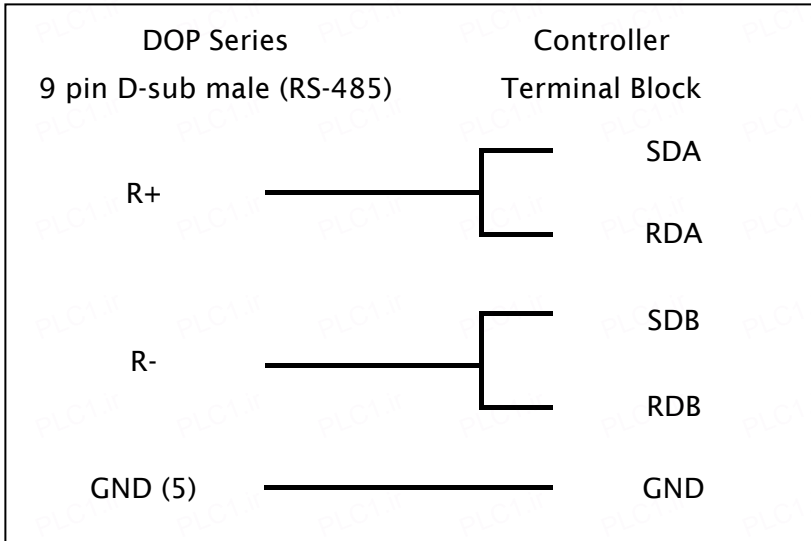
#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



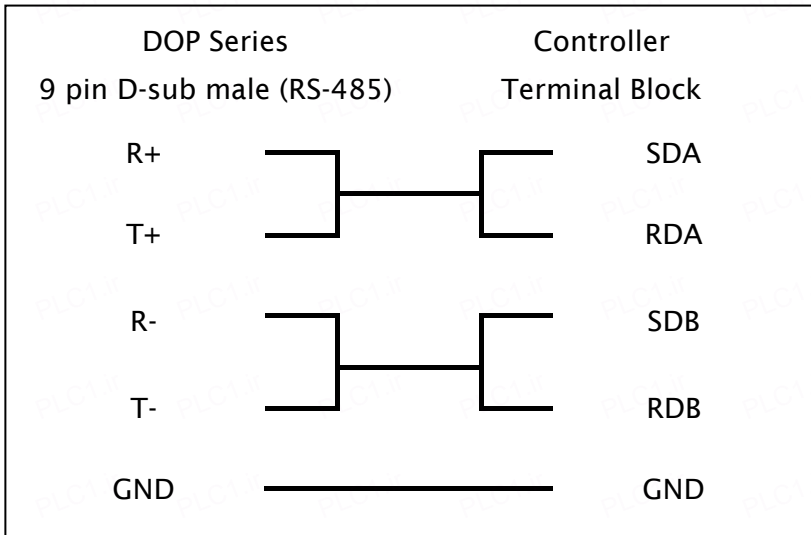
#### b. RS-485 (DOP-A/AE Series)



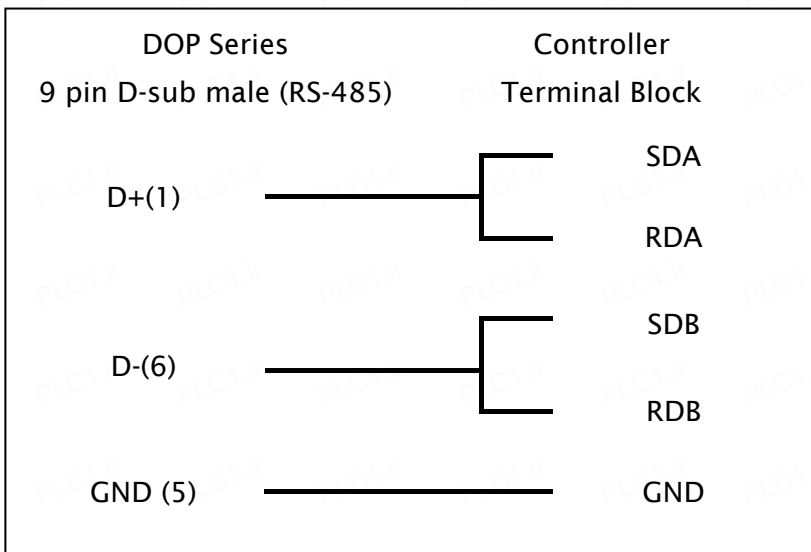
**c. RS-485 (DOP-AS57 Series)**



**d. RS-485 (DOP-AS35/AS38 Series)**



**e. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                    | Format      | Read/Write Range | Data Length | Note                     |
|-------------------------|-------------|------------------|-------------|--------------------------|
|                         | Word No.(n) |                  |             |                          |
| Auxiliary Relay         | Mn          | M0 - M7679       | Word        | <a href="#">2</a>        |
| Special Auxiliary Relay | Mn          | M8000 - M8511    | Word        | <a href="#">2</a>        |
| Status Relay            | Sn          | S0 - S4095       | Word        | <a href="#">2</a>        |
| Input Relay             | Xn          | X0 - X377        | Word        | Octal, <a href="#">2</a> |
| Output Relay            | Yn          | Y0 - Y377        | Word        | Octal, <a href="#">2</a> |
| Timer PV                | Tn          | T0 - T255        | Word        |                          |
| 16-Bits Counter PV      | Cn          | C0 - C199        | Word        |                          |
| 32-Bits Counter PV      | Cn          | C200 - C255      | Double Word |                          |
| Data Register           | Dn          | D0 - D7999       | Word        |                          |
| Special Data Register   | Dn          | D8000 - D8511    | Word        |                          |

**b. Contacts**

| Type                    | Format     | Read/Write Range | Note  |
|-------------------------|------------|------------------|-------|
|                         | Bit No.(n) |                  |       |
| Auxiliary Relay         | Mb         | M0 - M7679       |       |
| Special Auxiliary Relay | Mb         | M8000 - M8511    |       |
| Status Relay            | Sb         | S0 - S4095       |       |
| Input Relay             | Xb         | X0 - X377        | Octal |
| Output Relay            | Yb         | Y0 - Y377        | Octal |
| Timer Flag              | Tb         | T0 - T255        |       |
| Counter Flag            | Cb         | C0 - C255        |       |

 **NOTE**

- 1) This communication protocol supports FX Series 485-BD/232-BD communication module.
- 2) The device address must be the multiple of 16.

**Mitsubishi FX Series PLC([Note 1](#)) / Mitsubishi FX2N PLC([Note 2](#))**

**HMI Factory Setting:**

Baud rate: 9600, 7, Even, 1

Controller Station Number: 0 (no PLC station number in protocol, therefore, only 1(HMI) to 1(PLC) communication is allowed.)

Control Area / Status Area: D0 / D10

**Connection**

**a. RS-422 (DOP-A/AE Series)**

| DOP Series                |       | Controller                   |
|---------------------------|-------|------------------------------|
| 9 pin D-SUB male (RS-422) |       | 8 pin Mini DIN male (RS-422) |
| RXD+ (2)                  | ————— | (7) TXD+                     |
| RXD- (1)                  | ————— | (4) TXD-                     |
| TXD+ (3)                  | ————— | (2) RXD+                     |
| TXD- (4)                  | ————— | (1) RXD-                     |
| GND (5)                   | ————— | (3) SG                       |




**b. RS-422 (DOP-AS35/AS38/AS57 Series)**

| DOP Series                |       | Controller                   |
|---------------------------|-------|------------------------------|
| 9 pin D-SUB male (RS-422) |       | 8 pin Mini DIN male (RS-422) |
| R+                        | ————— | (7) TXD+                     |
| R-                        | ————— | (4) TXD-                     |
| T+                        | ————— | (2) RXD+                     |
| T-                        | ————— | (1) RXD-                     |
| GND                       | ————— | (3) SG                       |

**c. S-422 (DOP-B Series)**

| DOP Series                |       | Controller                   |  |
|---------------------------|-------|------------------------------|--|
| 9 pin D-SUB male (RS-422) |       | 8 pin Mini DIN male (RS-422) |  |
| RXD+ (4)                  | ————— | (7) TXD+                     |  |
| RXD- (9)                  | ————— | (4) TXD-                     |  |
| TXD+ (1)                  | ————— | (2) RXD+                     |  |
| TXD- (6)                  | ————— | (1) RXD-                     |  |
| GND (5)                   | ————— | (3) SG                       |  |

**d. RS-422 (DOP-A/AE Series)**

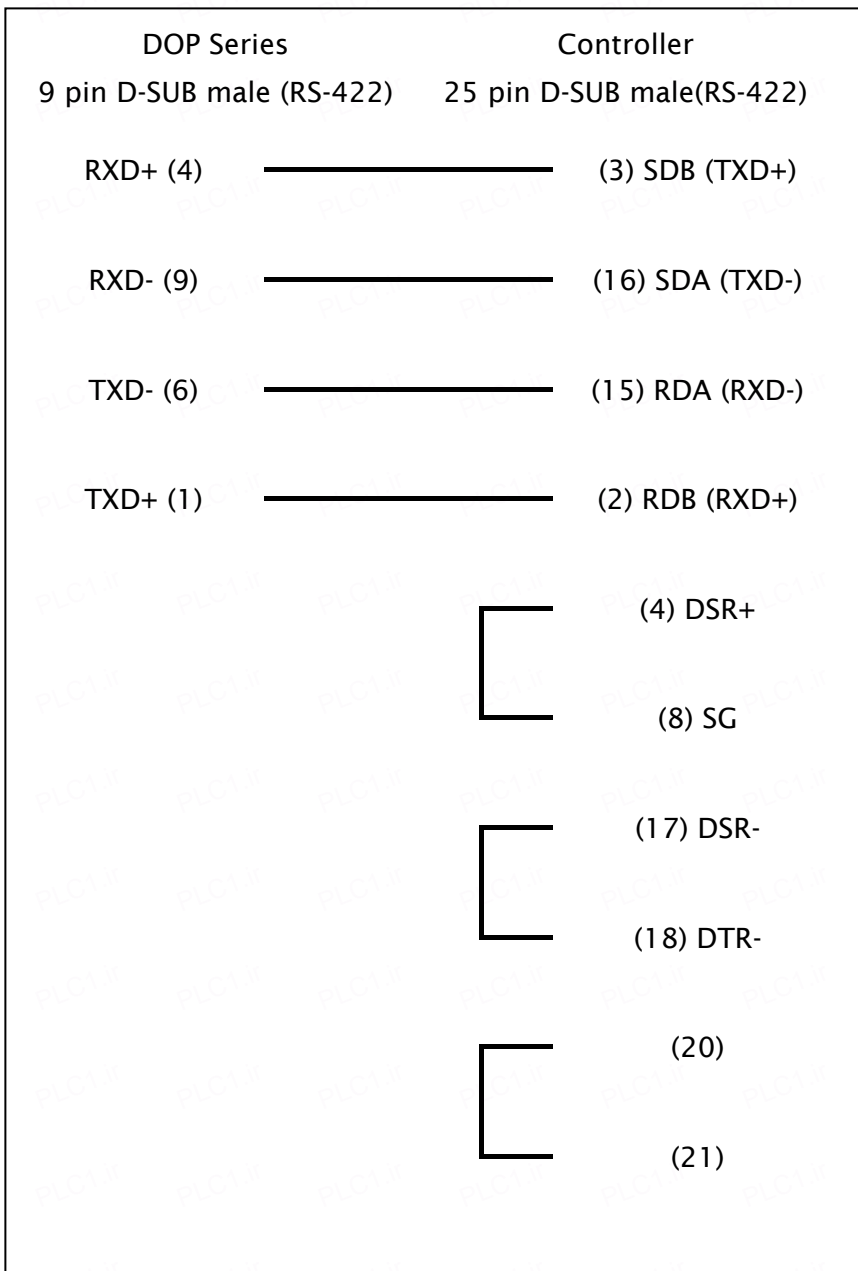
| DOP Series                |       | Controller  |           |
|---------------------------|-------|---|-----------|
| 9 pin D-SUB male (RS-422) |       | 25 pin D-SUB male (RS-422)  |           |
| RXD+ (2)                  | ————— | (3) SDB (TXD+)  |           |
| RXD- (1)                  | ————— | (16) SDA (TXD-)   |           |
| TXD- (4)                  | ————— | (15) RDA (RXD-)   |           |
| TXD+ (3)                  | ————— | (2) RDB (RXD+)  |           |
|                           |       |  | (4) DSR+  |
|                           |       |   | (8) SG    |
|                           |       |  | (17) DSR- |
|                           |       |   | (18) DTR- |
|                           |       |  | (20)      |
|                           |       |   | (21)      |

**e. RS-422 (DOP-AS57 Series)**

| DOP Series                | Controller                |
|---------------------------|---------------------------|
| 9 pin D-SUB male (RS-422) | 25 pin D-SUB male(RS-422) |
| R+ _____                  | (3) SDB (TXD+)            |
| R- _____                  | (16) SDA (TXD-)           |
| T- _____                  | (15) RDA (RXD-)           |
| T+ _____                  | (2) RDB (RXD+)            |
|                           | (4) DSR+                  |
|                           | (8) SG                    |
|                           | (17) DSR-                 |
|                           | (18) DTR-                 |
|                           | (20)                      |
|                           | (21)                      |



**f. RS-422 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                    | Format       | Read/Write Range | Data Length | Note                     |
|-------------------------|--------------|------------------|-------------|--------------------------|
|                         | Word No. (n) |                  |             |                          |
| Auxiliary Relay         | Mn           | M0 - M3064       | Byte        | <a href="#">3</a>        |
| Special Auxiliary Relay | Mn           | M8000 - M8248    | Byte        | <a href="#">3</a>        |
| Status Relay            | Sn           | S0 - S992        | Byte        | <a href="#">3</a>        |
| Input Relay             | Xn           | X0 - X360        | Byte        | Octal, <a href="#">3</a> |
| Output Relay            | Yn           | Y0 - Y360        | Byte        | Octal, <a href="#">3</a> |
| Timer PV                | Tn           | T0 - T255        | Word        |                          |
| 16-位元 Counter PV        | Cn           | C0 - C199        | Word        |                          |
| 32-位元 Counter PV        | Cn           | C200 - C255      | Double Word |                          |
| Data Register           | Dn           | D0 - D7999       | Word        |                          |
| Special Data Register   | Dn           | D8000 - D8255    | Word        |                          |

**b. Contacts**

| Type                    | Format      | Read/Write Range | Note  |
|-------------------------|-------------|------------------|-------|
|                         | Bit No. (b) |                  |       |
| Auxiliary Relay         | Mb          | M0 - M3071       |       |
| Special Auxiliary Relay | Mb          | M8000 - M8255    |       |
| Status Relay            | Sb          | S0 - S999        |       |
| Input Relay             | Xb          | X0 - X377        | Octal |
| Output Relay            | Yb          | Y0 - Y377        | Octal |
| Timer Flag              | Tb          | T0 - T255        |       |
| Counter Flag            | Cb          | C0 - C255        |       |

 **NOTE**

- 1) If connecting to Mitsubishi FX series PLC, the user can only use FX series communication protocol.
- 2) If connecting to Mitsubishi FX1N/FX2N series PLC, the user can only use FX2N communication protocol.
- 3) The device address must be the multiple of 8.

## Mitsubishi J2s Series

### HMI Factory Setting:

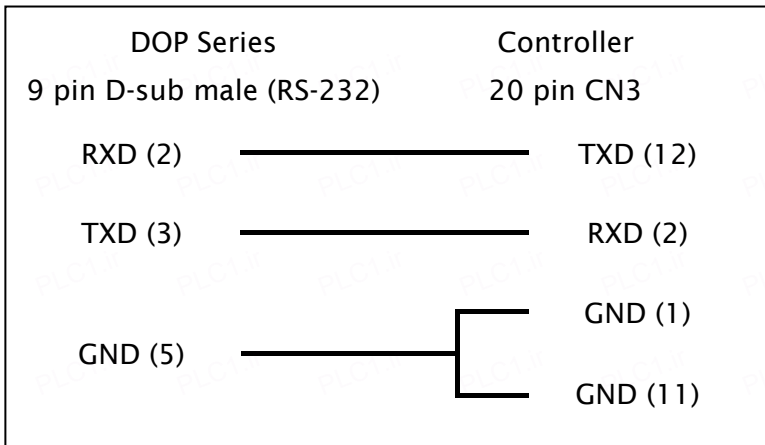
Baud rate: 9600, 8, Even, 1 (RS-232)

Controller Station Number: 0

Control Area / Status Area: None/None

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type   | Format       | Read/Write Range | Data Length | Note                                     |
|--|--------------|------------------|-------------|--|
|  | Word No. (n) |                  |             |  |
| Parameter list (cmd: 05/84)                            | Pn           | P0 - P84         | Double Word |  |
| Status display (cmd: 01,8n/NA)                         | Sn           | S0 - SE          | Double Word | Hexadecimal Read only, <a href="#">1</a> |
| Alarm Number in history (cmd: 33,1n/NA)                | ANn          | AN0 - AN5        | Word        | Read only, <a href="#">1</a>             |
| Alarm Occurrence time in history (cmd: 33,2n/NA)       | AOn          | AO0 - AO5        | Double Word | Read only, <a href="#">1</a>             |
| Current alarm number (AC) (cmd: 02/NA)                 | ACn          | AC0              | Word        | Read only, <a href="#">1</a>             |
| Status display at alarm occurrence (AS) (cmd: 35,8/NA) | ASn          | AS0              | Double Word | Read only, <a href="#">1</a>             |

| Type   | Format       | Read/Write Range | Data Length | Note                         |
|--|--------------|------------------|-------------|------------------------------|
|  | Word No. (n) |                  |             |                              |
| External Input pin status (EI)<br>(cmd: 12,40/92,00)                   | EIn          | EIO              | Double Word |                              |
| External Output pin status (EO)<br>(cmd: 12,C0/92,A0)                  | EOn          | EOO              | Double Word |                              |
| Operation mode selection (OP)<br>(cmd: NA/8B,00)                       | OPn          | OP0              | Word        | Read only, <a href="#">1</a> |
| Speed for test operation (TSPD)<br>(cmd: NA/A0,10)                     | TSPDn        | TSPD0            | Word        | Read only, <a href="#">1</a> |
| Acceleration/deceleration for test operation (TACC)<br>(cmd: NA/A0,11) | TACCn        | TACC0            | Double Word | Read only, <a href="#">1</a> |
| Distance for test operation (TDIS)<br>(cmd: NA/A0,13)                  | TDISn        | TDIS0            | Double Word | Read only, <a href="#">1</a> |

**b. Contacts**

| Type  | Format      | Read/Write Range | Note                         |
|---|-------------|------------------|------------------------------|
|   | Bit No. (b) |                  |                              |
| Status display clear (SRST)<br>(cmd: NA/81,00)                        | SRSTb       | SRST0            | Read only, <a href="#">1</a> |
| Alarm history clear (ACLR)<br>(cmd: NA/82,20)                         | ACLRb       | ACLR0            | Read only, <a href="#">1</a> |
| Alarm reset (ARST)<br>(cmd: NA/82,00)                                 | ARSTb       | ARST0            | Read only, <a href="#">1</a> |
| Turn off the external input signals (DI) (OFDI)<br>(cmd: NA/90,00)    | OFDIb       | OFDI0            | Read only, <a href="#">1</a> |
| Changes the external output signals (DO) (CHDO)<br>(cmd: NA/90,03)    | CHDOb       | CHDO0            | Read only, <a href="#">1</a> |
| Enable the disabled external input signals (ENDI)<br>(cmd: NA/90,10)  | ENDIb       | ENDI0            | Read only, <a href="#">1</a> |
| Enable the disabled external output signals (ENDO)<br>(cmd: NA/90,13) | ENDOb       | ENDO0            | Read only, <a href="#">1</a> |

| Type   | Format      | Read/Write Range | Note                         |
|--|-------------|------------------|------------------------------|
|  | Bit No. (b) |                  |                              |
| Clear the time constant of acceleration in test operation mode (TCLR)<br>(cmd: NA/A0,12) | TCLRb       | TCLR0            | Read only, <a href="#">1</a> |
| Temporary stop of position mode in test operation (TSTP)<br>(cmd: NA/A0,15)              | TSTPb       | TSTP0            | Read only, <a href="#">1</a> |

 **NOTE**

1) Read / Write Limit

This communication protocol uses devices to simulate the operation of Servo, so there is a limit for the device to read and write the command. In the column of register type and contact type, the string of characters after “cmd:” indicates the corresponding Servo command that the device will read and write.

1. 「Parameter List (cmd: 05/84)」, the command input 05 is to read and 84 is to write. This register allows both read and write
2. 「Status display (cmd: 01,8n/NA)」, the command input 01,8n is to read and NA means this register does not support write command. This register allows read only.
3. 「Operation mode selection (cmd: NA/8B,00)」, the command input 8B,00 is to write and NA means this register does not support read command. This register allows write only.

## Mitsubishi Q Series Computer Link

### HMI Factory Setting:

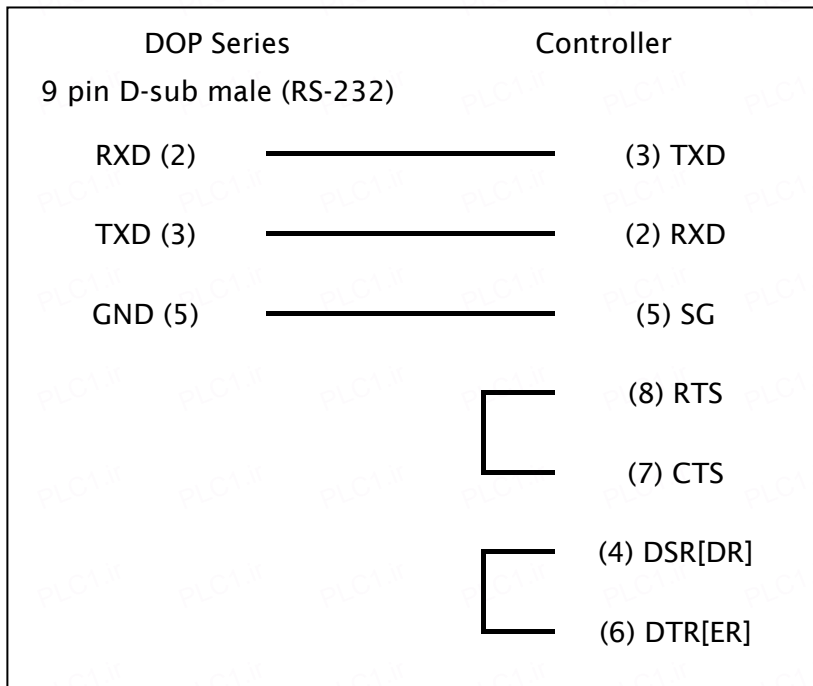
Baud rate: 19200, 8, None, 1

Controller Station Number: 0

Control Area / Status Area: D0 / D10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



**b. RS-422 (DOP-A/AE Series)**

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-422) |       |            |
| RXD- (1)                  | ————— | SDB (2)    |
| RXD+ (2)                  | ————— | SDA (1)    |
| TXD+ (3)                  | ————— | RDA (3)    |
| TXD- (4)                  | ————— | RDB (4)    |
| GND (5)                   | ————— | SG (5)     |

**c. RS-422 (DOP-AS35/AS38/AS57 Series)**

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-422) |       |            |
| R-                        | ————— | SDB (2)    |
| R+                        | ————— | SDA (1)    |
| T+                        | ————— | RDA (3)    |
| T-                        | ————— | RDB (4)    |
| GND                       | ————— | SG (5)     |

**d. RS-422 (DOP-B Series)**

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-422) |       |            |
| RXD- (9)                  | ————— | SDB (2)    |
| RXD+ (4)                  | ————— | SDA (1)    |
| TXD+ (1)                  | ————— | RDA (3)    |
| TXD- (6)                  | ————— | RDB (4)    |
| GND (5)                   | ————— | SG (5)     |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type                   | Format       | Read/Write Range | Data Length | Note                              |
|------------------------|--------------|------------------|-------------|-----------------------------------|
|                        | Word No. (n) |                  |             |                                   |
| Input                  | Xn           | X0 - X1FF0       | Word        | Hexadecimal,<br><a href="#">2</a> |
| Output                 | Yn           | Y0 - Y1FF0       | Word        | Hexadecimal,<br><a href="#">2</a> |
| Internal Relay         | Mn           | M0 - M8176       | Word        | <a href="#">2</a>                 |
| Special Internal Relay | Mn           | M9000 - M9240    | Word        | <a href="#">3</a>                 |
| Link Relay             | Bn           | B0 - B1FF0       | Word        | Hexadecimal,<br><a href="#">2</a> |
| Annunciator            | Fn           | F0 - F2032       | Word        | <a href="#">2</a>                 |
| Timer Value            | TNn          | TN0 - TN2047     | Word        |                                   |
| Counter Value          | CNn          | CN0 - CN2047     | Word        |                                   |
| Data Register          | Dn           | D0 - D8191       | Word        |                                   |
| Special Data Register  | Dn           | D9000 - D9255    | Word        |                                   |
| Link Register          | Wn           | W0 - W1FFF       | Word        | Hexadecimal                       |

**b. Contacts**

| Type                   | Format      | Read/Write Range | Note        |
|------------------------|-------------|------------------|-------------|
|                        | Bit No. (b) |                  |             |
| Input                  | Xb          | X0 - X1FFF       | Hexadecimal |
| Output                 | Yb          | Y0 - Y1FFF       | Hexadecimal |
| Internal Relay         | Mb          | M0 - M8191       |             |
| Special Internal Relay | Mb          | M9000 - M9255    |             |
| Link Relay             | Bb          | B0 - B1FFF       | Hexadecimal |
| Annunciator            | Fb          | F0 - F2047       |             |
| Timer Contact          | TSb         | TS0 - TS2047     |             |
| Timer Coil             | TCb         | TC0 - TC2047     |             |
| Counter Contact        | CSb         | CS0 - CS2047     |             |
| Counter Coil           | CCb         | CC0 - CC2047     |             |



 **NOTE**

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- 1) Before using this communication protocol, the user needs to set communication module via GX Developer programming tools. For more detailed information regarding the setting method, please refers to Mitsubishi PLC User Manual.
- 2) The device address must be the multiple of 16.
- 3) The device address must be the multiple of 16+9000.

## Mitsubishi Q series CPU Port

### HMI Factory Setting:

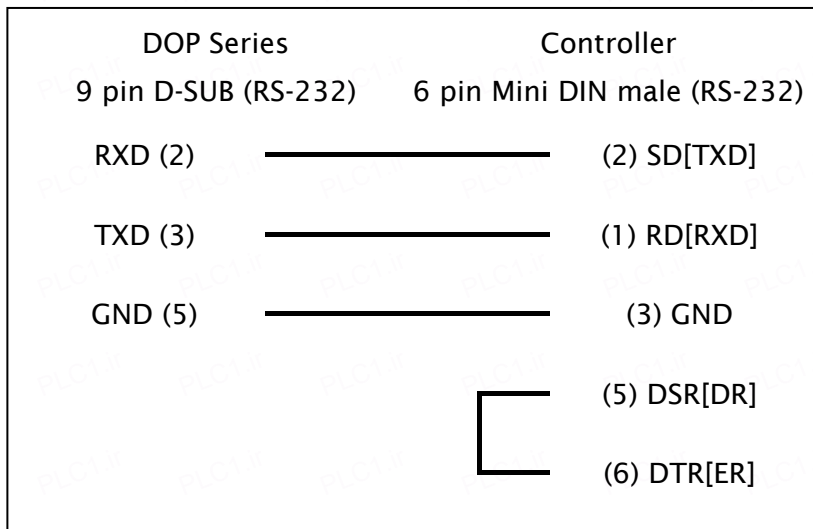
Baud rate: 19200, 8, Odd, 1

Controller Station Number: 0 (no PLC station number in protocol, therefore, only 1(HMI) to 1(PLC) communication is allowed.)

Control Area / Status Area: D0 / D10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type          | Format       | Read/Write Range | Data Length | Note                              |
|---------------|--------------|------------------|-------------|-----------------------------------|
|               | Word No. (n) |                  |             |                                   |
| Input         | X-n          | X-0 - X-1FFF     | Word        | Hexadecimal,<br><a href="#">2</a> |
| Output        | Y-n          | Y-0 - Y-1FFF     | Word        | Hexadecimal,<br><a href="#">2</a> |
| Direct input  | DX-n         | DX-0 - DX-1FFF   | Word        | Hexadecimal,<br><a href="#">2</a> |
| Direct output | DY-n         | DY-0 - DY-15     | Word        | <a href="#">2</a>                 |
| Latch Relay   | L-n          | L-0 - L-8191     | Word        | <a href="#">2</a>                 |
| Annunciator   | F-n          | F-0 - F-2047     | Word        | <a href="#">2</a>                 |

| Type                   | Format       | Read/Write Range | Data Length | Note                              |
|------------------------|--------------|------------------|-------------|-----------------------------------|
|                        | Word No. (n) |                  |             |                                   |
| Edge Relay             | V-n          | V-0 - V-2047     | Word        | <a href="#">2</a>                 |
| Step Relay             | S-n          | S-0 - S-8191     | Word        | <a href="#">2</a>                 |
| Link Relay             | B-n          | B-0 - B-1FFF     | Word        | Hexadecimal,<br><a href="#">2</a> |
| Special Link Relay     | SB-n         | SB-0 - SB-7FF    | Word        | Hexadecimal,<br><a href="#">2</a> |
| Internal Relay         | M-n          | M-0 - M-8191     | Word        | <a href="#">2</a>                 |
| Special Internal Relay | SM-n         | SM-0 - SM-2047   | Word        | <a href="#">2</a>                 |
| Timer Value            | TN-n         | TN-0 - TN-2047   | Word        |                                   |
| Retentive timer Value  | SN-n         | SN-0 - SN-2047   | Word        |                                   |
| Counter Value          | CN-n         | CN-0 - CN-1023   | Word        |                                   |
| Data Register          | D-n          | D-0 - D-12287    | Word        |                                   |
| Special Data Register  | SD-n         | SD-0 - SD-2047   | Word        |                                   |
| Index Register         | Z-n          | Z-0 - Z-15       | Word        |                                   |
| File Register          | R-n          | R-0 - R-32767    | Word        |                                   |
| File Register          | ZR-n         | ZR-0 -ZR-32767   | Word        |                                   |
| Link Register          | W-n          | W-0 - W-1FFF     | Word        | Hexadecimal                       |
| Special Link Register  | SW-n         | SW-0 - SW-7FF    | Word        | Hexadecimal                       |

**b. Contacts**

| Type                   | Format      | Read/Write Range | Note        |
|------------------------|-------------|------------------|-------------|
|                        | Bit No. (b) |                  |             |
| Input                  | X-b         | X-0 - X-1FFF     | Hexadecimal |
| Output                 | Y-b         | Y-0 - Y-1FFF     | Hexadecimal |
| Direct input           | DX-b        | DX-0 - DX-1FFF   | Hexadecimal |
| Direct output          | DY-b        | DY-0 - DY-15     |             |
| Latch Relay            | L-b         | L-0 - L-8191     |             |
| Annunciator            | F-b         | F-0 - F-2047     |             |
| Edge Relay             | V-b         | V-0 - V-2047     |             |
| Step Relay             | S-b         | S-0 - S-8191     |             |
| Link Relay             | B-b         | B-0 - B-1FFF     | Hexadecimal |
| Special Link Relay     | SB-b        | SB-0 - SB-7FF    | Hexadecimal |
| Internal Relay         | M-b         | M-0 - M-8191     |             |
| Special Internal Relay | SM-b        | SM-0 - SM-2047   |             |
| Timer Contact          | TS-b        | TS-0 - TS-2047   |             |
| Timer Coil             | TC-b        | TC-0 - TC-2047   |             |

| Type                    | Format      | Read/Write Range | Note |
|-------------------------|-------------|------------------|------|
|                         | Bit No. (b) |                  |      |
| Retentive timer Contact | SS-b        | SS-0 - SS-2047   |      |
| Retentive timer Coil    | SC-b        | SC-0 - SC-2047   |      |
| Counter Contact         | CS-b        | CS-0 - CS-1023   |      |
| Counter Coil            | CC-b        | CC-0 - CC-1023   |      |

 **NOTE**

- 1) If the baud rate is incorrect, HMI will set PLC baud rate as HMI baud rate automatically.
- 2) The device address must be the multiple of 16.
- 3) This protocol supports Mitsubishi Q00 and Q00J series.

## Mitsubishi Q Series Ethernet

( Supports QJ71E71 / QJ71E71-B2 / QJ71E71-B5 / QJ71E71-100 Series Module )

### HMI Factory Setting:

Baud rate: 192.168.0.1

Controller Station Number: 1025

Control Area / Status Area: D0 / D10

### Connection

Standard jumper Cable/ Network Cable without jumper (Auto-detected by HMI)

### Definition of PLC Read/Write Address

#### a. Registers

| Type                   | Format       | Read/Write Range | Data Length | Note                              |
|------------------------|--------------|------------------|-------------|-----------------------------------|
|                        | Word No. (n) |                  |             |                                   |
| Input                  | Xn           | X0 - X1FF0       | Word        | Hexadecimal,<br><a href="#">2</a> |
| Output                 | Yn           | Y0 - Y1FF0       | Word        | Hexadecimal,<br><a href="#">2</a> |
| Internal Relay         | Mn           | M0 - M8176       | Word        | <a href="#">2</a>                 |
| Special Internal Relay | Mn           | M9000 - M9240    | Word        | <a href="#">3</a>                 |
| Link Relay             | Bn           | B0 - B1FF0       | Word        | Hexadecimal,<br><a href="#">2</a> |
| Annunciator            | Fn           | F0 - F2032       | Word        | <a href="#">2</a>                 |
| Timer Value            | TNn          | TN0 - TN2047     | Word        |                                   |
| Counter Value          | CNn          | CN0 - CN2047     | Word        |                                   |
| Data Register          | Dn           | D0 - D8191       | Word        |                                   |
| Special Data Register  | Dn           | D9000 - D9255    | Word        |                                   |
| Link Register          | Wn           | W0 - W1FFF       | Word        | Hexadecimal                       |

#### b. Contacts

| Type                   | Format      | Read/Write Range | Note        |
|------------------------|-------------|------------------|-------------|
|                        | Bit No. (b) |                  |             |
| Input                  | Xb          | X0 - X1FFF       | Hexadecimal |
| Output                 | Yb          | Y0 - Y1FFF       | Hexadecimal |
| Internal Relay         | Mb          | M0 - M8191       |             |
| Special Internal Relay | Mb          | M9000 - M9255    |             |

| Type            | Format      | Read/Write Range | Note        |
|-----------------|-------------|------------------|-------------|
|                 | Bit No. (b) |                  |             |
| Link Relay      | Bb          | B0 - B1FFF       | Hexadecimal |
| Annunciator     | Fb          | F0 - F2047       |             |
| Timer Contact   | TSb         | TS0 - TS2047     |             |
| Timer Coil      | TCb         | TC0 - TC2047     |             |
| Counter Contact | CSb         | CS0 - CS2047     |             |
| Counter Coil    | CCb         | CC0 - CC2047     |             |

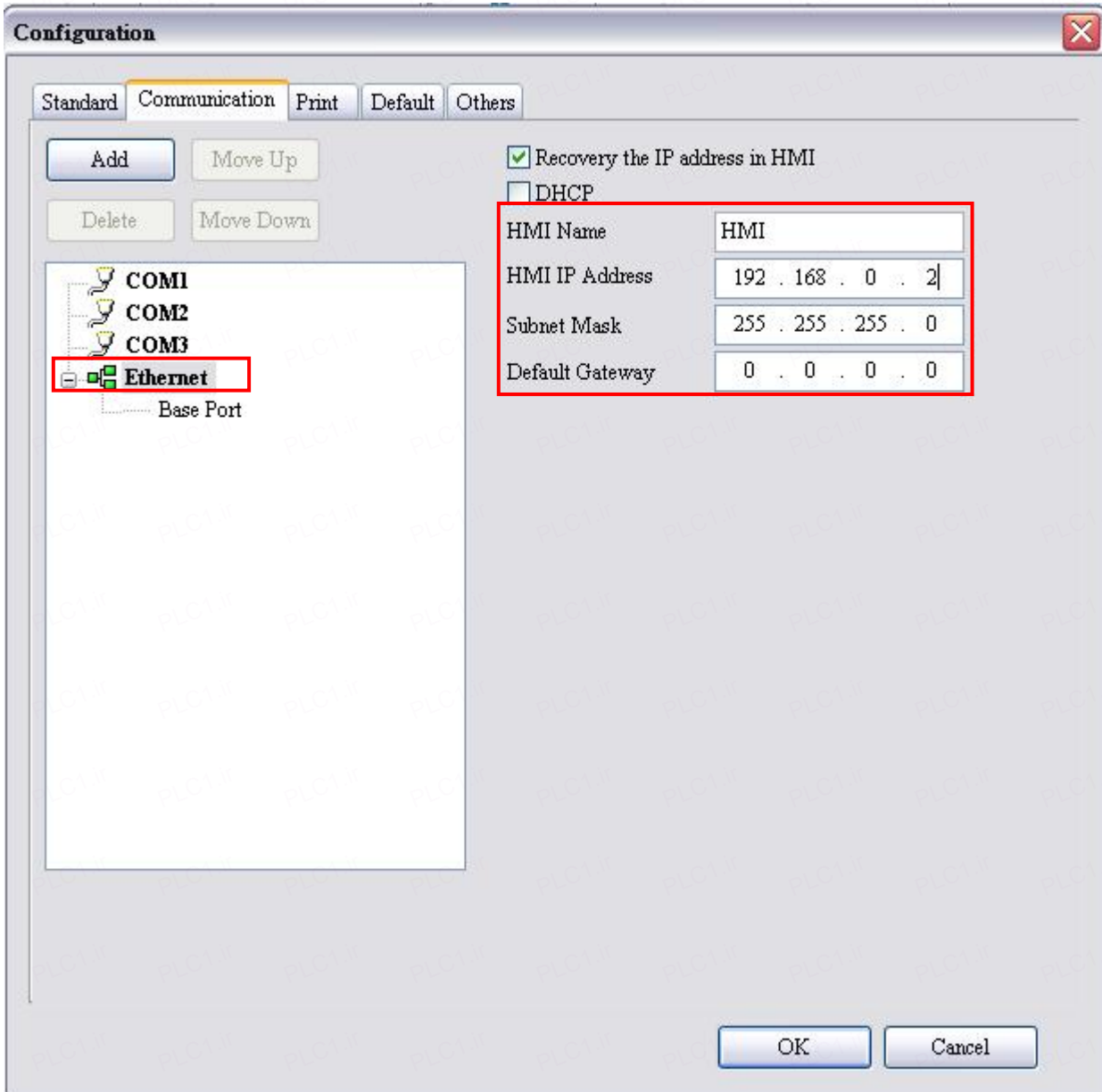
 **NOTE**

- 1) Before using this communication protocol, the user needs to set communication module via GX Developer programming tools. For more detailed information regarding the setting method, please refers to Mitsubishi PLC User Manual.
- 2) The device address must be the multiple of 16.
- 3) The device address must be the multiple of 16 plus 9000.

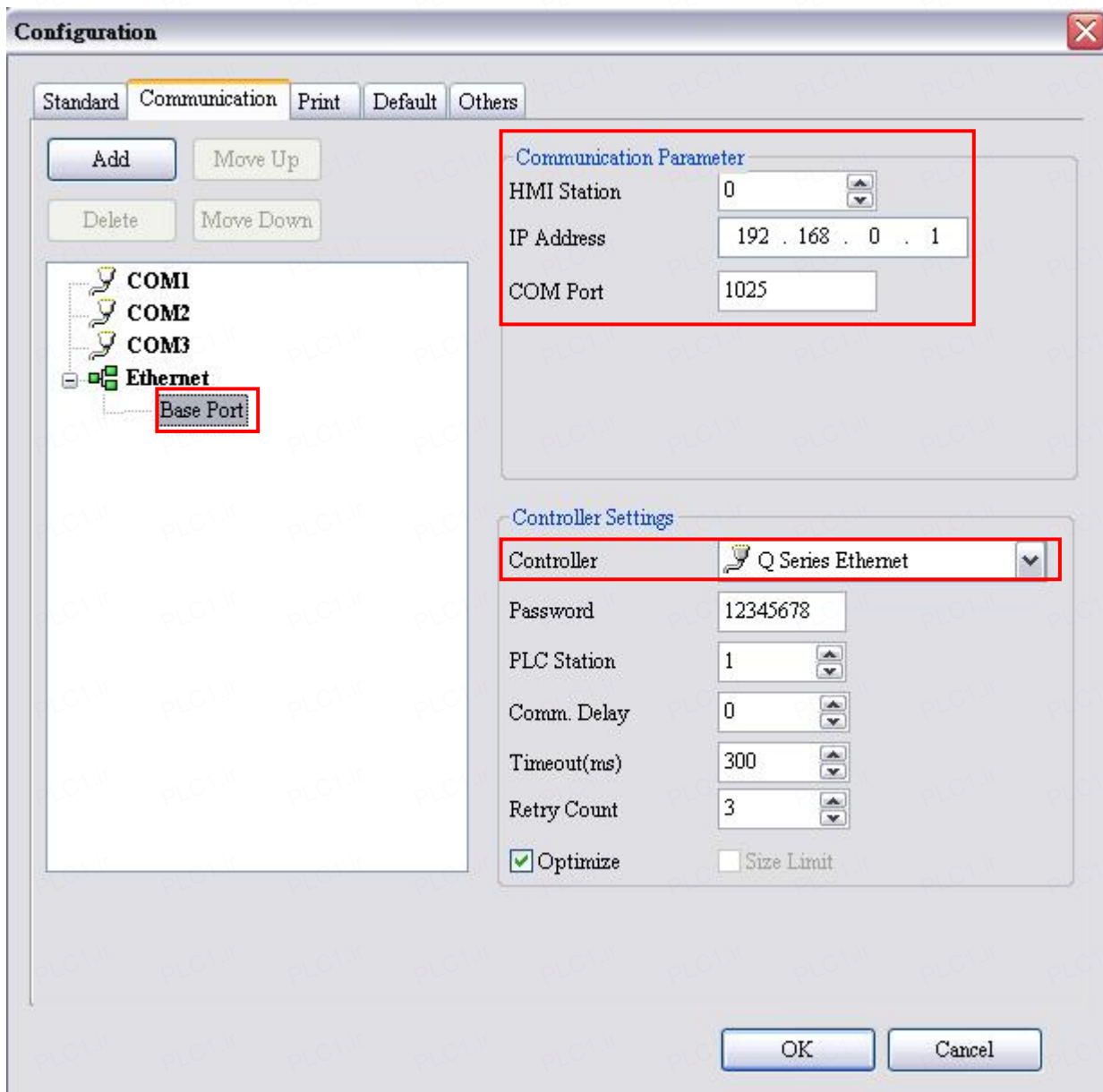
## Settings

### Screen Editor

#### 1. HMI Configuration Setting



2. PLC Configuration Setting



GX Developer (V8.35M)

1. Network Parameter MNET/10H Ethernet Settings

| Item             | Setting  |
|------------------|----------|
| Network Type     | Ethernet |
| Starting I/O No. | 0000     |
| Network No.      | 1        |
| Group No.        | 1        |
| Station No.      | 1        |
| Mode             | On-line  |



## 2. Operation Settings

| Item                            | Setting              |
|---------------------------------|----------------------|
| Communication Data Code         | Binary code          |
| Initial Timing                  | Always wait for OPEN |
| IP Address                      | 192.168.0.1          |
| Send Frame Setting              | Ethernet (V2.0)      |
| Enable Write at RUN time        | Enable               |
| TCP Living Confirmation Setting | Use the KeepAlive    |

## 3. Open Settings

| Item                                 | Setting         |
|--------------------------------------|-----------------|
| Protocol                             | TCP             |
| Open Method                          | Unpassive       |
| Fixed buffer                         | Send            |
| Fixed buffer communication procedure | Procedure exist |
| Existence confirmation               | No confirm      |
| Host Station Port No.                | 0401 (HEX)      |

4. For more detailed information regarding the setting method, please refer to Mitsubishi PLC User Manual.

## MKS BY125 Low Cost Synchrocontroller

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1

Controller Station Number: 11 ([Note1](#))

Control Area / Status Area: None/None

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series) ([Note2](#))

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-232) |       |            |
| RXD (2)                   | ————— | TXD(3)     |
| TXD (3)                   | ————— | RXD(2)     |
| GND (5)                   | ————— | GND(5)     |

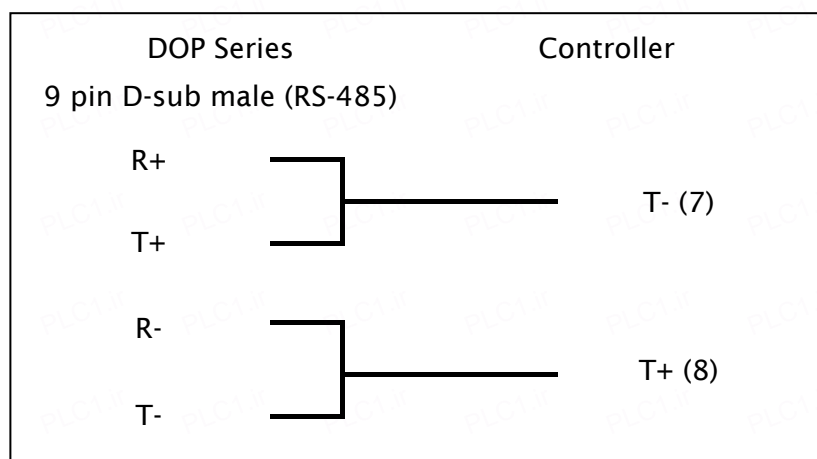
#### b. RS-485 (DOP-A/AE Series)

| DOP Series                |                | Controller |
|---------------------------|----------------|------------|
| 9 pin D-sub male (RS-485) |                |            |
| D- (1)                    | ┌───┐<br>└───┘ | T- (7)     |
| D- (4)                    |                |            |
| D+ (2)                    | ┌───┐<br>└───┘ | T+ (8)     |
| D+ (3)                    |                |            |

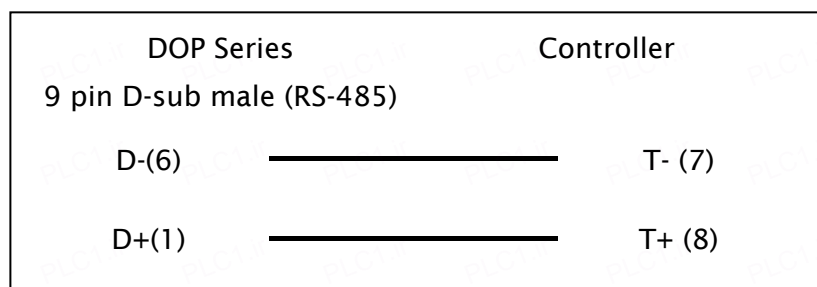
#### c. RS-485 (DOP-AS57 Series)

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-485) |       |            |
| R-                        | ————— | T- (7)     |
| R+                        | ————— | T+ (8)     |

**d. RS-485 (DOP-AS35/AS38 Series)**



**e. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                                 | Format      | Read/Write Range                               | Data Length | Note              |
|--------------------------------------|-------------|--|-------------|-------------------|
|                                      | Word No.(n) |  |             |                   |
| Data In Register / Setup Register    | Cn          | C0 - C17, C40 - C41, C45 - C48, C50, C90 - C92 | Double Word | <a href="#">3</a> |
| Synchronizing (Differential Counter) | SYN_ERRn    | SYN_ERR0                                       | Double Word |                   |
| Integration register                 | IRn         | IR0  | Double Word |                   |
| Actual Master speed                  | MAS_SPDn    | MAS_SPD0                                       | Double Word |                   |

**b. Contacts**

| Type          | Format       | Read/Write Range | Note              |
|---------------|--------------|------------------|-------------------|
|               | Bit No.(n)   |                  |                   |
| Reset         | RSTb         | RST0             |                   |
| Jog Trim+     | JOGTRIM_INCb | JOGTRIM_INC0     |                   |
| Jog Trim-     | JOGTRIM_DECb | JOGTRIM_DEC0     |                   |
| Activate Data | ACT_DATAAb   | ACT_DATA0        | <a href="#">4</a> |

| Type         | Format      | Read/Write Range | Note |
|--------------|-------------|------------------|------|
|              | Bit No.(n)  |                  |      |
| Store EEPROM | STR_EEPROMb | STR_EEPROM0      |      |
| Index Slave  | IND_SLAb    | IND_SLAO         |      |
| Index Master | IND_MASb    | IND_MAS0         |      |

 **NOTE**

- 1) The valid station number is in the range of 11 to 99. The station number 20, 30, 40, 50, 60, 70, 80, 90 are broadcast station number.
  - 00 for all broadcast
  - 10 for broadcast range from 11 to 19
  - 20 for broadcast range from 21 to 29
  - ... and so on

The broadcast function is not yet available, therefore do not use broadcast station number.
- 2) Please be aware RS-232 can only be connected to pin2, pin3 and pin5. Pin 9 is for +5V. DO NOT use pin 9 or serious damage may occur.
- 3) The effective addresses of Cn are not consecutive (5 blocks: C0~17, C40~41, C45~C48, C50, C90~C92). When setting the addresses, do not exceed the block range. For example, when using a Numeric Entry or Character Entry element, if the address is C15, the data length can only be 6 Words(for C15, C16, C17). A data length exceed 6 words would occupy other address setting except C0 ~ C17, in this case, an error may occur.
- 4) The received value of the device will not change even when all register address is written in. The user needs to press ACT\_DATA0 again for value be updated.

## MKS CT150

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1 (RS-232)

Controller Station Number: 11

Control Area / Status Area: None / None

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP Series           | Controller                |
|----------------------|---------------------------|
| 9 pin D-SUB (RS-232) | 9 pin D-sub male (RS-232) |
| RXD (2)              | (3) TXD                   |
| TXD (3)              | (2) RXD                   |
| GND (5)              | (5) SG                    |

### Definition of PLC Read/Write Address

#### a. Registers

| Type                  | Format      | Read/Write Range                  | Data Length | Note |
|-----------------------|-------------|-----------------------------------|-------------|------|
|                       | Word No.(n) |                                   |             |      |
| Data In Register      | Cn          | C0 - C25                          |             |      |
| Setup Register        | Cn          | C40 - C43 ; C45 - C50 ; C90 - C97 |             |      |
| Error Count           | Err_CNT     | 0                                 |             |      |
| LV Value              | LV_VAL      | 0                                 |             |      |
| Printmark Error       | PRTMARK_ERR | 0                                 |             |      |
| Batch Counter         | BAT_CNT     | 0                                 |             |      |
| Waste Counter         | WASTE_CNT   | 0                                 |             |      |
| Line Speed            | LINE_SPD    | 0                                 |             |      |
| Actual Cutting Length | ACT_CUT_LEN | 0                                 |             |      |

**b. Contacts**

| Type               | Format      | Read/Write Range | Note |
|--------------------|-------------|------------------|------|
|                    | Bit No.(n)  |                  |      |
| Reset              | RST         | 0                |      |
| Jog Trim+          | JOGTRIM_INC | 0                |      |
| Jog Trim-          | JOGTRIM_DEC | 0                |      |
| Read PI            | READ_PI     | 0                |      |
| Activate Data      | ACT_DATA    | 0                |      |
| Store Eeprom       | STR_EEPROM  | 0                |      |
| Start/Stop         | START_STOP  | 0                |      |
| Reset Mark Counter | RSTMARK_CNT | 0                |      |

## MKS MC700/720 Motion Controller

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1

Controller Station Number: 11 ([Note1](#))

Control Area / Status Area: None / None

### Connection





#### a. RS-232 (DOP-A/AE/AS, DOP-B Series) ([Note2](#))

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-232) |       |            |
| RXD (2)                   | ————— | TXD(3)     |
| TXD (3)                   | ————— | RXD(2)     |
| GND (5)                   | ————— | GND(5)     |





#### b. RS-422 (DOP-A/AE Series)

| DOP Series  |       | Controller |
|---|-------|------------|
| 9 pin D-sub male (RS-422) 9 pin D-sub male (RS-422) |       |            |
| RXD- (1)  | ————— | T- (7)     |
| RXD+ (2)  | ————— | T+ (8)     |
| TXD+ (3)  | ————— | R+ (6)     |
| TXD- (4)  | ————— | R- (1)     |



**c. RS-422 (DOP-AS35/AS38/AS57 Series)**

| DOP Series                |   | Controller                |
|---------------------------|---|---------------------------|
| 9 pin D-sub male (RS-422) |   | 9 pin D-sub male (RS-422) |
| R-                        |  | T- (7)                    |
| R+                        |  | T+ (8)                    |
| T+                        |  | R+ (6)                    |
| T-                        |  | R- (1)                    |

**d. RS-422 (DOP-B Series)**

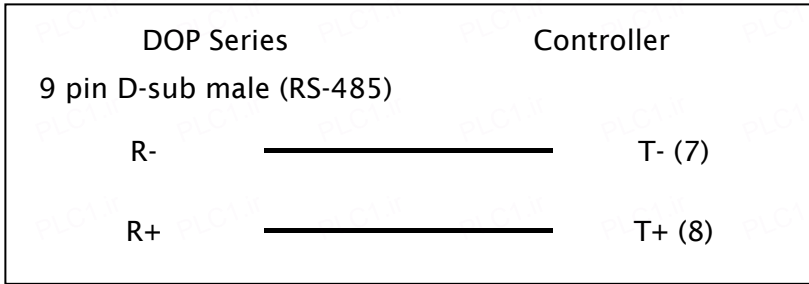
| DOP Series                |   | Controller                |
|---------------------------|---|---------------------------|
| 9 pin D-sub male (RS-422) |   | 9 pin D-sub male (RS-422) |
| RXD- (9)                  |    | T- (7)                    |
| RXD+ (4)                  |  | T+ (8)                    |
| TXD+ (1)                  |  | R+ (6)                    |
| TXD- (6)                  |  | R- (1)                    |

**e. RS-485 (DOP-A/AE Series)**

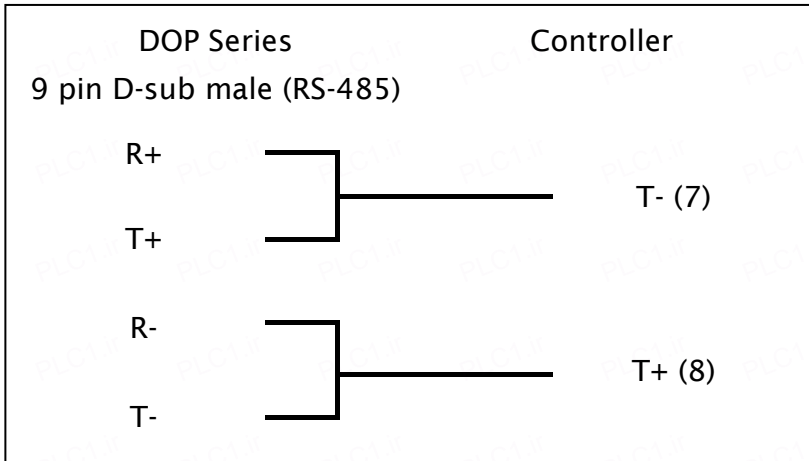
| DOP Series                |   | Controller |
|---------------------------|---|------------|
| 9 pin D-sub male (RS-485) |   |            |
| D- (1)                    |  | T- (7)     |
| D- (4)                    |   |            |
| D+ (2)                    |  | T+ (8)     |
| D+ (3)                    |   |            |



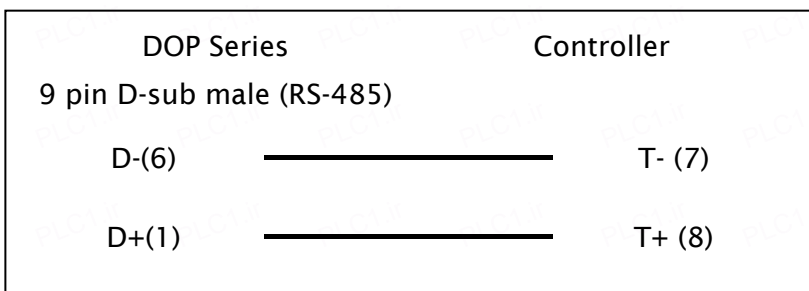
**f. RS-485 (DOP-AS57 Series)**



**g. RS-485 (DOP-AS35/AS38 Series)**



**h. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                        | Format      | Read/Write Range | Data Length | Note |
|-----------------------------|-------------|------------------|-------------|------|
|                             | Word No.(n) |                  |             |      |
| General Parameters          | GPn         | GP0 - GP31       | Double Word |      |
| Parameter Block for Slave 1 | PB1_n       | PB1_0 - PB1_31   | Double Word |      |
| Parameter Block for Slave 2 | PB2_n       | PB2_0 - PB2_31   | Double Word |      |
| Parameter Block for Slave 3 | PB3_n       | PB3_0 - PB3_31   | Double Word |      |
| Parameter Block for Slave 4 | PB4_n       | PB4_0 - PB4_31   | Double Word |      |
| Process Data                | PRODn       | PROD0 - PROD31   | Double Word |      |
| Communication Settings      | CSETn       | CSET0 - CSET31   | Double Word |      |

| Type                           | Format      | Read/Write Range | Data Length | Note |
|--------------------------------|-------------|------------------|-------------|------|
|                                | Word No.(n) |                  |             |      |
| Setup Settings                 | STUPn       | STUP0 - STUP31   | Double Word |      |
| Status of Commands and Outputs | S_CON       | S_CO0 - S_CO4    | Double Word |      |

**b. Contacts**

| Type                           | Format                    | Read/Write Range   | Note |
|--------------------------------|---------------------------|--------------------|------|
|                                | Word No.(n)<br>Bit No.(b) |                    |      |
| Commands                       | CMDb                      | CMD0 - CMD31       |      |
| Outputs                        | OUTb                      | OUT0 - OUT31       |      |
| Status of Commands and Outputs | S_CON.b                   | S_CO0.0 - S_CO4.31 |      |

 **NOTE**

- 1) The valid station number is in the range of 11 to 99. The station number 20, 30, 40, 50, 60, 70, 80, 90 are broadcast station number.
  - 00 for all broadcast
  - 10 for broadcast range from 11 to 19
  - 20 for broadcast range from 21 to 29
  - ... and so on

The broadcast function is not yet available, therefore do not use broadcast station number.
- 2) Please be aware RS-232 can only be connected to pin2, pin3 and pin5. Pin 9 is for +5V. DO NOT use pin 9 or serious damage may occur.

## Modbus 984 RTU / ASCII (Master)

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1 (ASCII); 9600, 8, Even, 1 (RTU)

Controller Station Number: 0

Control Area / Status Area: W40100 / W40200

### Connection

Please refer to “Pin Definition of Serial Communication” for more detail.

### Definition of PLC Read/Write Address

#### a. Registers

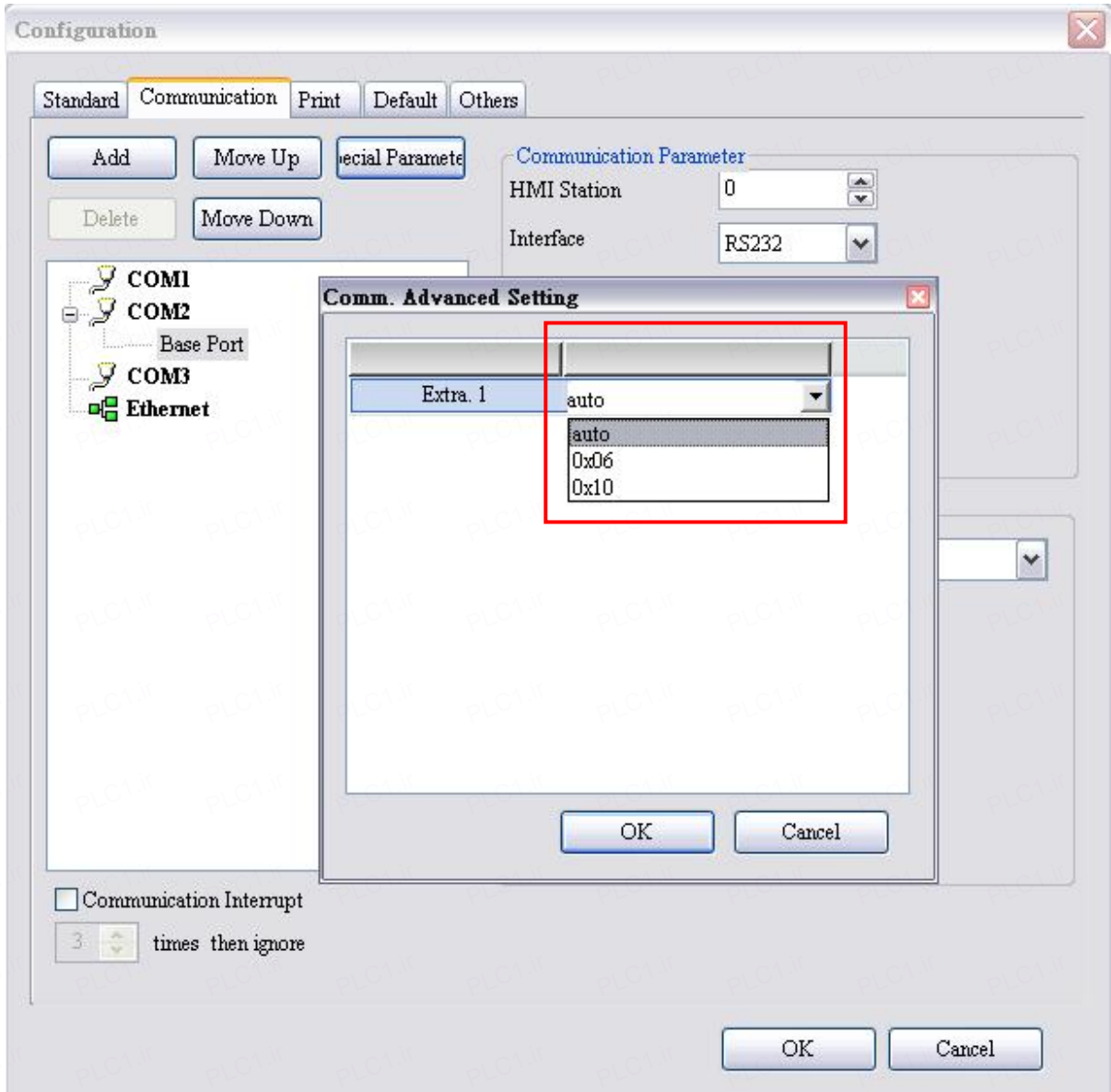
| Type             | Format       | Read/Write Range | Data Length | Note      |
|------------------|--------------|------------------|-------------|-----------|
|                  | Word No. (n) |                  |             |           |
| Output Registers | Wn           | W40001 - W50000  | Word        |           |
| Input Registers  | Wn           | W30001 - W40000  | Word        | Read only |

#### b. Contacts

| Type             | Format      | Read/Write Range | Note      |
|------------------|-------------|------------------|-----------|
|                  | Bit No. (b) |                  |           |
| Discrete Outputs | Bb          | B1 - B10000      |           |
| Discrete Inputs  | Bb          | B10001 - B20000  | Read only |

**NOTE**

- 1.) If the controller requests certain Modbus input during the connection, it can be done through special parameter setting. When the default value is set to Auto, HMI will automatically react to a single inputted command(0x06) or a multiple inputted command (0x10) according to the data length.



## Modbus 984 RTU / ASCII (Master, 6 Digits)

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1 (ASCII); 9600, 8, Even, 1 (RTU)

Controller Station Number: 1

Control Area / Status Area: W4-1 / W4-11

### Connection

Please refer to “Pin Definition of Serial Communication” for more detail.

### Definition of PLC Read/Write Address

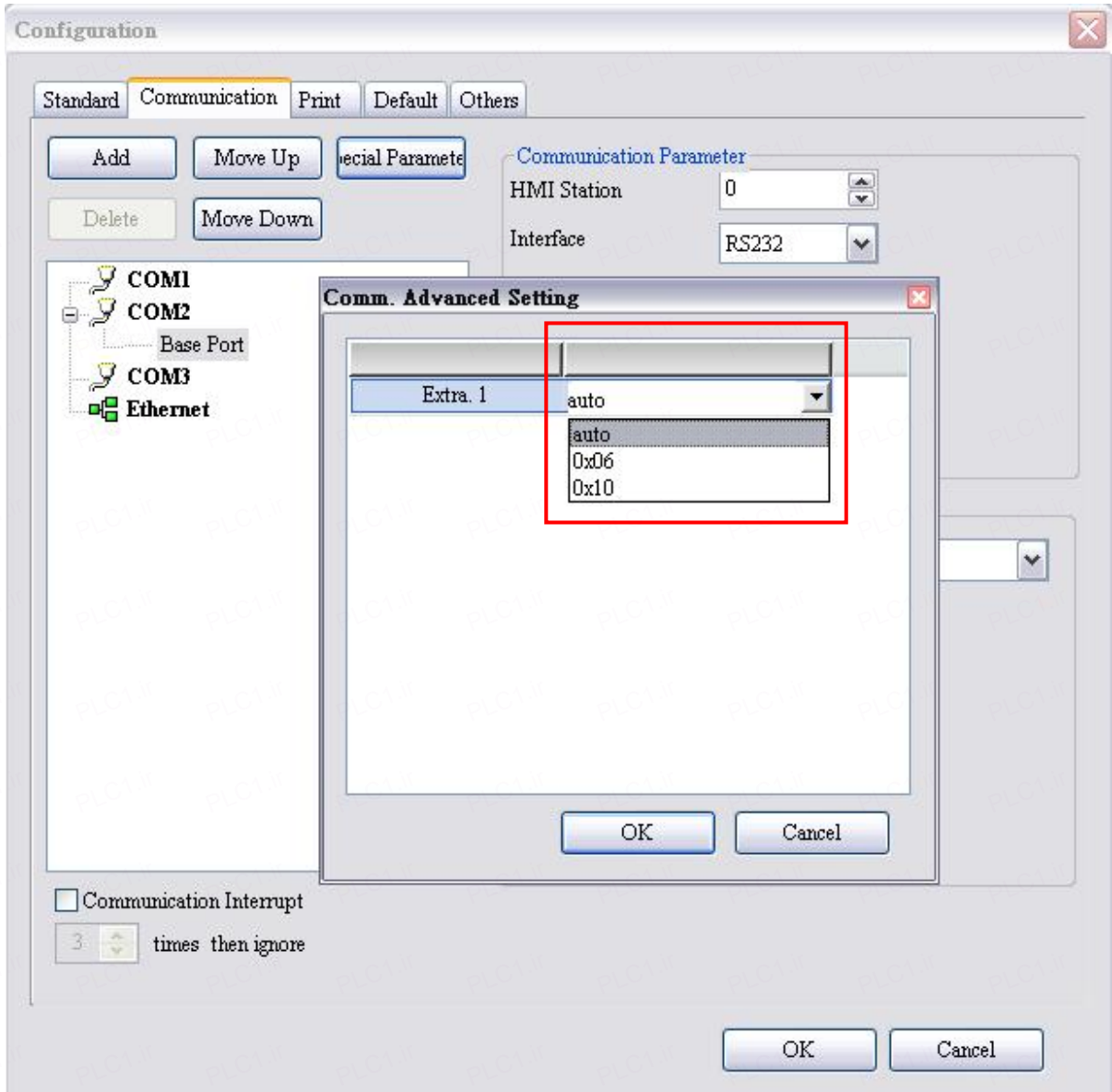
#### a. Registers

| Type             | Format       | Read/Write Range    | Data Length | Note      |
|------------------|--------------|---------------------|-------------|-----------|
|                  | Word No. (n) |                     |             |           |
| Output Registers | W4-n         | W4-00001 - W4-65535 | Word        |           |
| Input Registers  | W3-n         | W3-00001 - W3-65535 | Word        | Read only |

#### b. Contacts

| Type             | Format      | Read/Write Range    | Note      |
|------------------|-------------|---------------------|-----------|
|                  | Bit No. (b) |                     |           |
| Discrete Outputs | B0-b        | B0-00001 - B0-65535 |           |
| Discrete Inputs  | B1-b        | B0-00001 - B0-65535 | Read only |

- 1.) If the controller requests certain Modbus input during the connection, it can be done through special parameter setting. When the default value is set to Auto, HMI will automatically react to a single inputted command(0x06) or a multiple inputted command (0x10) according to the data length.



## Modbus nW RTU / ASCII (Master)

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1.(ASCII); 9600, 8, Even, 1.(RTU)

Controller Station Number: 1([Note1](#))

Control Area / Status Area: W40100 / W40200

### Connection

Please refer to “Pin Definition of Serial Communication” for more detail.

### Definition of PLC Read/Write Address

#### a. Registers

| Type             | Format       | Read/Write Range | Data Length | Note |
|------------------|--------------|------------------|-------------|------|
|                  | Word No. (n) |                  |             |      |
| Output Registers | Wn           | W40001 - W50000  | Word        |      |
| Input Registers  | Wn           | W30001 - W40000  | Word        |      |

#### b. Contacts

| Type             | Format      | Read/Write Range | Note |
|------------------|-------------|------------------|------|
|                  | Bit No. (b) |                  |      |
| Discrete Outputs | Bb          | B1 - B10000      |      |
| Discrete Inputs  | Bb          | B10001 - B20000  |      |

### **NOTE**

- 1) This communication protocol does not support station 0 (the broadcast function).
- 2) To attain optimize reading, please ensure the “Optimize” option is selected in communication setting. Do not select “Data Length Limit” if “Optimize” option is not selected,

## Modbus RTU 2W (Master)

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1 (ASCII); 9600, 8, Even, 1 (RTU)

Controller Station Number: 0 (no PLC station number in protocol, therefore, only 1(HMI) to 1(PLC) communication is allowed.)

Control Area / Status Area: W40100 / W40200

### Connection

Please refer to “Pin Definition of Serial Communication” for more detail.

### Definition of PLC Read/Write Address

#### a. Registers

| Type             | Format       | Read/Write Range | Data Length | Note      |
|------------------|--------------|------------------|-------------|-----------|
|                  | Word No. (n) |                  |             |           |
| Output Registers | Wn           | W40001 - W50000  | Word        |           |
| Input Registers  | Wn           | W30001 - W40000  | Word        | Read only |

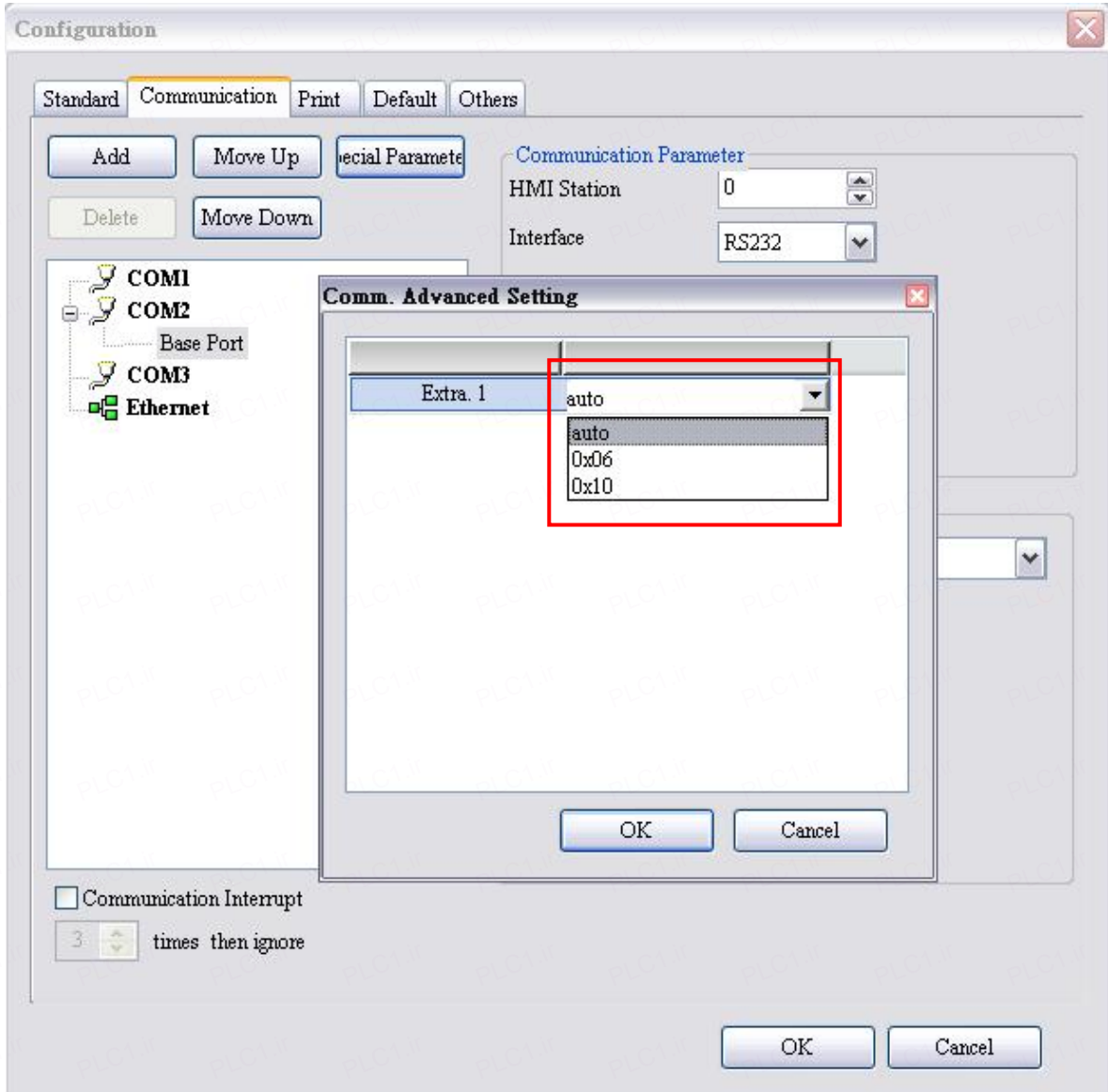
#### b. Contacts

| Type             | Format      | Read/Write Range | Note      |
|------------------|-------------|------------------|-----------|
|                  | Bit No. (b) |                  |           |
| Discrete Outputs | Bb          | B1 - B10000      |           |
| Discrete Inputs  | Bb          | B10001 - B20000  | Read only |



**NOTE**

- 1) If the controller requests certain Modbus input during the connection, it can be done through special parameter setting. When the default value is set to Auto, HMI will automatically react to a single inputted command(0x06) or a multiple inputted command (0x10) according to the data length.



## Modbus RTU / ASCII (Slave)

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1 (ASCII); 9600, 8, Even, 1 (RTU)

Controller Station Number: 1 (No function)

Control Area / Status Area: W40100 / W40200

### Connection

Please refer to “Pin Definition of Serial Communication” for more detail.

### Definition of PLC Read/Write Address

#### a. Registers

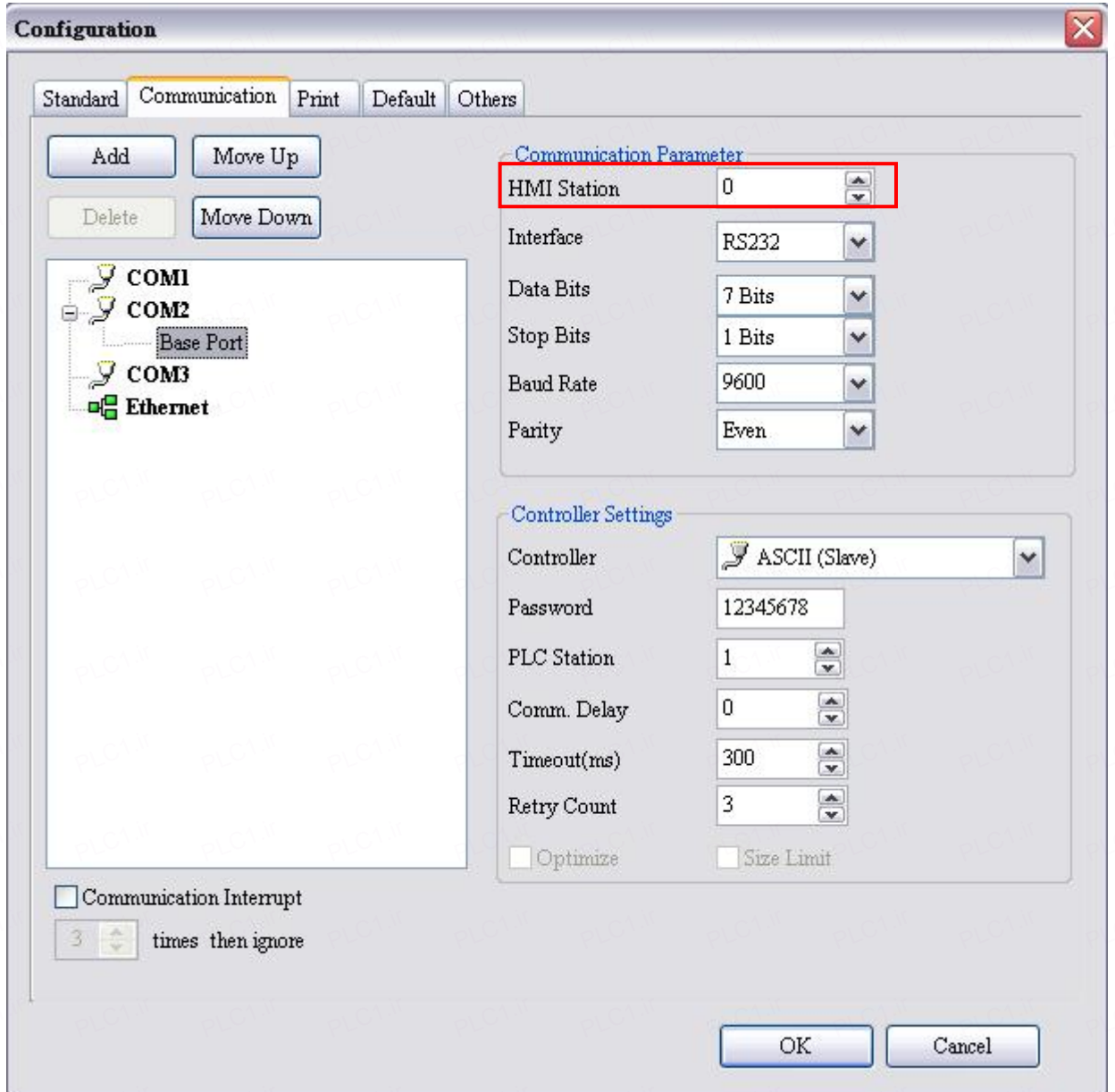
| Type             | Format       | Read/Write Range | Data Length | Note              |
|------------------|--------------|------------------|-------------|-------------------|
|                  | Word No. (n) |                  |             |                   |
| Output Registers | Wn           | W40001 - W50000  | Word        | <a href="#">2</a> |

#### b. Contacts

| Type             | Format      | Read/Write Range | Note              |
|------------------|-------------|------------------|-------------------|
|                  | Bit No. (b) |                  |                   |
| Discrete Outputs | Bb          | B1 - B2048       | <a href="#">2</a> |

**NOTE**

- 1) When using this communication protocol, HMI station number is the Slave station number (default setting is 0).



2) Relationship between Modbus address HMI register:

| Modbus Address  | Modbus 6 Digits Address | Definition of Internal Registers in HMI |                      |                                      |
|-----------------|-------------------------|---|----------------------|--------------------------------------|
| W40001 - W41024 | W4-00001 - W4-01024     | →                                       | \$0 - \$1023         | Internal register                    |
| W42001 - W43024 | W4-02001 - W4-00001     | →                                       | \$M0 - \$M1023       | Non-volatile internal register       |
| W44001          | W4-04001                | →                                       | RCPNO                | Receipt number register              |
| W45001 ...      | W4-05001 ...            | →                                       | RCP0 - RCPn          | Receipt register                     |
| B00001 - B01024 | B0-00001 - B0-01024     | →                                       | \$2000.0 - \$2063.15 | Internal register (Bit)              |
| B01025 - B02048 | B0-01025 - B0-02048     | →                                       | \$M200.0 - \$M263.15 | Non-volatile internal register (Bit) |

For example, to read HMI internal memory \$0, the Modbus address is W40001 and HMI will save W40001; to read non-volatile internal register \$M200.1, then the Modbus address is B01026 and so on.

## Modbus RTU / ASCII Hex Address (Master)

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 1 (ASCII); 9600, 8, Even, 1 (RTU)

Controller Station Number: 1

Control Area / Status Area: RW-0 / RW-10

### Definition of PLC Read/Write Address

#### a. Registers

| Type             | Format       | Read/Write Range | Data Length | Note      |
|------------------|--------------|------------------|-------------|-----------|
|                  | Word No. (n) |                  |             |           |
| Output Registers | RW-n         | RW-0 - RW-FFFF   | Word        |           |
| Input Registers  | R-n          | R-0 - R-FFFF     | Word        | Read only |

#### b. Contacts

| Type             | Format      | Read/Write Range | Note      |
|------------------|-------------|------------------|-----------|
|                  | Bit No. (b) |                  |           |
| Discrete Outputs | RWB-b       | RWB-0 - RWB-FFFF |           |
| Discrete Inputs  | RB-b        | RB-0 - RB-FFFF   | Read only |

### **NOTE**

- 1) The communication protocol and communication address are in hexadecimal.

## Modbus TCP/IP

### HMI Factory Setting:

Controller IP Address: 192.168.0.1  
 Baud rate: 192.168.0.1  
 Controller Station Number: 1  
 Control Area / Status Area: RW-0 / RW-10

### Connection

Standard Jumper Cable / Network Cable without jumper (Auto-detected by HMI)

### Definition of PLC Read/Write Address

#### a. Registers

| Type             | Format       | Read/Write Range | Data Length | Note      |
|------------------|--------------|------------------|-------------|-----------|
|                  | Word No. (n) |                  |             |           |
| Output Registers | RW-n         | RW-0 - RW-FFFF   | Word        |           |
| Input Registers  | R-n          | R-0 - R-FFFF     | Word        | Read only |

#### b. Contacts

| Type             | Format                      | Read/Write Range | Note      |
|------------------|-----------------------------|------------------|-----------|
|                  | Word No. (n)<br>Bit No. (b) |                  |           |
| Discrete Outputs | RWB-b                       | RWB-0 - RWB-FFFF |           |
| Discrete Inputs  | RB-b                        | RB-0 - RB-FFFF   | Read only |

## Modbus TCP/IP (6 Digits)

### HMI Factory Setting:

Controller IP Address: 192.168.0.1  
 Controller COM Port: 502  
 Controller Station Number: 1  
 Control Area / Status Area: W4-1 / W4-11

### Connection

Standard Jumper Cable / Network Cable without jumper (Auto-detected by HMI)

### Definition of PLC Read/Write Address

#### a. Registers

| Type             | Format       | Read/Write Range    | Data Length | Note      |
|------------------|--------------|---------------------|-------------|-----------|
|                  | Word No. (n) |                     |             |           |
| Output Registers | W4-n         | W4-00001 - W4-65535 | Word        |           |
| Input Registers  | W3-n         | W3-00001 - W3-65535 | Word        | Read only |

#### b. Contacts

| Type             | Format      | Read/Write Range    | Note      |
|------------------|-------------|---------------------|-----------|
|                  | Bit No. (b) |                     |           |
| Discrete Outputs | B0-b        | B0-00001 - B0-65535 |           |
| Discrete Inputs  | B1-b        | B0-00001 - B0-65535 | Read only |

## Modicon TSX (Uni-Telway)

### HMI Factory Setting:

Baud rate: 9600, 8, Odd, 1

Controller Station Number: 2([Note2](#))

Control Area / Status Area: %MW0 / %MW10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

It requires specific TSX PCX1031 cable of Modicon Uni-Telway for wiring.

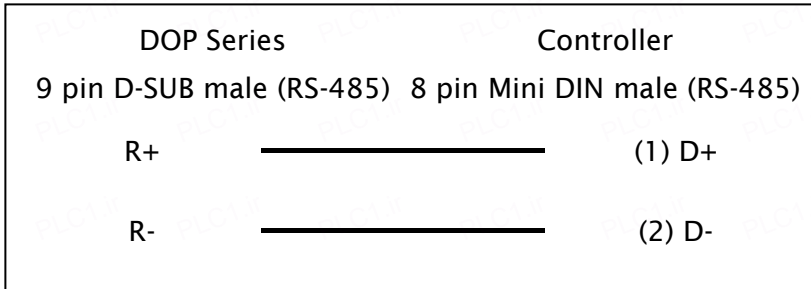
| DOP Series           |       | Controller                |
|----------------------|-------|---------------------------|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB male (RS-232) |
| RXD (2)              | ————— | (2) SD                    |
| TXD (3)              | ————— | (3) RD                    |
| GND (5)              | ————— | (5) SG                    |

#### b. RS-485 (DOP-A/AE Series)

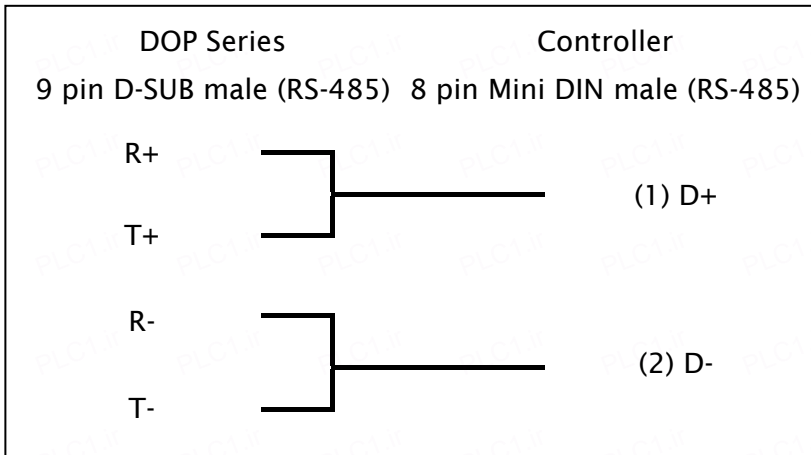
| DOP Series                |                | Controller                   |
|---------------------------|----------------|------------------------------|
| 9 pin D-SUB male (RS-485) |                | 8 pin Mini DIN male (RS-485) |
| RXD+ (2)                  | ┌───┐<br>└───┘ | (1) D+                       |
| TXD+ (3)                  |                |                              |
| RXD- (1)                  | ┌───┐<br>└───┘ | (2) D-                       |
| TXD- (4)                  |                |                              |



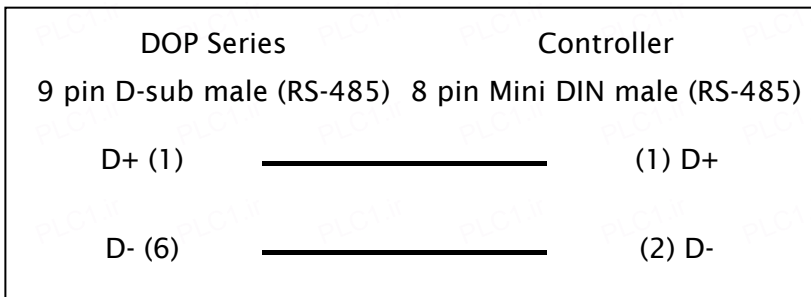
**c. RS-485 (DOP-AS57 Series)**



**d. RS-485 (DOP-AS35/AS38 Series)**



**e. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                  | Format       | Read/Write Range | Data Length | Note              |
|-----------------------|--------------|------------------|-------------|-------------------|
|                       | Word No. (n) |                  |             |                   |
| WORD_DEVICE_ Internal | %MWn         | %MW0 - %MW65534  | Word        | <a href="#">6</a> |
| WORD_DEVICE_ System   | %SWn         | %SW0 - %SW127    | Word        |                   |
| WORD_DEVICE_ Input    | %KWn         | %KW0 - %KW65534  | Word        | Read only         |

**b. Contacts**

| Type                  | Format                      | Read/Write Range   | Note                                  |
|-----------------------|-----------------------------|--------------------|---------------------------------------|
|                       | Word No. (n)<br>Bit No. (b) |                    |                                       |
| BIT_DEVICE_ Internal  | %Mn:b                       | %M0:0 - %M65534:15 | <a href="#">4</a> , <a href="#">6</a> |
| BIT_DEVICE_ System    | %Sb                         | %S0 - %S127        |                                       |
| BIT_DEVICE_ Internal1 | %Mb                         | %M0 - %M65534      | <a href="#">5</a>                     |

 **NOTE**

- 1) HMI Station needs to be in range of 1 - 8.
- 2) PLC station number can be the same as HMI station number, but it can not be 0.
- 3) Internal memory of PLC and other relative parameters must be set up first or only %S will function, others will not be able to communicate.
- 4) %Mn:b is the Bit address that corresponds to WORD\_DEVICE\_ Internal (%MWn).
- 5) %Mb is the internal Relay address of PLC.
- 6) The read/write range of WORD\_DEVICE\_ Internal / BIT\_DEVICE\_ Internal depends on the used memory space of PLC.
- 7) The differences between **Modbus Slave** and **Uni-Telway Slave** mode:

| When PLC is in <b>Modbus Slave</b> mode   | When PLC is in <b>Uni-Telway Slave</b> mode   |
|---|---|
| The following drivers are all available for use. <ol style="list-style-type: none"> <li>1. Modicon / TWIDO</li> <li>2. Modbus / 984 RTU (Master)</li> <li>3. Modbus / 984 RTU (Master, 6 Digits)</li> <li>4. Modbus / RTU Hex Address (Master)</li> </ol> | To increase communication efficiency: <ol style="list-style-type: none"> <li>1. Select <u>TSX NEZA (Uni-Telway)</u> when reading and writing only one word of %MW data for one time communication.</li> <li>2. Select <u>TSX (Uni-Telway)</u> when reading and writing up to 30 words of %MW data for one time communication and there are more than two PLCs and HMIs connected.</li> <li>3. Select <u>TSX (1-1 Uni-Telway)</u> when reading and writing up to 30 words of %MW data for one time communication and there are one PLC and one HMI connected.</li> </ol> |

## Modicon TSX NEZA (Uni-Telway)

### HMI Factory Setting:

- Baud rate: 9600, 8, Odd, 1
- Controller Station Number: 2
- Control Area / Status Area: %MW0 / %MW10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

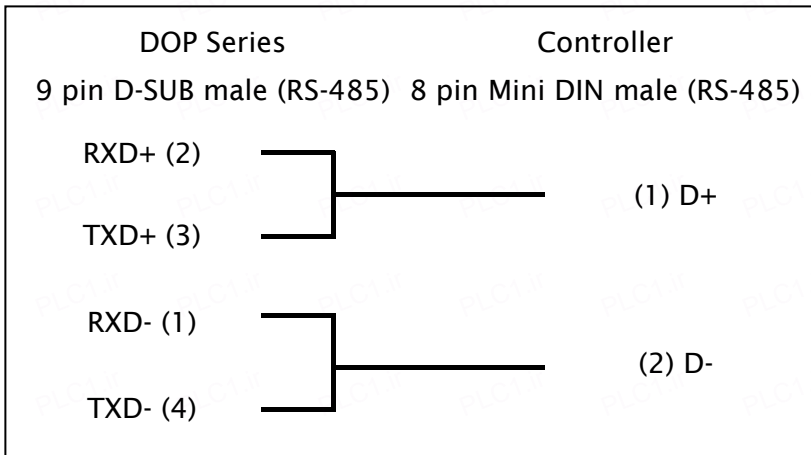
It requires specific TSX PCX1031 cable of Modicon Uni-Telway for wiring.

| DOP Series           |       | Controller                |
|----------------------|-------|---------------------------|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB male (RS-232) |
| RXD (2)              | ————— | (2) SD                    |
| TXD (3)              | ————— | (3) RD                    |
| GND (5)              | ————— | (5) SG                    |

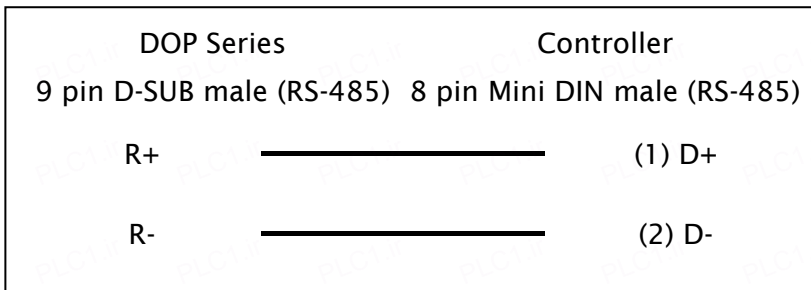
#### b. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP Series                |  | Controller                   |
|---------------------------|--|------------------------------|
| 9 pin D-SUB male (RS-485) |  | 8 pin Mini DIN male (RS-485) |
| RXD+ (2)                  |  | (1) D+                       |
| TXD+ (3)                  |  |                              |
| RXD- (1)                  |  | (2) D-                       |
| TXD- (4)                  |  |                              |

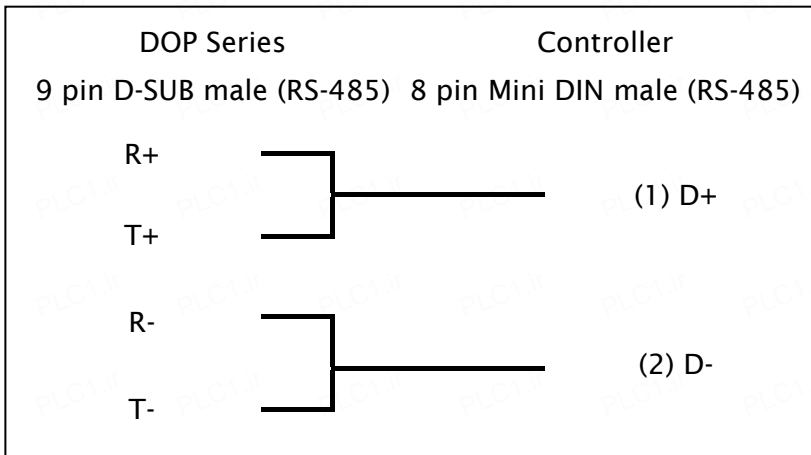
**c. RS-485 (DOP-A/AE Series)**



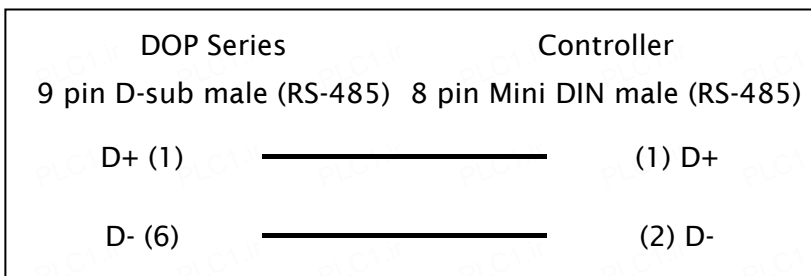
**d. RS-485 (DOP-AS57 Series)**



**e. RS-485 (DOP-AS35/AS38 Series)**



**f. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                  | Format       | Read/Write Range | Data Length | Note              |
|-----------------------|--------------|------------------|-------------|-------------------|
|                       | Word No. (n) |                  |             |                   |
| WORD_DEVICE_ Internal | %MWn         | %MW0 - %MW65534  | Word        | <a href="#">6</a> |
| WORD_DEVICE_ System   | %SWn         | %SW0 - %SW127    | Word        |                   |
| WORD_DEVICE_ Input    | %KWn         | %KW0 - %KW65534  | Word        | Read only         |

**b. Contacts**

| Type                  | Format                      | Read/Write Range   | Note                                  |
|-----------------------|-----------------------------|--------------------|---------------------------------------|
|                       | Word No. (n)<br>Bit No. (b) |                    |                                       |
| BIT_DEVICE_ Internal  | %Mn:b                       | %M0:0 - %M65534:15 | <a href="#">4</a> , <a href="#">6</a> |
| BIT_DEVICE_ System    | %Sb                         | %S0 - %S127        |                                       |
| BIT_DEVICE_ Internal1 | %Mb                         | %M0 - %M65534      | <a href="#">5</a>                     |

 **NOTE**

- 1) HMI Station needs to be in range of 1 - 8.
- 2) PLC station number can be the same as HMI station number.
- 3) Internal memory of PLC and other relative parameters must be set up first or only %S will function, others will not be able to communicate.
- 4) %Mn:b is the Bit address that corresponds to WORD\_DEVICE\_ Internal (%MWn).
- 5) %Mb is the internal Relay address of PLC.
- 6) The read/write range of WORD\_DEVICE\_ Internal / BIT\_DEVICE\_ Internal depends on the used memory space of PLC.
- 7) The differences between **Modbus Slave** and **Uni-Telway Slave** mode:

| When PLC is in <b>Modbus Slave</b> mode   | When PLC is in <b>Uni-Telway Slave</b> mode   |
|---|---|
| The following drivers are all available for use. <ol style="list-style-type: none"> <li>1. Modicon / TWIDO</li> <li>2. Modbus / 984 RTU (Master)</li> <li>3. Modbus / 984 RTU (Master, 6 Digits)</li> <li>4. Modbus / RTU Hex Address (Master)</li> </ol> | To increase communication efficiency: <ol style="list-style-type: none"> <li>1. Select <b>TSX NEZA (Uni-Telway)</b> when reading and writing only one word of %MW data for one time communication.</li> <li>2. Select <b>TSX (Uni-Telway)</b> when reading and writing up to 30 words of %MW data for one time communication and there are more than two PLCs and HMIs connected.</li> <li>3. Select <b>TSX (1-1 Uni-Telway)</b> when reading and writing up to 30 words of %MW data for one time communication and there are one PLC and one HMI connected.</li> </ol> |

## Modicon TSX (1-1 Uni-Telway)

### HMI Factory Setting:

Baud rate: 9600, 8, Odd, 1

Controller Station Number: 1 (no PLC station number in protocol, supports only 1 (HMI) to 1 (PLC) communication)

Control Area / Status Area: %MW0 / %MW10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

It requires specific TSX PCX1031 cable of Modicon Uni-Telway for wiring.

| DOP Series           |       | Controller                |
|----------------------|-------|---------------------------|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB male (RS-232) |
| RXD (2)              | ————— | (2) SD                    |
| TXD (3)              | ————— | (3) RD                    |
| GND (5)              | ————— | (5) SG                    |

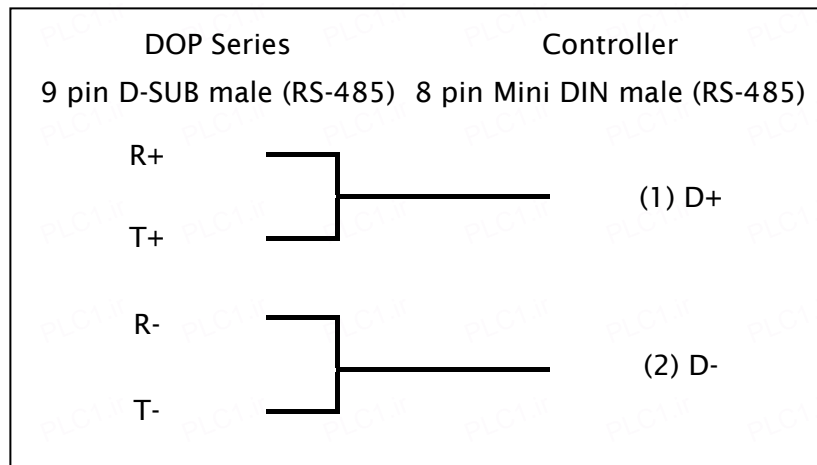
#### b. RS-485 (DOP-A/AE Series)

| DOP Series                |                | Controller                   |
|---------------------------|----------------|------------------------------|
| 9 pin D-SUB male (RS-485) |                | 8 pin Mini DIN male (RS-485) |
| RXD+ (2)                  | ┌───┐<br>└───┘ | (1) D+                       |
| TXD+ (3)                  |                |                              |
| RXD- (1)                  | ┌───┐<br>└───┘ | (2) D-                       |
| TXD- (4)                  |                |                              |

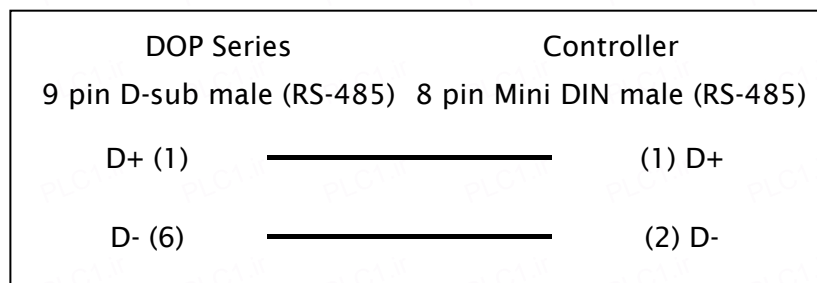
#### c. RS-485 (DOP-AS57 Series)

| DOP Series                |       | Controller                   |
|---------------------------|-------|------------------------------|
| 9 pin D-SUB male (RS-485) |       | 8 pin Mini DIN male (RS-485) |
| R+                        | ————— | (1) D+                       |
| R-                        | ————— | (2) D-                       |

**d. RS-485 (DOP-AS35/AS38 Series)**



**e. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type                  | Format       | Read/Write Range | Data Length | Note              |
|-----------------------|--------------|------------------|-------------|-------------------|
|                       | Word No. (n) |                  |             |                   |
| WORD_DEVICE_ Internal | %MWn         | %MW0 - %MW65534  | Word        | <a href="#">4</a> |
| WORD_DEVICE_ System   | %SWn         | %SW0 - %SW127    | Word        |                   |
| WORD_DEVICE_ Input    | %KWn         | %KW0 - %KW65534  | Word        | Read only         |

**b. Contacts**

| Type                  | Format                      | Read/Write Range   | Note                                  |
|-----------------------|-----------------------------|--------------------|---------------------------------------|
|                       | Word No. (n)<br>Bit No. (b) |                    |                                       |
| BIT_DEVICE_ Internal  | %Mn:b                       | %M0:0 - %M65534:15 | <a href="#">2</a> , <a href="#">4</a> |
| BIT_DEVICE_ System    | %Sb                         | %S0 - %S127        |                                       |
| BIT_DEVICE_ Internal1 | %Mb                         | %M0 - %M65534      | <a href="#">3</a>                     |

 **NOTE**

- 1) Internal memory of PLC and other relative parameters must be set up first or only %S will function, others will not be able to communicate.
- 2) %Mn:b is the Bit address that corresponds to WORD\_DEVICE\_ Internal (%MWn).
- 3) %Mb is the internal Relay address of PLC.
- 4) The read/write range of WORD\_DEVICE\_ Internal / BIT\_DEVICE\_ Internal depends on the used memory space of PLC.
- 5) The differences between **Modbus Slave** and **Uni-Telway Slave** mode:

| When PLC is in <b>Modbus Slave</b> mode  | When PLC is in <b>Uni-Telway Slave</b> mode  |
|--|--|
| <p>The following drivers are all available for use.</p> <ol style="list-style-type: none"> <li>1. Modicon / TWIDO</li> <li>2. Modbus / 984 RTU (Master)</li> <li>3. Modbus / 984 RTU (Master, 6 Digits)</li> <li>4. Modbus / RTU Hex Address (Master)</li> </ol> | <p>To increase communication efficiency:</p> <ol style="list-style-type: none"> <li>1. Select <u>TSX NEZA (Uni-Telway)</u> when reading and writing only one word of %MW data for one time communication.</li> <li>2. Select <u>TSX (Uni-Telway)</u> when reading and writing up to 30 words of %MW data for one time communication and there are more than two PLCs and HMIs connected.</li> <li>3. Select <u>TSX (1-1 Uni-Telway)</u> when reading and writing up to 30 words of %MW data for one time communication and there are one PLC and one HMI connected.</li> </ol> |



## Modicon TWIDO

### HMI Factory Setting:

Baud rate: 9600, 8, Even, 1

Controller Station Number: 1

Control Area / Status Area: W40100 / W40200

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

It requires specific TSX PCX1031 cable of Modicon Uni-Telway for wiring.

| DOP Series           |       | Controller                |
|----------------------|-------|---------------------------|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB male (RS-232) |
| RXD (2)              | ————— | (2) SD                    |
| TXD (3)              | ————— | (3) RD                    |
| GND (5)              | ————— | (5) SG                    |

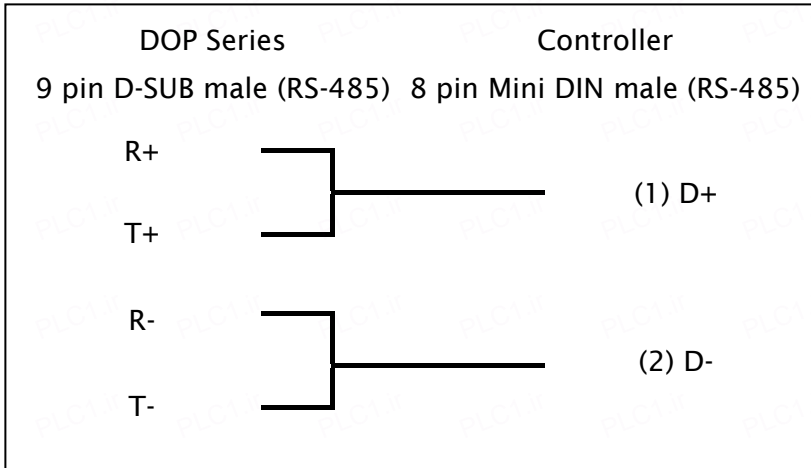
#### b. RS-485 (DOP-A/AE Series)

| DOP Series                |                | Controller                   |
|---------------------------|----------------|------------------------------|
| 9 pin D-SUB male (RS-485) |                | 8 pin Mini DIN male (RS-485) |
| RXD+ (2)                  | ┌───┐<br>└───┘ | (1) D+                       |
| TXD+ (3)                  |                |                              |
| RXD- (1)                  | ┌───┐<br>└───┘ | (2) D-                       |
| TXD- (4)                  |                |                              |

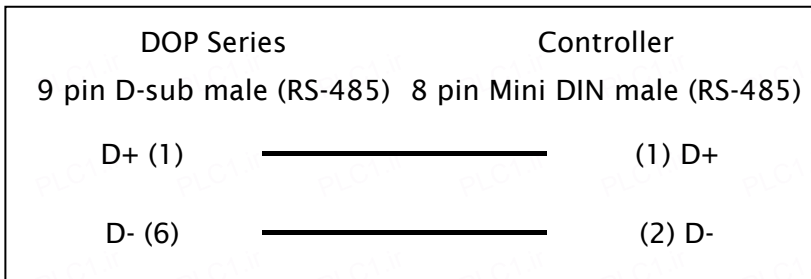
#### c. RS-485 (DOP-AS57 Series)

| DOP Series                |       | Controller                   |
|---------------------------|-------|------------------------------|
| 9 pin D-SUB male (RS-485) |       | 8 pin Mini DIN male (RS-485) |
| R+                        | ————— | (1) D+                       |
| R-                        | ————— | (2) D-                       |

**d. RS-485 (DOP-AS35/AS38 Series)**



**e. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type             | Format       | Read/Write Range | Data Length | Note      |
|------------------|--------------|------------------|-------------|-----------|
|                  | Word No. (n) |                  |             |           |
| Output Registers | Wn           | W40001 - W50000  | Word        |           |
| Input Registers  | Wn           | W30001 - W40000  | Word        | Read only |

**b. Contacts**

| Type             | Format      | Read/Write Range | Note      |
|------------------|-------------|------------------|-----------|
|                  | Bit No. (b) |                  |           |
| Discrete Outputs | Bb          | B1 - B10000      |           |
| Discrete Inputs  | Bb          | B10001 - B20000  | Read only |

**NOTE**

- 1) Before communication starts, the communication mode of PLC should be switched to Modbus Slave by using PL7 programming software..

## Moeller EasyPLC 800/MFD

### HMI Factory Setting:

Baud rate: 19200, 8, None, 1

Controller Station Number: 0

Control Area / Status Area: None/None

### Connection

#### a. RS-232 (via PC-CAB-1) (DOP-A/AE/AS, DOP-B Series)

| DOP Series       |       | Controller                  |
|------------------|-------|-----------------------------|
| 9 pin D-sub male |       | PC-CAB-1 D-sub female       |
| RXD (2)          | ————— | TXD (2)                     |
| TXD (3)          | ————— | RXD (3)                     |
| GND (5)          | ————— | GND (5)                     |
| DC 12V           | ————— | (7) <a href="#">(Note1)</a> |
| DC 0V            | ————— | (4) <a href="#">(Note1)</a> |

### Definition of PLC Read/Write Address

#### a. Registers

| Type                | Format       | Read/Write Range | Data Length | Note              |
|---------------------|--------------|------------------|-------------|-------------------|
|                     | Word No. (n) |                  |             |                   |
| I Inputs            | In           | I1               | Word        |                   |
| Q Outputs           | Qn           | Q1               | Word        |                   |
| R Inputs            | Rn           | R1               | Word        |                   |
| S Outputs           | Sn           | S1               | Word        |                   |
| P Buttons           | Pn           | P1               | Word        |                   |
| Marker MW           | MWn          | MW1 - MW96       | Word        |                   |
| Marker MD           | MDn          | MD1 - MD96       | Double Word | <a href="#">2</a> |
| Diagnostics Bits ID | IDn          | ID1              | Word        |                   |

**b. Contacts**

| Type                | Format                      | Read/Write Range | Note |
|---------------------|-----------------------------|------------------|------|
|                     | Word No. (n)<br>Bit No. (b) |                  |      |
| I Inputs            | Ib                          | I1 - I16         |      |
| Q Outputs           | Qb                          | Q1 - Q8          |      |
| R Inputs            | Rb                          | R1 - R16         |      |
| S Outputs           | Sb                          | S1 - S8          |      |
| P Buttons           | Pb                          | P1 - P4          |      |
| M Marker Bits       | Mb                          | M1 - M96         |      |
| Diagnostics Bits ID | IDb                         | ID1 - ID16       |      |

 **NOTE**

- 1) The communication port of Moeller EasyPLC requires additional 10~12V for communication. Please conduct positive voltage to pin 7 and negative voltage to pin 4, the voltage range of two pins should be in 10~12 V.
- 2) When using Moeller EasyPLC, the data length must be greater than 2 words or an encoding error may occur.

## Moeller PS3/PS4 Series PLC

### HMI Factory Setting:

Baud rate: 9600, 8, None, 1 (RS-232)

Controller Station Number: 2

Control Area / Status Area: MW0/MW10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

| DOP Series                |       | Controller |
|---------------------------|-------|------------|
| 9 pin D-sub male (RS-232) |       | 8pin PRG   |
| RXD (2)                   | _____ | (5)        |
| TXD (3)                   | _____ | (2)        |
| GND (5)                   | _____ | (3)        |

### Definition of PLC Read/Write Address

#### a. Registers

| Type               | Format       | Read/Write Range | Data Length | Note              |
|--------------------|--------------|------------------|-------------|-------------------|
|                    | Word No. (n) |                  |             |                   |
| Marker MW          | MWn          | MW0 - MW32766    | Byte        | <a href="#">2</a> |
| Diagnostic Status  | DSWn         | DSW0             | Byte        |                   |
| Process Status     | PSWn         | PSW0             | Byte        |                   |
| Diagnostic Counter | DCn          | DC0 - DC15       | Word        |                   |

#### b. Contacts

| Type              | Format                      | Read/Write Range  | Note              |
|-------------------|-----------------------------|-------------------|-------------------|
|                   | Word No. (n)<br>Bit No. (b) |                   |                   |
| Marker M          | Mn.b                        | MW0.0 - MW32766.7 | <a href="#">2</a> |
| Diagnostic Status | DSn.b                       | DS0.0 - DS1.7     |                   |
| Process Status    | PSn.b                       | PS0.0 - PS1.7     |                   |

 **NOTE**

- 1) The read/write range of register Marker (Device MW) of PS4 Series must be set via PC programming software or PLC program before connecting to HMI; otherwise, the communication error may occur. The setting range of Marker (Device MW) of PS3 Series is fixed between 0 to 2172 except 126, the address MW126 cannot be used.
- 2) Marker MW register is an even address, but Marker M is not.

## NIKKI DENSO NCS-FI/FS Series

### HMI Factory Setting:

Baud rate: 9600, 8, Odd, 2

Controller Station Number: 1 (Valid 0 ~ 99)

Control Area / Status Area: None/None

### Connection

#### a. RS-422 (DOP-A/AE Series)

| DOP Series                |       | Controller                   |
|---------------------------|-------|------------------------------|
| 9 pin D-sub male (RS-422) |       | 14 pin special male (RS-422) |
| RXD- (1)                  | ————— | (9) TXD(B)                   |
| RXD+ (2)                  | ————— | (2) TXD(A)                   |
| TXD+ (3)                  | ————— | (4) RXD(A)                   |
| TXD- (4)                  | ————— | (11) RXD(B)                  |
| GND (5)                   | ————— | (14) GND                     |

#### b. RS-422 (DOP-AS35/AS38/AS57 Series)

| DOP Series                |       | Controller                   |
|---------------------------|-------|------------------------------|
| 9 pin D-sub male (RS-422) |       | 14 pin special male (RS-422) |
| R-                        | ————— | (9) TXD(B)                   |
| R+                        | ————— | (2) TXD(A)                   |
| T+                        | ————— | (4) RXD(A)                   |
| T-                        | ————— | (11) RXD(B)                  |
| GND                       | ————— | (14) GND                     |

**c. RS-422 (DOP-B Series)**

| DOP Series                |       | Controller                   |
|---------------------------|-------|------------------------------|
| 9 pin D-sub male (RS-422) |       | 14 pin special male (RS-422) |
| RXD- (1)                  | ————— | (9) TXD(B)                   |
| RXD+ (2)                  | ————— | (2) TXD(A)                   |
| TXD+ (3)                  | ————— | (4) RXD(A)                   |
| TXD- (4)                  | ————— | (11) RXD(B)                  |
| GND (5)                   | ————— | (14) GND                     |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type                   | Format       | Read/Write Range  | Data Length | Note      |
|------------------------|--------------|-------------------|-------------|-----------|
|                        | Word No. (n) |                   |             |           |
| WORD_DEVICE_ RRegister | RW-n         | RW-0 - RW-3999    | Word        |           |
| WORD_DEVICE_ RRegister | RW-n         | RW-8000 - RW-9999 | Word        |           |
| WORD_DEVICE_ DStatus   | XW-n         | XW-0 - XW-8       | Word        |           |
| WORD_DEVICE_ DStatus   | DW-n         | DW-0 - DW-129     | Word        | Read only |
| WORD_DEVICE_ RRegister | RD-n         | RD-0 - RD-3999    | Double Word |           |
| WORD_DEVICE_ RRegister | RD-n         | RD-8000 - RD-9999 | Double Word |           |
| WORD_DEVICE_ DStatus   | DD-n         | DD-0 - DD-129     | Double Word | Read only |

**b. Contacts**

| Type                   | Format                      | Read/Write Range    | Note |
|------------------------|-----------------------------|---------------------|------|
|                        | Word No. (n)<br>Bit No. (b) |                     |      |
| BIT_DEVICE_ RRegister  | RB-nb                       | RB-00 - RB-3999F    |      |
| BIT_DEVICE_ RRegister  | RB-nb                       | RB-80000 - RB-9999F |      |
| BIT_DEVICE_ BitControl | XB-nb                       | XB-00 - XB-8F       |      |

 **NOTE**

- 1) The valid controller station number is in the range of 0~99, an input greater than this range would only count for the last two digits.



## Omron C Series PLC

(This driver can support OMRON C/CPM series PLC simultaneously)

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 2

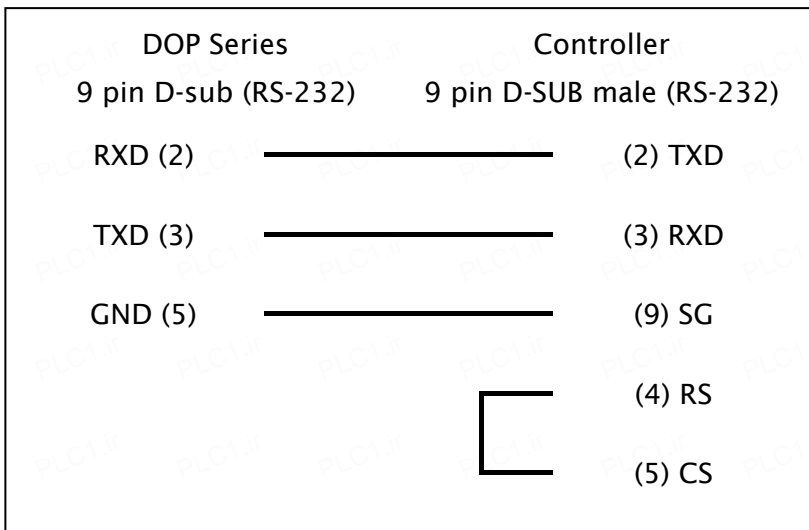
Controller Station Number: 0

Control Area / Status Area: DW0/DW10

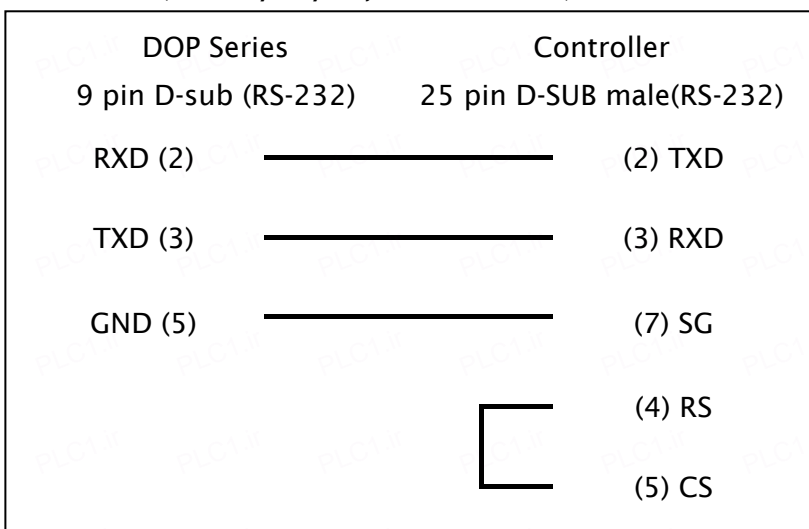
### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

##### 1:1 Host Link via RS-232C converter



#### b. RS-232 (DOP-A/AE/AS, DOP-B Series)



**c. RS-422 (DOP-A/AE Series)**

| DOP Series                |       | Controller                |
|---------------------------|-------|---------------------------|
| 9 pin D-SUB male (RS-422) |       | 9 pin D-SUB male (RS-422) |
| RXD- (1)                  | ————— | (9) TXD-                  |
| RXD+ (2)                  | ————— | (5) TXD+                  |
| TXD+ (3)                  | ————— | (1) RXD+                  |
| TXD- (4)                  | ————— | (6) RXD-                  |

**d. RS-422 (DOP-AS35/AS38/AS57 Series)**

| DOP Series                |       | Controller                |
|---------------------------|-------|---------------------------|
| 9 pin D-SUB male (RS-422) |       | 9 pin D-SUB male (RS-422) |
| R-                        | ————— | (9) TXD-                  |
| R+                        | ————— | (5) TXD+                  |
| T+                        | ————— | (1) RXD+                  |
| T-                        | ————— | (6) RXD-                  |

**e. RS-422 (DOP-B Series)**

| DOP Series                |       | Controller                |
|---------------------------|-------|---------------------------|
| 9 pin D-SUB male (RS-422) |       | 9 pin D-SUB male (RS-422) |
| RXD- (9)                  | ————— | (9) TXD-                  |
| RXD+ (4)                  | ————— | (5) TXD+                  |
| TXD+ (1)                  | ————— | (1) RXD+                  |
| TXD- (6)                  | ————— | (6) RXD-                  |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type    | Format       | Read/Write Range | Data Length | Note |
|---------|--------------|------------------|-------------|------|
|         | Word No. (n) |                  |             |      |
| IR area | IRn          | IR0 - IR511      | Word        |      |
| HR area | HRn          | HR0 - HR99       | Word        |      |
| AR area | ARn          | AR0 - AR27       | Word        |      |
| LR area | LRn          | LR0 - LR63       | Word        |      |
| TC area | TCn          | TC0 - TC511      | Word        |      |
| DM area | DMn          | DM0 - DM6655     | Word        |      |

**b. Contacts**

| Type    | Format                      | Read/Write Range | Note |
|---------|-----------------------------|------------------|------|
|         | Word No. (n)<br>Bit No. (b) |                  |      |
| IR area | IRnbb                       | IR000 - IR51115  |      |
| HR area | HRnbb                       | HR000 - HR9915   |      |
| AR area | ARnbb                       | AR000 - AR2715   |      |
| LR area | LRnbb                       | LR000 - LR6315   |      |
| TC area | TCb                         | TC0 - TC511      |      |

## Omron CJ1/CS1 Series PLC

(Supporting OMRON CS/CJ/CP1/CQM/CV/CVM Series of PLC)

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 2 (RS-232)

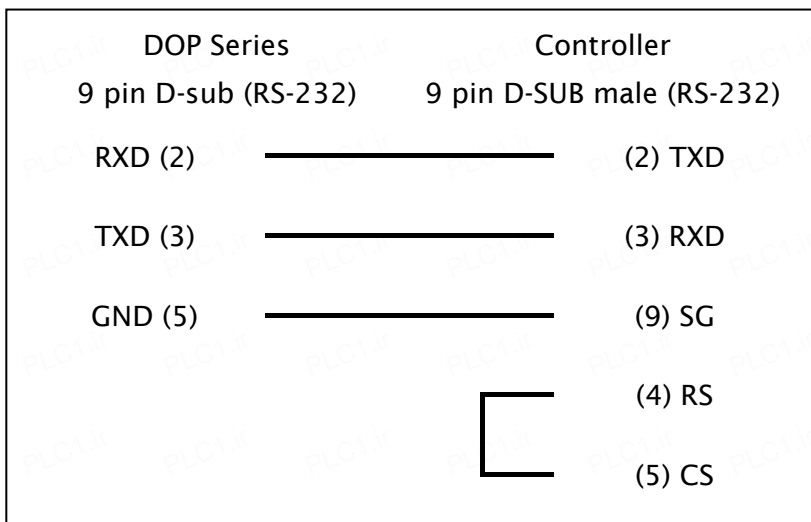
Controller Station Number: 0

Control Area / Status Area: D0 / D10

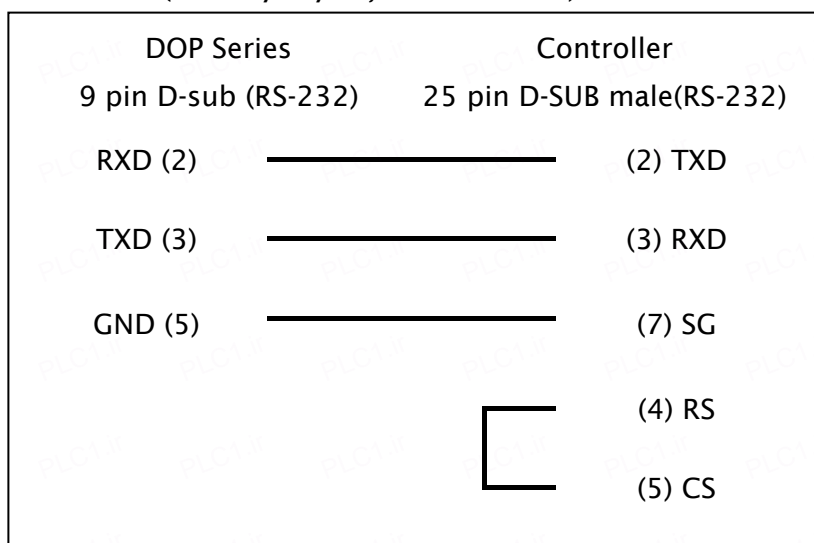
### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

##### CJIM CPU module (RS-232)



#### b. RS-232 (DOP-A/AE/AS, DOP-B Series)



**c. RS-422 (DOP-A/AE Series)**

| DOP Series                |       | Controller                |
|---------------------------|-------|---------------------------|
| 9 pin D-SUB male (RS-422) |       | 9 pin D-SUB male (RS-422) |
| RXD- (1)                  | ————— | (9) TXD-                  |
| RXD+ (2)                  | ————— | (5) TXD+                  |
| TXD+ (3)                  | ————— | (1) RXD+                  |
| TXD- (4)                  | ————— | (6) RXD-                  |

**d. RS-422 (DOP-AS35/AS38/AS57 Series)**

| DOP Series                |       | Controller                |
|---------------------------|-------|---------------------------|
| 9 pin D-SUB male (RS-422) |       | 9 pin D-SUB male (RS-422) |
| R-                        | ————— | (9) TXD-                  |
| R+                        | ————— | (5) TXD+                  |
| T+                        | ————— | (1) RXD+                  |
| T-                        | ————— | (6) RXD-                  |

**e. RS-422 (DOP-B Series)**

| DOP Series                |       | Controller                |
|---------------------------|-------|---------------------------|
| 9 pin D-SUB male (RS-422) |       | 9 pin D-SUB male (RS-422) |
| RXD- (9)                  | ————— | (9) TXD-                  |
| RXD+ (4)                  | ————— | (5) TXD+                  |
| TXD+ (1)                  | ————— | (1) RXD+                  |
| TXD- (6)                  | ————— | (6) RXD-                  |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type                 | Format                     | Read/Write Range | Data Length | Note                         |
|----------------------|----------------------------|------------------|-------------|------------------------------|
|                      | Bank No.(m)<br>Word No.(n) |                  |             |                              |
| CIO area             | CIO <sub>n</sub>           | CIO0 - CIO9999   | Word        |                              |
| Hold area            | H <sub>n</sub>             | H0 - H999        | Word        |                              |
| Auxiliary area       | A <sub>n</sub>             | A0 - A999        | Word        | <a href="#">1</a>            |
| DM area              | D <sub>n</sub>             | D0 - D65535      | Word        |                              |
| EM area              | Em.n                       | E0.0 - E12.65535 | Word        |                              |
| Timer PVs            | T <sub>n</sub>             | T0 - T9999       | Word        |                              |
| Counter PVs          | C <sub>n</sub>             | C0 - C9999       | Word        |                              |
| Work area            | W <sub>n</sub>             | W0 - W999        | Word        |                              |
| EM Current Bank area | EM <sub>n</sub>            | EM0 - EM65535    | Word        |                              |
| Index Register       | IR <sub>n</sub>            | IR0 - IR99       | Double Word |                              |
| DR area              | DR <sub>n</sub>            | DR0 - DR99       | Word        |                              |
| TK area              | TK <sub>n</sub>            | TK0 - TK1022     | Byte        | Read only, <a href="#">3</a> |

**b. Contacts**

| Type                 | Format                                   | Read/Write Range       | Note                         |
|----------------------|--|------------------------|------------------------------|
|                      | Bank No.(m)<br>Word No.(n)<br>Bit No.(b) |                        |                              |
| CIO area             | CIOB <sub>nbb</sub>                      | CIOB000 - CIOB999915   |                              |
| Hold area            | HB <sub>nbb</sub>                        | HB000 - HB99915        |                              |
| Auxiliary area       | AB <sub>nbb</sub>                        | AB000 - AB99915        | <a href="#">2</a>            |
| DM area              | DB <sub>nbb</sub>                        | DB000 - DB6553515      |                              |
| EM area              | EB <sub>m.nbb</sub>                      | EB0.000 - EB12.6553515 |                              |
| Timer area           | TB <sub>b</sub>                          | TB0 - TB9999           | Read only                    |
| Counter area         | CB <sub>b</sub>                          | CB0 - CB9999           | Read only                    |
| Work area            | WB <sub>nbb</sub>                        | WB000 - WB99915        |                              |
| EM Current Bank area | EMB <sub>nbb</sub>                       | EMB000 - EMB6553515    |                              |
| Index Register       | IRB <sub>nbb</sub>                       | IRB000 - IRB9931       |                              |
| DR area              | DRB <sub>nbb</sub>                       | DRB000 - DRB9915       |                              |
| TK area              | TKB <sub>nbb</sub>                       | TKB000 - TKB1022.15    | Read only, <a href="#">3</a> |

 **NOTE**

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- 1) A0 - A447 are read only.
- 2) AB000 - AB44715 are read only.
- 3) The address of register TK must be an even number.

## **Omron TPM1A PLC**

(The same as Omron C Series PLC.)



## Parker Compax3 Servo

### HMI Factory Setting:

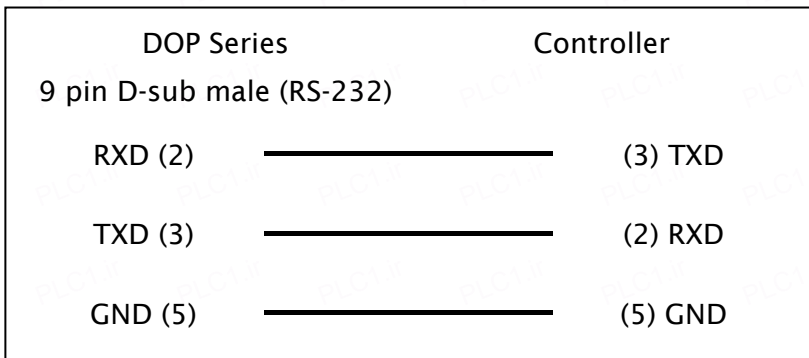
Baud rate: 115200, 8, None, 1

Controller Station Number: 0 ([Note1](#))

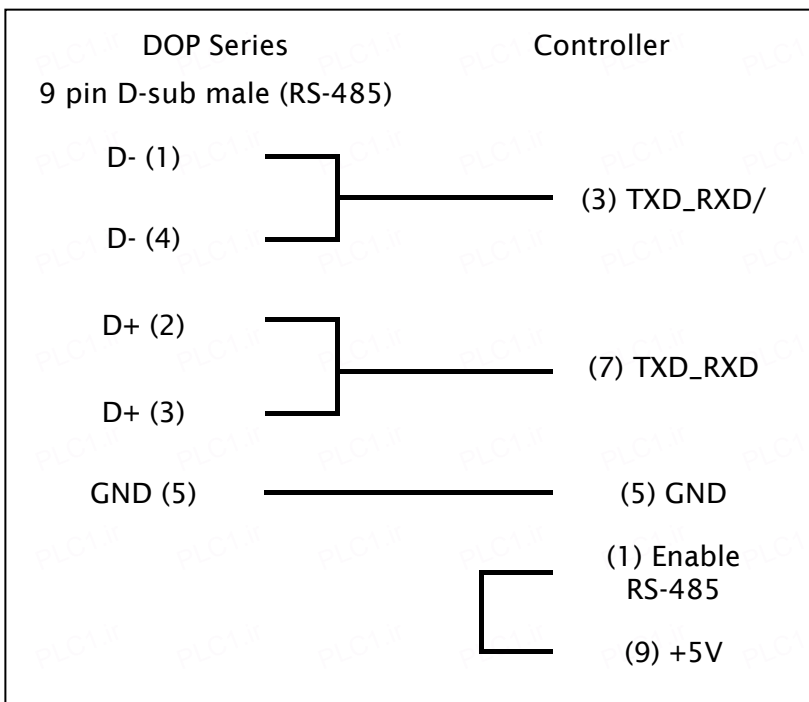
Control Area / Status Area: None/None

### Connection

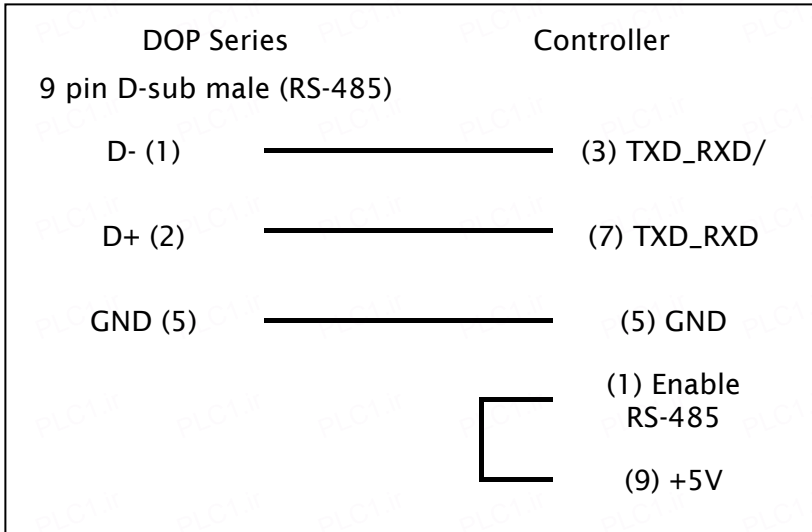
#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)



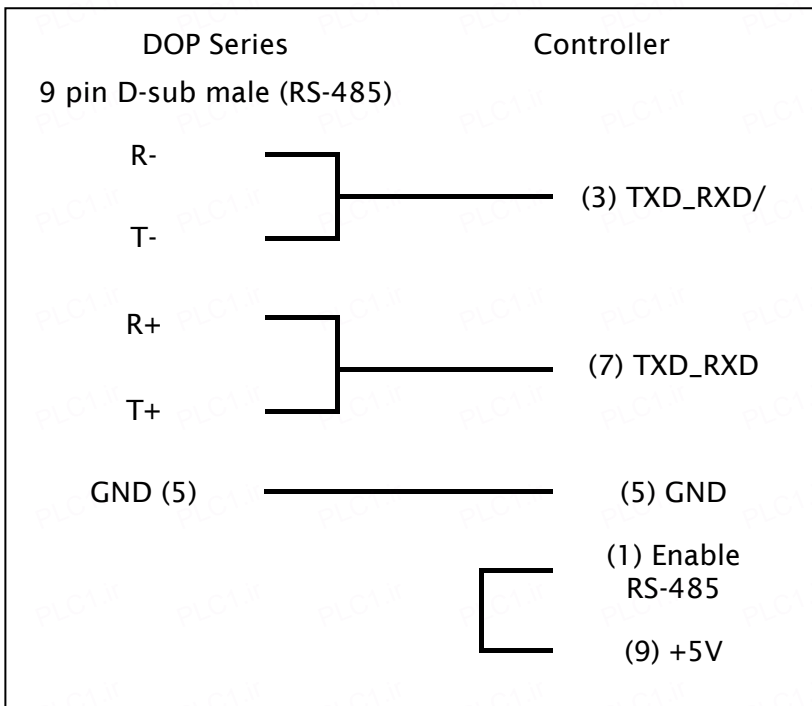
#### b. RS-485 (2-wire) (DOP-A/AE Series)



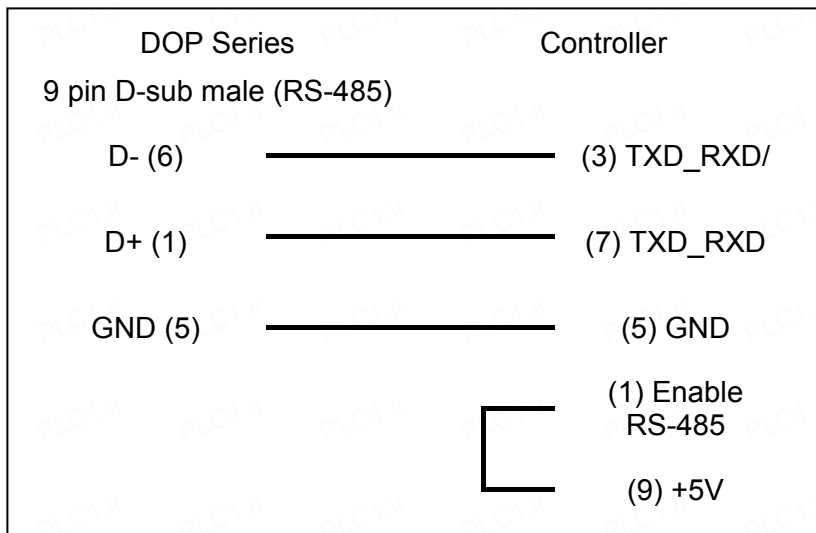
**c. RS-485 (2-wire) (DOP-AS57 Series)**



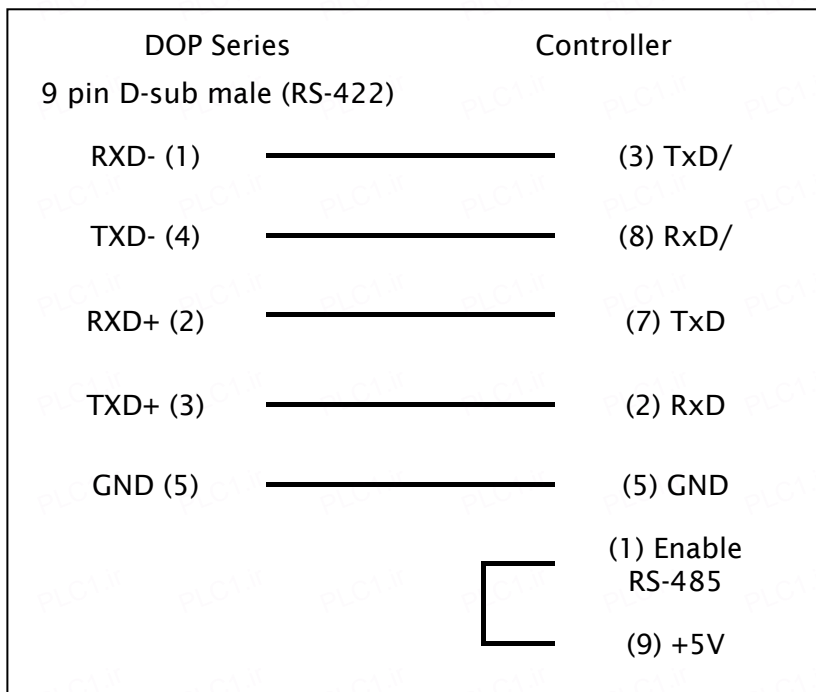
**d. RS-485 (2-wire) (DOP-AS35/AS38 Series)**



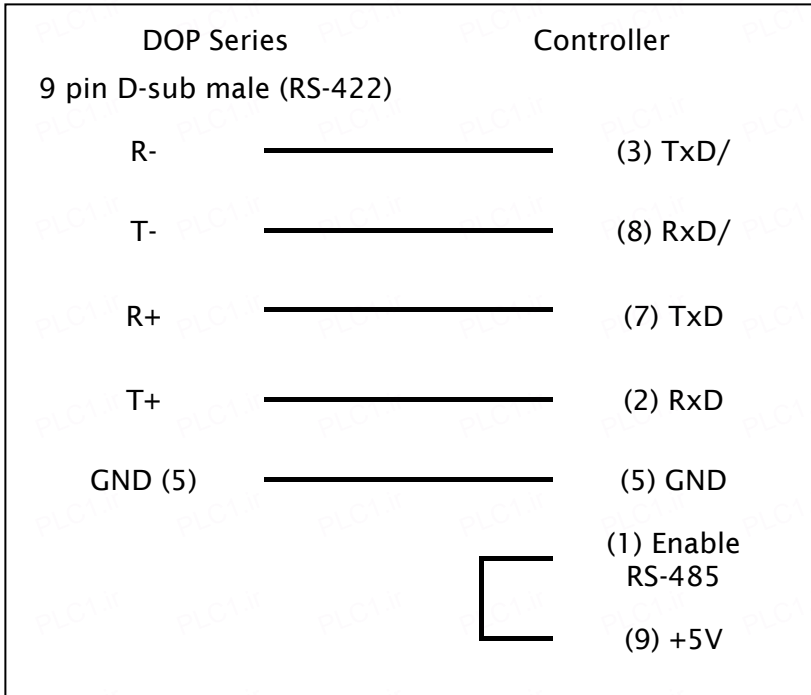
**e. RS-485 (2-wire) (DOP-B Series)**



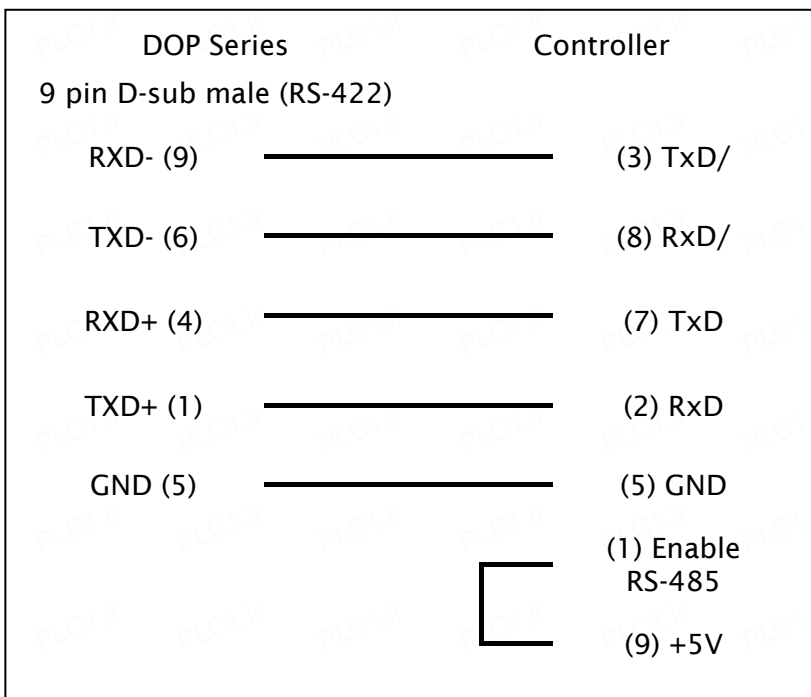
**f. RS-422 (4-wire) (DOP-A/AE Series)**



**g. RS-422 (4-wire) (DOP-AS35/AS38/AS57 Series)**



**h. RS-422 (4-wire) (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

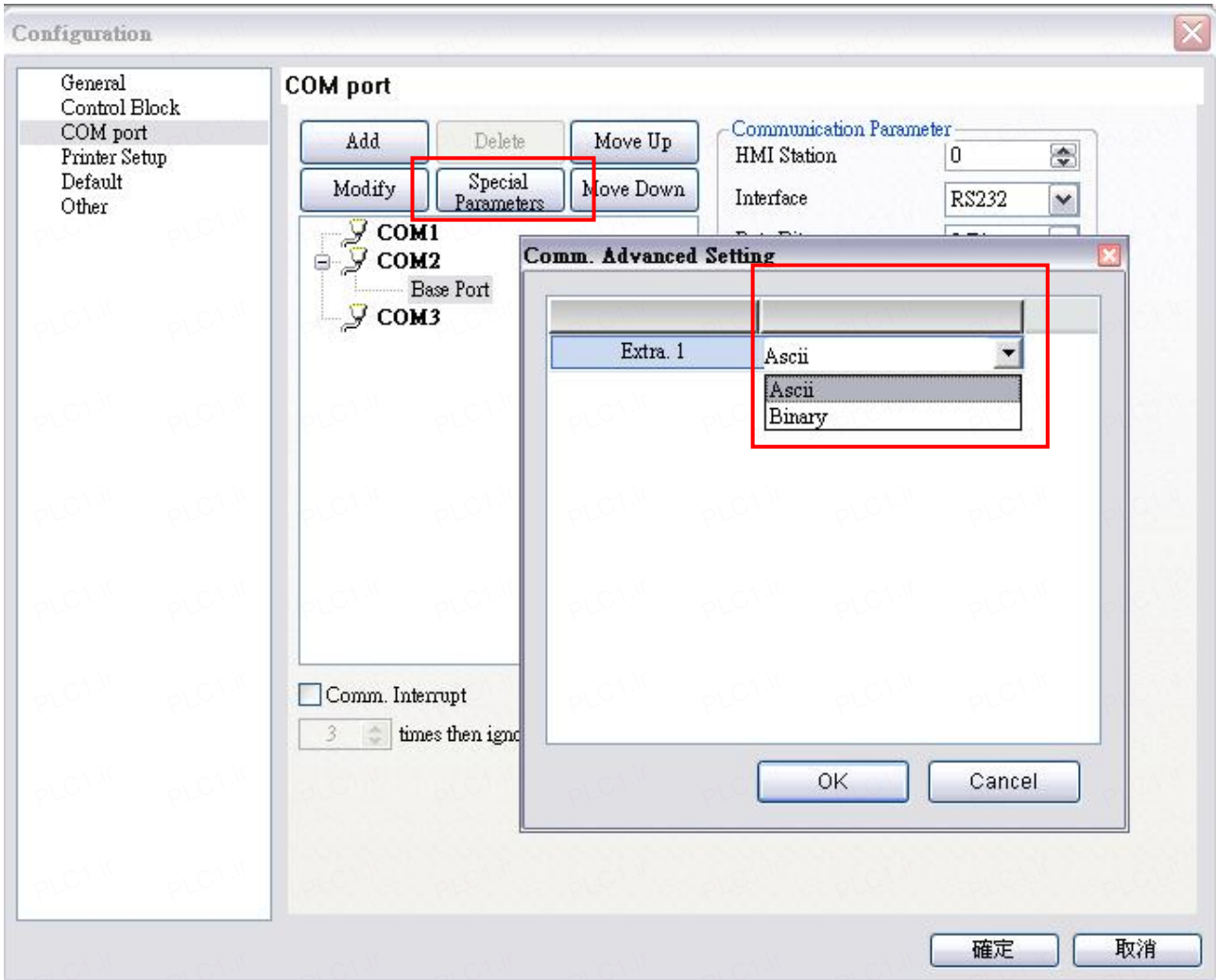
| Type   | Format                           | Read/Write Range          | Data Length       | Note              |
|--------|----------------------------------|---------------------------|-------------------|-------------------|
|        | Index No.(n)<br>Sub-Index No.(m) |                           |                   |                   |
| Object | OBJWn.m                          | OBJW0.1 -<br>OBJW65535.32 | Word              |                   |
| Object | OBJDn.m                          | OBJD0.1 -<br>OBJD65535.32 | Double<br>word    | <a href="#">3</a> |
| Object | OBJRn.m                          | OBJR0.1 - OBJR65535.32    | Floating<br>point | <a href="#">3</a> |

**b. Contacts**

| Type   | Format   | Read/Write Range                 | Note |
|--------|--|----------------------------------|------|
|        | Index No.(n)<br>Sub-Index No.(m)<br>Bit No.(b) |                                  |      |
| Object | OBJWBn.m/b                                     | OBJWB0.1/0 -<br>OBJWB65535.32/15 |      |
| Object | OBJDBn.m/b                                     | OBJDB0.1/0 -<br>OBJDB65535.32/31 |      |

**NOTE**

- 1) The connection established by RS-232 does not require station number setting. But, if the connection is established by RS-485, station number must be set in a range of 0 ~99.
- 2) This program supports both ASCII/BINARY RECORD mode, but the default setting is ASCII mode. Change can be made in “Screen Editor” → “Special Parameters” → “Extra”.



- 3) This protocol support access to the parameter of Compax3 and above only and is defined as OBJ. The data in different address are not the same type, therefore the character follows “OBJ” is to represent each type of data. OBJW is for 16bits date; OBJD is for 32 bits data, the data length must be Double Word format and numeric unit can not be Floating point; OBJR is for 32 bits data, data length must be Double Word type and numeric unit must be Floating point.
- 4) Pay special attention to the parameter characteristics, “read only” or “read/write”. Please refer to Parker Compax 3 user manual for more detail.

## RKC Rex B Series

### HMI Factory Setting:

Baud rate: 9600, 7, Even, 2 (RS-422)

Controller Station Number: 0

Control Area / Status Area: None/None

### Connection

#### a. RS-422 (DOP-A/AE Series)

| DOP Series       |       | Controller |
|------------------|-------|------------|
| 9 pin D-sub male |       |            |
| RXD- (1)         | ————— | TA (12)    |
| RXD+ (2)         | ————— | TB (13)    |
| TXD+ (3)         | ————— | RB (15)    |
| TXD- (4)         | ————— | RA (14)    |
| GND (5)          | ————— | SG (11)    |

#### b. RS-422 (DOP-AS35/AS38/AS57 Series)

| DOP Series       |       | Controller |
|------------------|-------|------------|
| 9 pin D-sub male |       |            |
| R-               | ————— | TA (12)    |
| R+               | ————— | TB (13)    |
| T+               | ————— | RB (15)    |
| T-               | ————— | RA (14)    |
| GND              | ————— | SG (11)    |

**c. RS-422 (DOP-B Series)**

| DOP Series       |       | Controller |
|------------------|-------|------------|
| 9 pin D-sub male |       |            |
| RXD- (9)         | ————— | TA (12)    |
| RXD+ (4)         | ————— | TB (13)    |
| TXD+ (1)         | ————— | RB (15)    |
| TXD- (6)         | ————— | RA (14)    |
| GND (5)          | ————— | SG (11)    |

**Definition of PLC Read/Write Address**

**a. Registers**

| Type                                 | Format         | Read/Write Range | Data Length | Note                         |
|--------------------------------------|----------------|------------------|-------------|------------------------------|
|                                      | Channel No.(n) |                  |             |                              |
| Temperature measured-value (PV)      | M1:n           | M1:1 - M1:8      | Word        | Read only, <a href="#">1</a> |
| Control output status (Heating-side) | O1:n           | O1:1 - O1:8      | Word        | Read only, <a href="#">1</a> |
| Control output status (Cooling-side) | O2:n           | O2:1 - O2:8      | Word        | Read only, <a href="#">1</a> |
| Heater break alarm status            | AC:n           | AC:1 - AC:8      | Byte        | Read only                    |
| Current transformer input value      | M2:n           | M2:1 - M2:8      | Word        | Read only, <a href="#">1</a> |
| Error code                           | ER:n           | ER:1             | Word        | Read only                    |
| Communication Error code             | EC:n           | EC:1             | Word        | Read only                    |
| PID/AT identification                | G1:n           | G1:1 - G1:8      | Byte        |                              |
| Temperature set-value (SV)           | S1:n           | S1:1 - S1:8      | Word        | <a href="#">1</a>            |
| Proportional band (Heating-side)     | P1:n           | P1:1 - P1:8      | Word        | <a href="#">1</a>            |
| Proportional band (Cooling-side)     | P2:n           | P2:1 - P2:8      | Word        | <a href="#">1</a>            |
| Integral time                        | I1:n           | I1:1 - I1:8      | Word        |                              |
| Derivative time                      | D1:n           | D1:1 - D1:8      | Word        |                              |
| Anti-reset windup                    | W1:n           | W1:1 - W1:8      | Word        |                              |
| Deadband                             | V1:n           | V1:1 - V1:8      | Word        | <a href="#">1</a>            |



| Type                                 | Format         | Read/Write Range | Data Length | Note              |
|--------------------------------------|----------------|------------------|-------------|-------------------|
|                                      | Channel No.(n) |                  |             |                   |
| Alarm 1 setting                      | A1:n           | A1:1 - A1:8      | Word        | <a href="#">1</a> |
| Alarm 2 setting                      | A2:n           | A2:1 - A2:8      | Word        | <a href="#">1</a> |
| Channel used/unused                  | EI:n           | EI:1 - EI:8      | Byte        |                   |
| Proportional cycle<br>(Heating-side) | T0:n           | T0:1 - T0:8      | Word        |                   |
| Proportional cycle<br>(Cooling-side) | T1:n           | T1:1 - T1:8      | Word        |                   |
| PV bias                              | PB:n           | PB:1 - PB:8      | Word        | <a href="#">1</a> |
| Heater break alarm setting           | A3:n           | A3:1 - A3:8      | Word        | <a href="#">1</a> |
| Memory area execution NO.<br>setting | ZA:n           | ZA:1             | Byte        |                   |
| Control response parameter           | CA:n           | CA:1 - CA:8      | Byte        |                   |
| Output Monitoring time               | TU:n           | TU:1             | Word        |                   |
| Event function selection             | XK:n           | XK:1             | Byte        |                   |

**b. Contacts**

| Type                    | Format         | Read/Write Range | Note      |
|-------------------------|----------------|------------------|-----------|
|                         | Channel No.(b) |                  |           |
| Alarm 1 status          | AA:b           | AA:1 - AA:8      | Read only |
| Alarm 2 status          | AB:b           | AB:1 - AB:8      | Read only |
| Burnout status          | B1:b           | B1:1 - B1:8      | Read only |
| Control run/stop        | X1:b           | X1:1             |           |
| Alarm interlock release | AR:b           | AR:1             | Read only |
| Event input status      | L1:b           | L1:1             | Read only |

 **NOTE**

- 1) The input value and display value of RKC Rex B Series must in one decimal place. Please refer to RKC user manual to ensure if the temperature controller supports one decimal place.

## Siemens S7 200

### HMI Factory Setting:

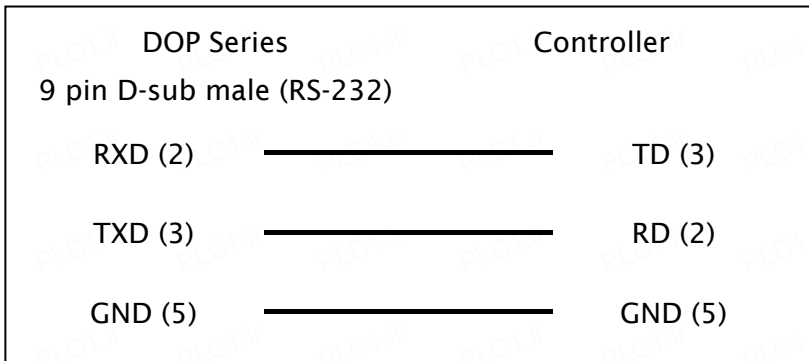
Baud rate: 9600, 7, Even, 1

Controller Station Number: 2

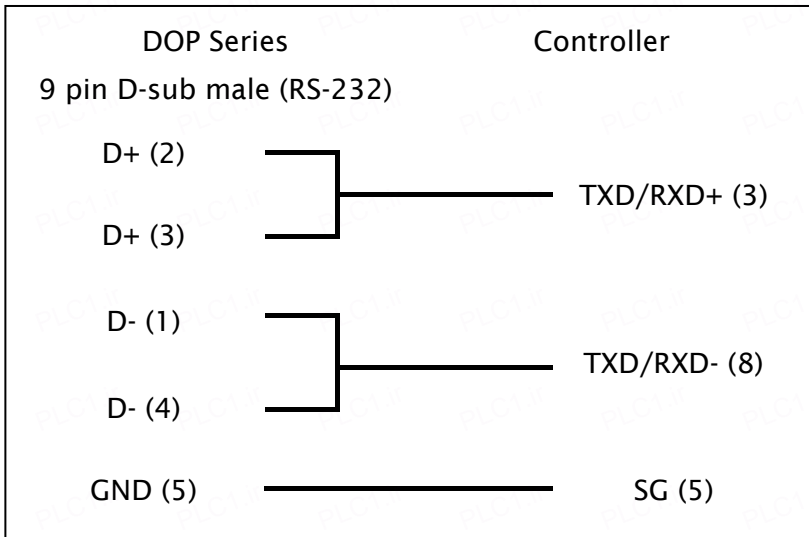
Control Area / Status Area: VW0/VW10

### Connection

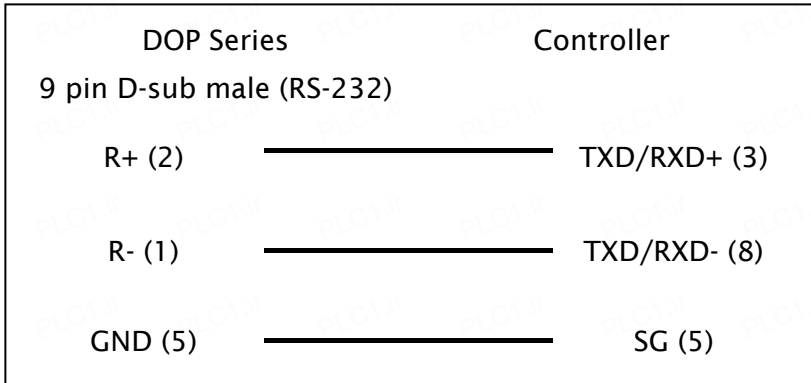
#### a. RS-232 (via PPI Multi-Master Cable) (DOP-A/AE/AS, DOP-B Series)



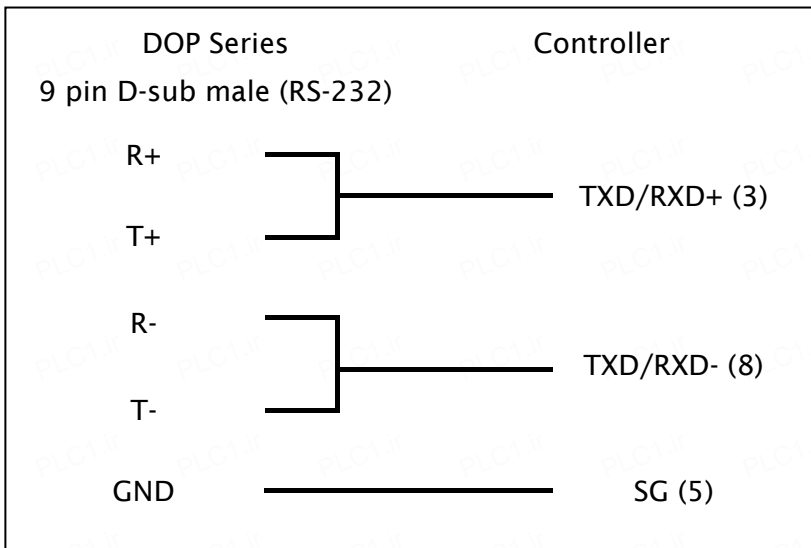
#### b. RS-485 (via PLC Program Port) (DOP-A/AE Series)



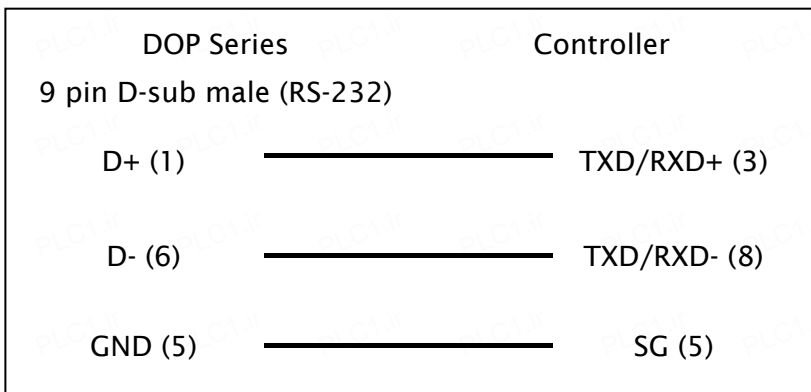
**c. RS-485 (via PLC Program Port) (DOP-AS57 Series)**



**d. RS-485 (via PLC Program Port) (DOP-AS35/AS38 Series)**



**e. RS-485 (via PLC Program Port) (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

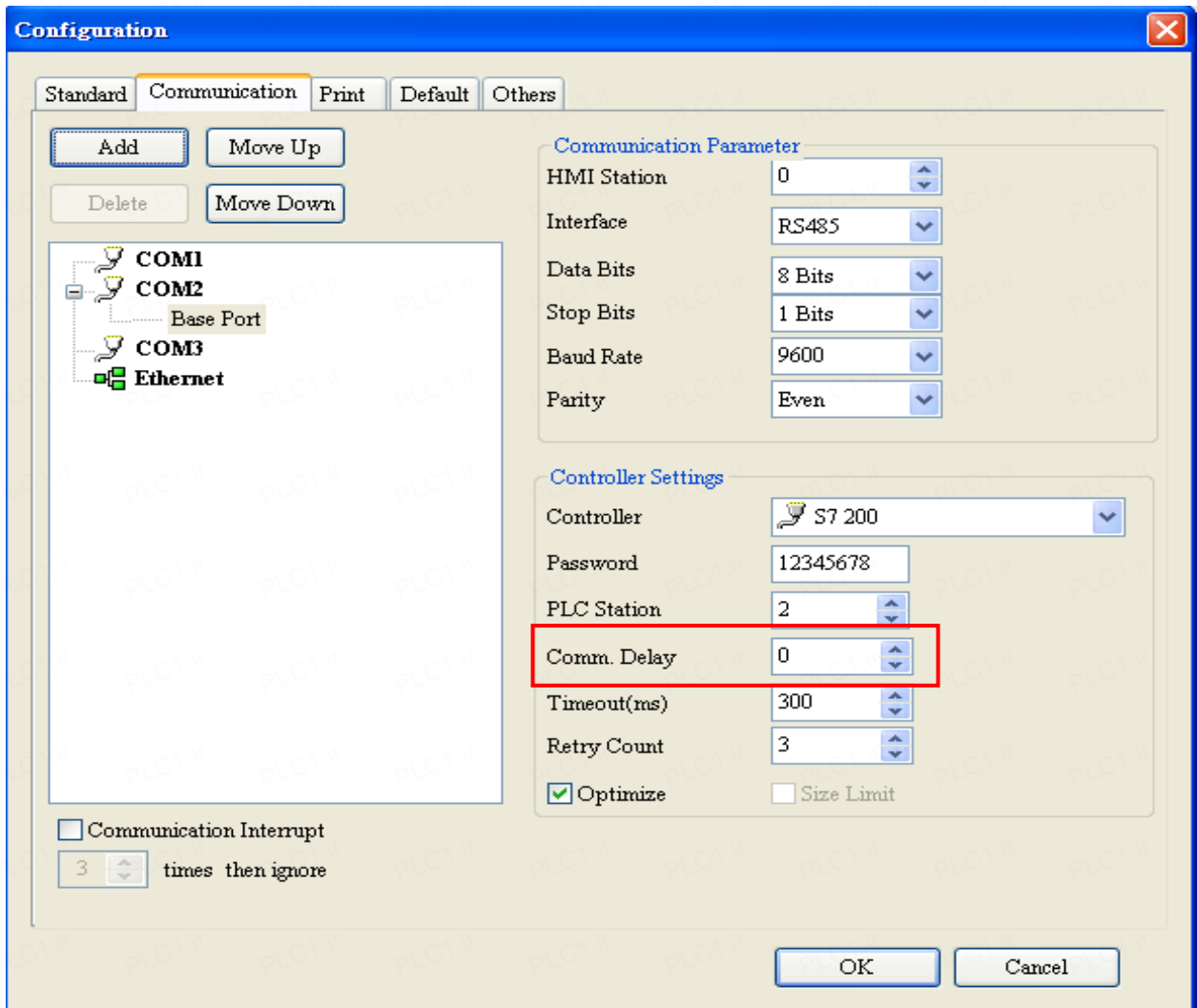
| Type               | Format       | Read/Write Range | Data Length | Note |
|--------------------|--------------|------------------|-------------|------|
|                    | Word No. (n) |                  |             |      |
| Timer              | Tn           | T0 - T255        | Word        |      |
| Analog input word  | AIWn         | AIW0 - AIW30     | Word        |      |
| Counter            | Cn           | C0 - C255        | Word        |      |
| Analog output word | AQWn         | AQW0 - AQW30     | Word        |      |
| Input Image        | IWn          | IW0 - IW14       | Word        |      |
| Input Image        | IDn          | ID0 - ID12       | Double Word |      |
| Output Image       | QWn          | QW0 - QW14       | Word        |      |
| Output Image       | QDn          | QD0 - QD12       | Double Word |      |
| Special Bits       | SMWn         | SMW0 - SMW199    | Word        |      |
| Special Bits       | SMDn         | SMD0 - SMD197    | Double Word |      |
| Internal Bits      | MWn          | MW0 - MW98       | Word        |      |
| Internal Bits      | MDn          | MD0 - MD96       | Double Word |      |
| Data Area          | VWn          | VW0 - VW9998     | Word        |      |
|                    | DBWn         | DBW0 - DBW9998   |             |      |
| Data Area          | VDn          | VD0 - VD9996     | Double Word |      |
| Special S          | SWn          | SW0 - SW99       | Word        |      |
| Special S          | SDn          | SD0 - SD97       | Double Word |      |

**b. Contacts**

| Type          | Format                      | Read/Write Range | Note      |
|---------------|-----------------------------|------------------|-----------|
|               | Word No. (n)<br>Bit No. (b) |                  |           |
| Timer Bit     | Tb                          | T0 - T255        | Read Only |
| Counter Bit   | Cb                          | C0 - C255        | Read Only |
| Input Image   | In.b                        | I0.0 - I15.7     |           |
| Output Image  | Qn.b                        | Q0.0 - Q15.7     |           |
| Special Bit   | SMn.b                       | SM0.0 - SM200.7  |           |
| Internal Bit  | Mn.b                        | M0.0 - M99.7     |           |
| Data Area Bit | Vn.b                        | V0.0 - V9999.7   |           |
| Special S Bit | Sn.b                        | S0.0 - S100.7    |           |

**NOTE**

- 1) S7-200 processes a longer period of internal program scanning or inputs an interruption command may slows down HMI response rate and cause “Must Retry” or “No Such Resource” error message. Communication Delay function is suggested to avoid this problem. The parameter setting unit is ms and suggested setting value is 10. The setting value should not be greater than 30.



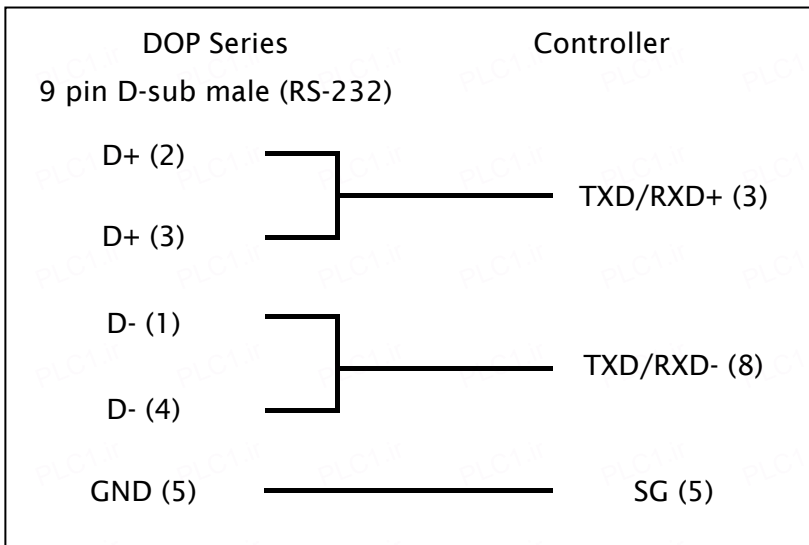
## Siemens S7 300 (Direct MPI)

### HMI Factory Setting:

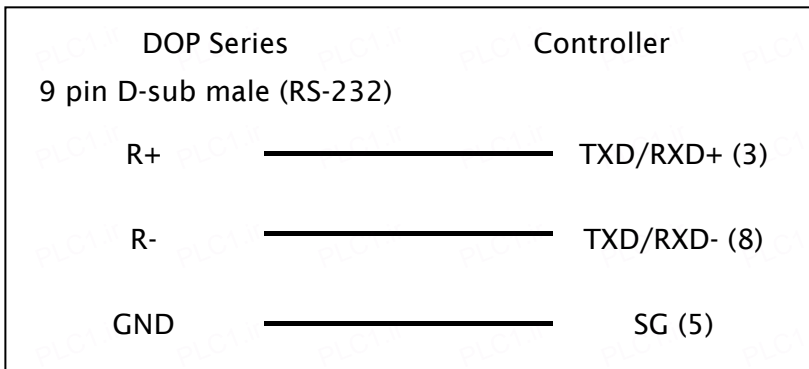
Baud rate: 187500, 8, Even, 1 (RS-485) ([Note1](#))  
 Controller Station Number: 2([Note2](#), [Note3](#), [Note4](#))  
 Control Area / Status Area: DBW0/DBW20

### Connection

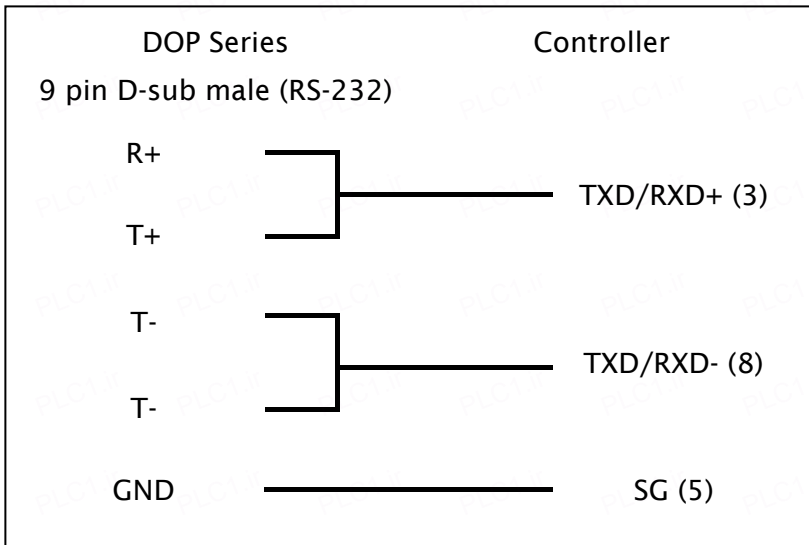
#### a. RS-485 (DOP-A/AE Series)



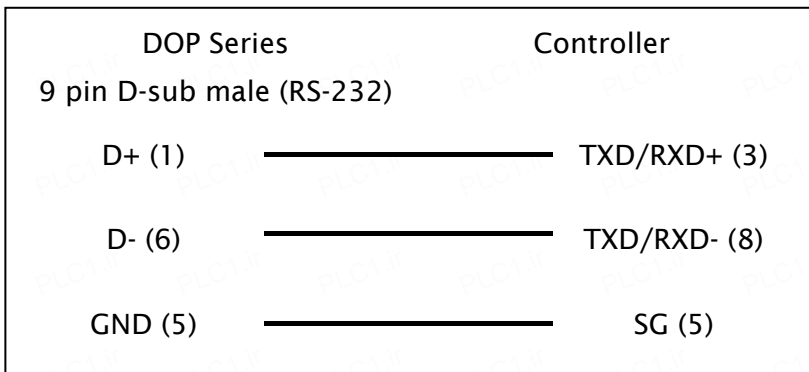
#### b. RS-485 (DOP-AS57 Series)



**c. RS-485 (DOP-AS35/AS38 Series)**



**d. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type          | Format                     | Read/Write Range             | Data Length | Note              |
|---------------|----------------------------|------------------------------|-------------|-------------------|
|               | Word No.(n)<br>Bank No.(m) |                              |             |                   |
| Input Image   | IWn                        | IW0 - IW65534                | Word        |                   |
|               | IDn                        | ID0 - ID65532                | Double Word |                   |
| Output Image  | QWn                        | QW0 - QW65534                | Word        |                   |
|               | QDn                        | QD0 - QD65532                | Double Word |                   |
| Internal Bits | MWn                        | MW0 - MW65534                | Word        |                   |
|               | MDn                        | MD0 - MD65532                | Double Word |                   |
| Data Area     | DBm.DBWn                   | DB1.DBW0 -<br>DB255.DBW65534 | Word        | <a href="#">5</a> |
|               | DBm.DBDn                   | DB1.DBD0 -<br>DB255.DBW65532 | Double Word | <a href="#">5</a> |

| Type             | Format                     | Read/Write Range | Data Length | Note              |
|------------------|----------------------------|------------------|-------------|-------------------|
|                  | Word No.(n)<br>Bank No.(m) |                  |             |                   |
| Data Area (DB10) | DBWn                       | DBW0 - DBW65534  | Word        |                   |
|                  | DBDn                       | DBD0 - DBD65532  | Double Word |                   |
|                  | VWn                        | VW0 - VW65534    | Word        |                   |
|                  | VDn                        | VD0 - VD65532    | Double Word |                   |
| Timer            | Tn                         | T0 - T65535      | Word        | <a href="#">6</a> |
| Counter          | Cn                         | C0 - C65535      | Double Word | <a href="#">6</a> |

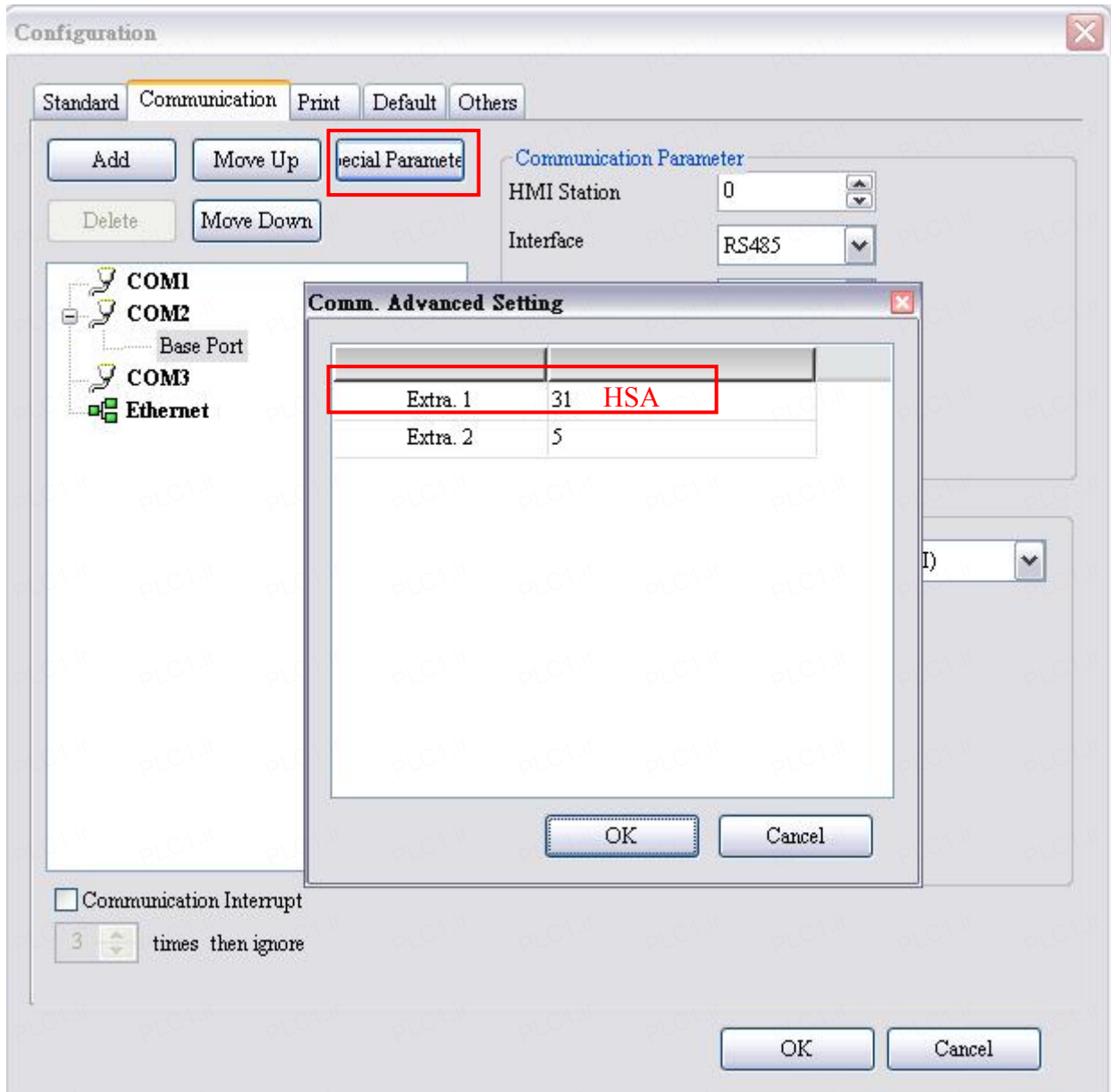
**b. Contacts**

| Type             | Format                                 | Read/Write Range              | Note              |
|------------------|--|-------------------------------|-------------------|
|                  | Word No.(n) ; Bank No.(m) ; Bit No.(b) |                               |                   |
| Input Image      | In.b                                   | I0.0 - I65535.7               |                   |
| Output Image     | Qn.b                                   | Q0.0 - Q65535.7               |                   |
| Internal Bits    | Mn.b                                   | M0.0 - M65535.7               |                   |
| Data Area        | DBm.DBXn.b                             | DB1.DBX0.0 - DB255.DBX65535.7 | <a href="#">5</a> |
| Data Area (DB10) | DBXn.b                                 | DBX0.0 - DBX65535.7           |                   |
|                  | Vn.b                                   | V0.0 - V65535.7               |                   |

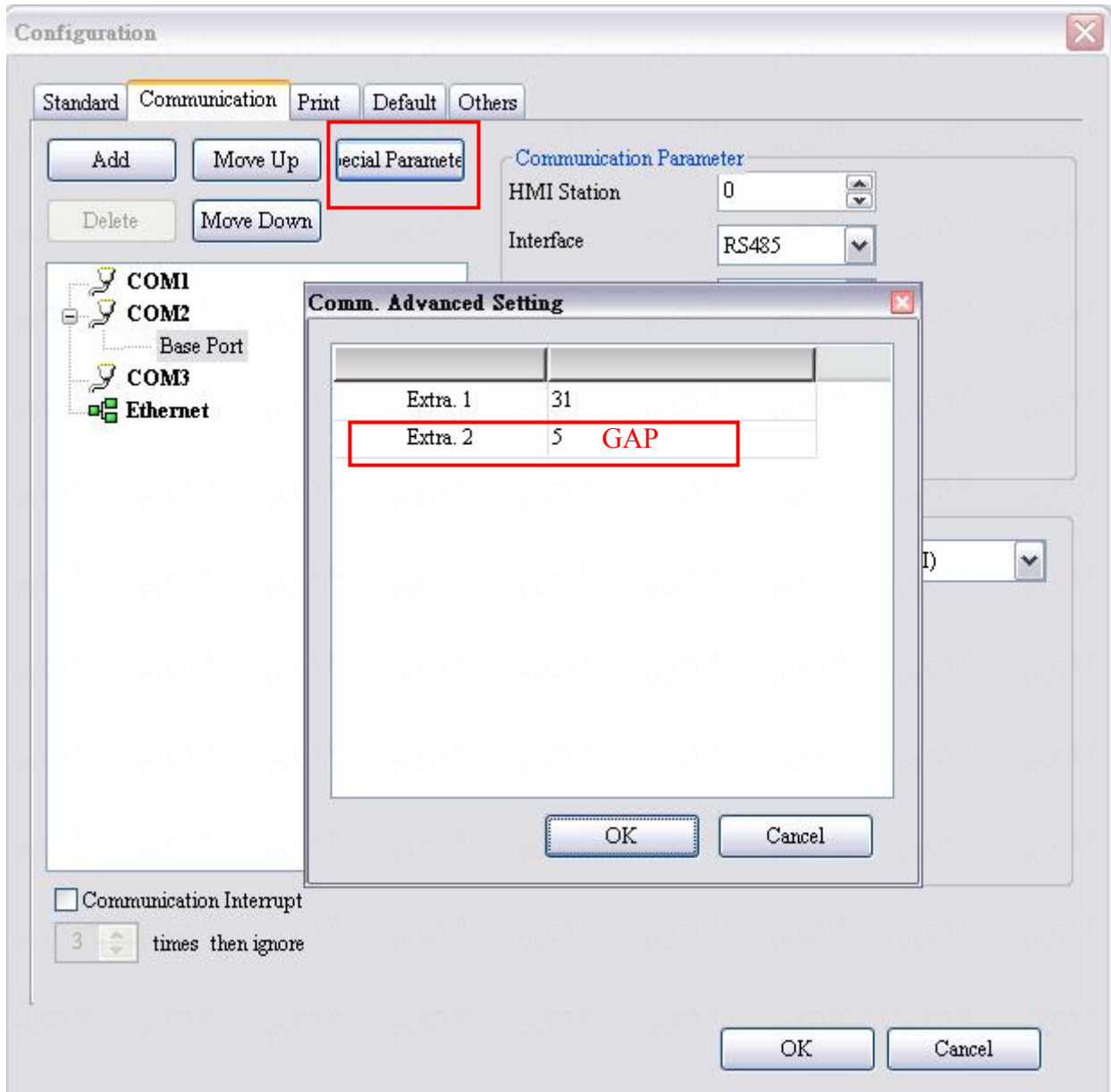
 **NOTE**

- 1) This communication protocol only supports 187500 bps. Only one COM port can use this communication protocol for one project (it supports COM2 and COM3 ports, but it does not support COM1 port).
- 2) This communication protocol supports multiple HMI to multiple PLC connection. However, it is still recommend connecting a maximum of two HMI to a PLC at a time. A connection of more than two HMI would cause low baud rate and time out error may occur.
- 3) In order to set Highest Station Address(HSA) click Option > Configuration > Special Parameter > Extra. The default setting for HSA is 31, max. value is 126 and Min. value is 2. The setting for HSA must be in consistent with PLC setting.





- 4) In "Communication" section, click on "Extra" setting, and update GUF coefficient of GAP in setting 2. The GUF coefficient is the frequency of the HMI checking the existence of controller within the communication network. If coefficient is larger, the frequency of update will be low, in another word, it takes longer waiting time for other devices to join the network. The default setting of GUF is 5, maximum value is 31 and minimum value is 1. If multiple HMI connections are required, it is recommended to lower GUF coefficient in order to shorten the waiting time of newly joined HMI and to prevent the error of "network can not be joined".



- 5) PLC needs to enable DB memory (DBm.DBWn · DBm.DBDn · DBm.DBXn.b) before DB data can be read.
- 6) The valid digit of value for Timer is only up to 3 digits. If a value input is more than 3 digits, the Timer will regards the highest 3 (decimal) and replace the rest by 0. For example, a value 12345 will be written as 12300 in PLC.
- 7) The valid digit of value for Counter is to 3 digits. If a value input is more than 3 digits, the Counter will regards the first 3 digits and leave out the rest. For example, a value 12345 will be written as 123 in PLC.

## Siemens S7 300 (ISO TCP)

### HMI Factory Setting:

IP Address: 192.168.0.1

COM Port: 102

Control Area / Status Area: DBW0 / DBW20

### Connection

Standard Jumper Cable / Network Cable without jumper (Auto-detected by HMI)

### Definition of PLC Read/Write Address

#### a. Registers

| Type             | Format                     | Read/Write Range             | Data Length | Note              |
|------------------|----------------------------|------------------------------|-------------|-------------------|
|                  | Word No.(n)<br>Bank No.(m) |                              |             |                   |
| Input Image      | IWn                        | IW0 - IW65534                | Word        |                   |
|                  | IDn                        | ID0 - ID65532                | Double Word |                   |
| Output Image     | QWn                        | QW0 - QW65534                | Word        |                   |
|                  | QDn                        | QD0 - QD65532                | Double Word |                   |
| Internal Bits    | MWn                        | MW0 - MW65534                | Word        |                   |
|                  | MDn                        | MD0 - MD65532                | Double Word |                   |
| Data Area        | DBm.DBWn                   | DB1.DBW0 -<br>DB255.DBW65534 | Word        | <a href="#">1</a> |
|                  | DBm.DBDn                   | DB1.DBD0 -<br>DB255.DBW65532 | Double Word | <a href="#">1</a> |
| Data Area (DB10) | DBWn                       | DBW0 - DBW65534              | Word        |                   |
|                  | DBDn                       | DBD0 - DBD65532              | Double Word |                   |
|                  | VWn                        | VW0 - VW65534                | Word        |                   |
|                  | VDn                        | VD0 - VD65532                | Double Word |                   |
| Timer            | Tn                         | T0 - T65535                  | Word        | <a href="#">2</a> |
| Counter          | Cn                         | C0 - C65535                  | Double Word | <a href="#">3</a> |

**b. Contacts**

| Type             | Format                                   | Read/Write Range              | Note |
|------------------|--|-------------------------------|------|
|                  | Word No.(n)<br>Bank No.(m)<br>Bit No.(b) |                               |      |
| Input Image      | In.b                                     | I0.0 - I65535.7               |      |
| Output Image     | Qn.b                                     | Q0.0 - Q65535.7               |      |
| Internal Bits    | Mn.b                                     | M0.0 - M65535.7               |      |
| Data Area        | DBm.DBXn.b                               | DB1.DBX0.0 - DB255.DBX65535.7 |      |
| Data Area (DB10) | DBXn.b                                   | DBX0.0 - DBX65535.7           |      |
|                  | Vn.b                                     | V0.0 - V65535.7               |      |

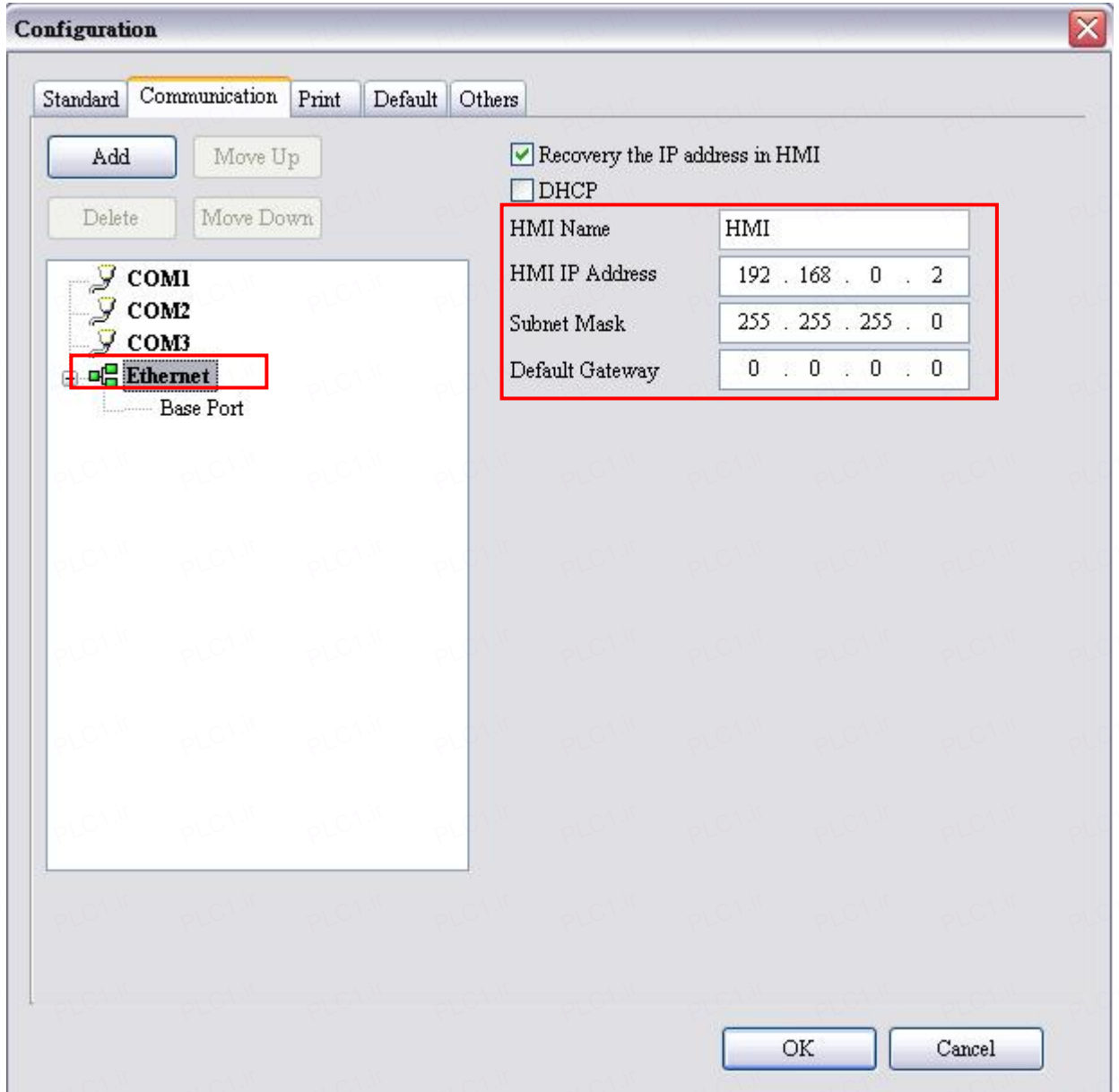
 **NOTE**

- 1) PLC needs to enable DB memory (**DBm.DBWn**, **DBm.DBDn**, **DBm.DBXn.b**) before DB data can be read.
- 2) Timer reads only up to 3 digits. If a value input is more than 3 digits, the Timer will regards the highest 3 (decimal) and replace the rest by 0. For example, a value 12345 will be written as 12300 in PLC.
- 3) Counter reads only up to 3 digits. If a value input is more than 3 digits, the Counter will regards the first 3 digits and leave out the rest. For example, a value 12345 will be written as 123 in PLC.

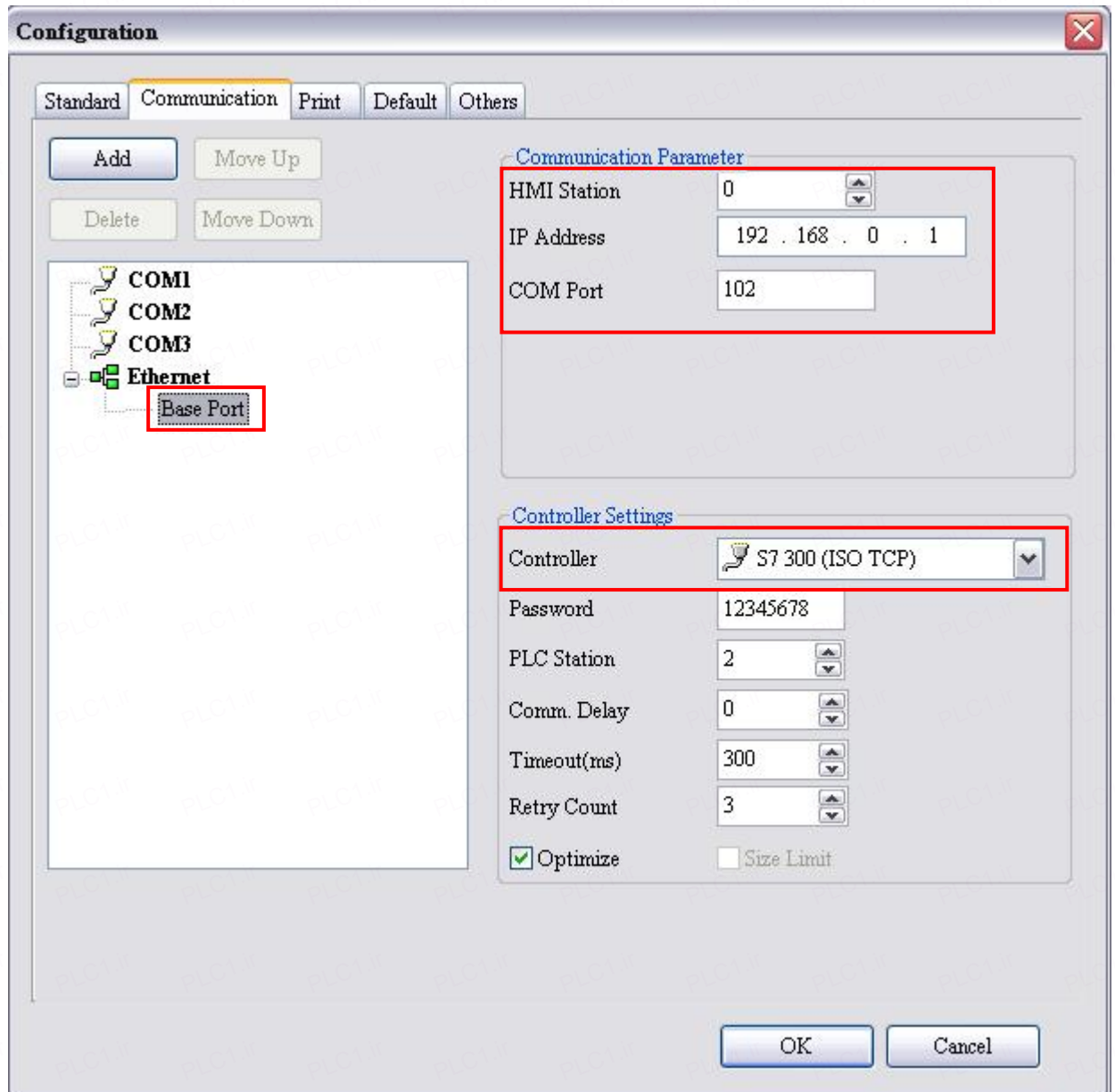
## Settings

Screen Editor :

### 1. HMI Ethernet Setting



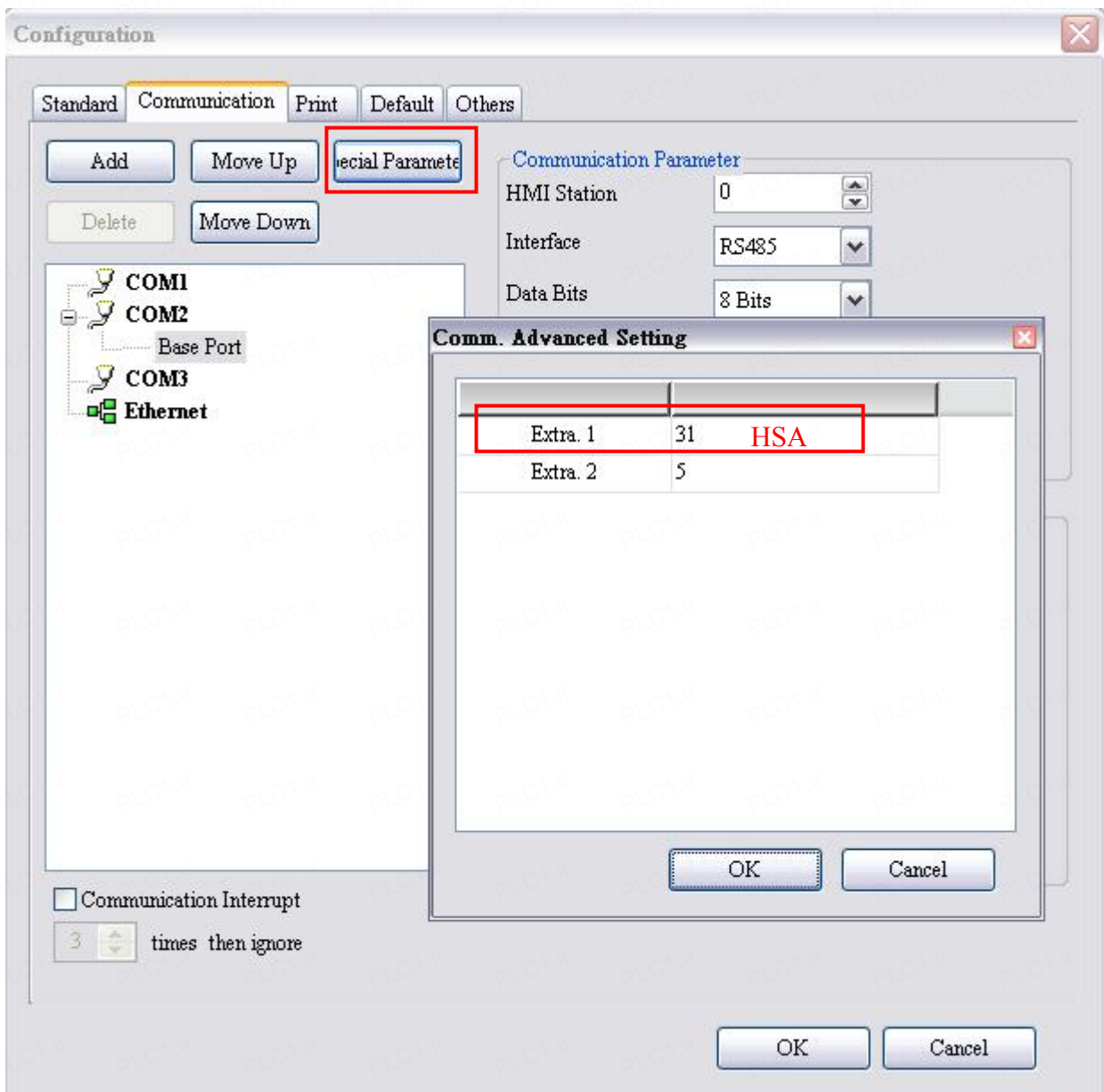
2. PLC Ethernet Setting



Simatic (V5.4) :

1. Right click on “CP343-1 Lean” module and select "Object Properties", on this page set up “IP address” and “Subnet mask” for CP343-1 Lean Module. Please be aware that the “IP address” setting must be the same as PLC Ethernet setting in Screen Editor and the “Subnet mask” setting must be the same as the HMI Ethernet setting in Screen Editor.
2. To add a new "Other station", right click on “Object Properties”, add a new Interface and set the “Type” as “Industrial Ethernet”. To set up HMI “IP address” and “Subnet mask”, go to “Ethernet interface” > “Properties”, please be aware that this setting must be the same as the HMI Ethernet setting in Screen Editor. As the setting is completed, left click on the green box above “Other station” and drag to link with the green line above.

3. Right click on the CPU module and select "Insert New Connection", for "Connection Partner" select "Unspecified" and for "Type" select "TCP connection". Then go to "Properties - TCP connection" >"Options", and set "Mode" to "Fetch passive"; please follows the restriction for "Address" setting, set "Address" to Local Port No. must be the same as PLC Ethernet setting in Screen Editor, to Partner's IP must be the same as HMI Ethernet setting in Screen Editor, but Port No. can be any Port No. depending on the structure of network connection.
4. Right click on another CPU to add a new "TCP connection" and repeats setting 3, except the "Mode", go to "Options" > "Mode" and select "Write passive".
5. After setting 1~4 is done, you will see two "TCP connection" at the bottom of PLC Ethernet setting page. PLC Ethernet setting is completed.
6. For detail on parameter setting, please refer to Siemens PLC user manual.



## Siemens S7 300 (with PC adapter)

### HMI Factory Setting:

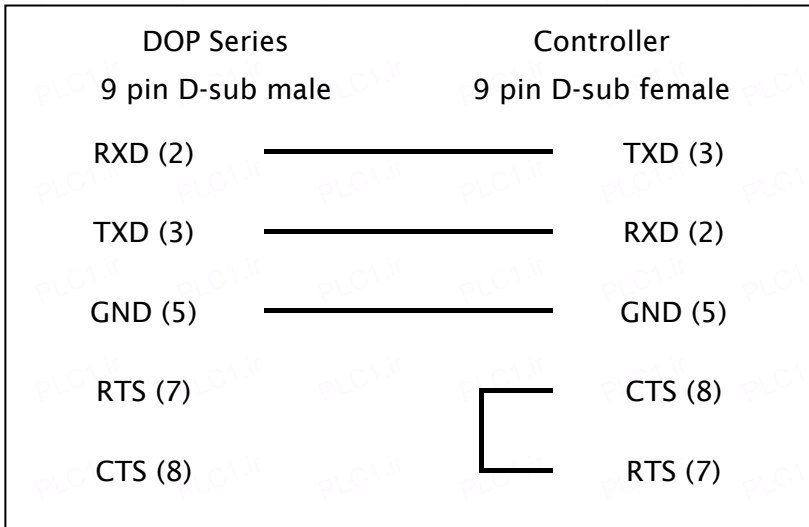
Baud rate: 19200, 8, Even, 1

Controller Station Number: 2([Note1](#), [Note2](#), [Note3](#))

Control Area / Status Area: DBW0/DBW20

### Connection

#### a. RS-232 (via PC adapter) (DOP-A/AE/AS, DOP-B Series)



### Definition of PLC Read/Write Address

#### a. Registers

| Type          | Format                     | Read/Write Range             | Data Length | Note              |
|---------------|----------------------------|------------------------------|-------------|-------------------|
|               | Word No.(n)<br>Bank No.(m) |                              |             |                   |
| Input Image   | IWn                        | IW0 - IW65534                | Word        |                   |
|               | IDn                        | ID0 - ID65532                | Double Word |                   |
| Output Image  | QWn                        | QW0 - QW65534                | Word        |                   |
|               | QDn                        | QD0 - QD65532                | Double Word |                   |
| Internal Bits | MWn                        | MW0 - MW65534                | Word        |                   |
|               | MDn                        | MD0 - MD65532                | Double Word |                   |
| Data Area     | DBm.DBWn                   | DB1.DBW0 -<br>DB255.DBW65534 | Word        | <a href="#">4</a> |



**b. Contacts**

| Type             | Format                                   | Read/Write Range              | Note              |
|------------------|--|-------------------------------|-------------------|
|                  | Word No.(n)<br>Bank No.(m)<br>Bit No.(b) |                               |                   |
| Input Image      | In.b                                     | I0.0 - I65535.7               |                   |
| Output Image     | Qn.b                                     | Q0.0 - Q65535.7               |                   |
| Internal Bits    | Mn.b                                     | M0.0 - M65535.7               |                   |
| Data Area        | DBm.DBXn.b                               | DB1.DBX0.0 - DB255.DBX65535.7 | <a href="#">4</a> |
| Data Area (DB10) | DBXn.b                                   | DBX0.0 - DBX65535.7           |                   |
|                  | Vn.b                                     | V0.0 - V65535.7               |                   |

 **NOTE**

- 1) Communication via PC adapter, PLC station will not be used, therefore, only 1(HMI) to 1 (PLC) communication is allowed.
- 2) Baud rate setting of PLC must be 187.5kps or above (but not 19.2kps). For HMI, the baud rate can only be 19.2kbps or 28.4kbps (by the Switch setting of PC adapter).
- 3) Set up both ends of PC adapter for PLC connection and HMI connection (one end to one connection). Once PLC is connected, the Power LED signal will be on instantly and the LED signal would blink only during the communication. If communication failure occurs, the LED signal will remain off.
- 4) PLC needs to enable DB memory (**DBm.DBWn**, **DBm.DBDn**, **DBm.DBXn.b**) before DB data can be read.
- 5) Timer reads only up to 3 digits. If a value input is more than 3 digits, the Timer will regards the highest 3 (decimal) and replace the rest by 0. For example, a value 12345 will be written as 12300 in PLC.
- 6) Counter reads only up to 3 digits. If a value input is more than 3 digits, the Counter will regards the first 3 digits and leave out the rest. For example, a value 12345 will be written as 123 in PLC.

## Siemens S7 300 (without PC adapter)

### HMI Factory Setting:

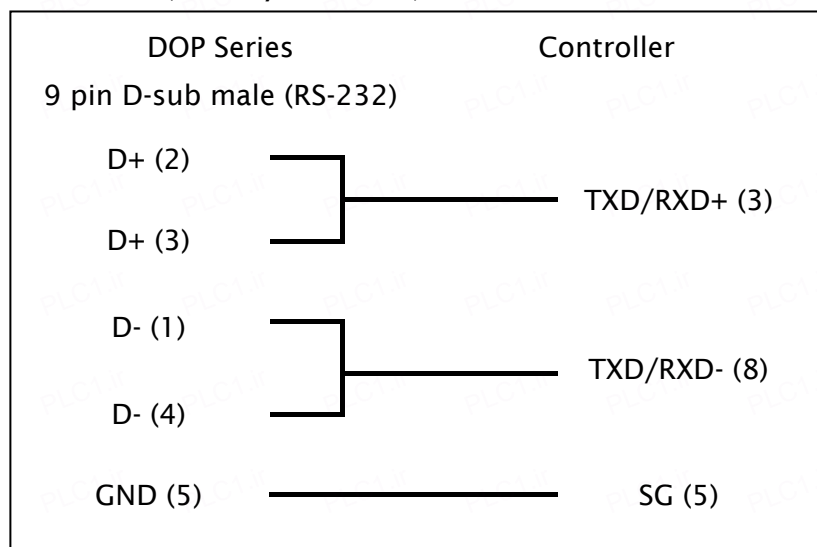
Baud rate: 19200, 8, Even, 1 (RS-485) ([Note1](#))

Controller Station Number: 2([Note2](#), [Note3](#), [Note4](#))

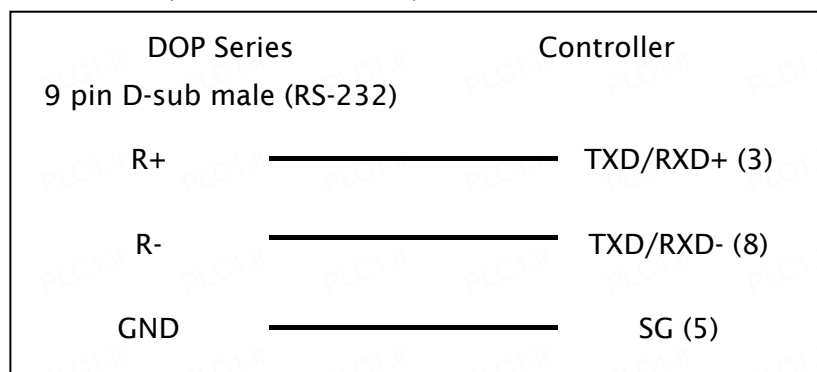
Control Area / Status Area: DBW0/DBW20

### Connection

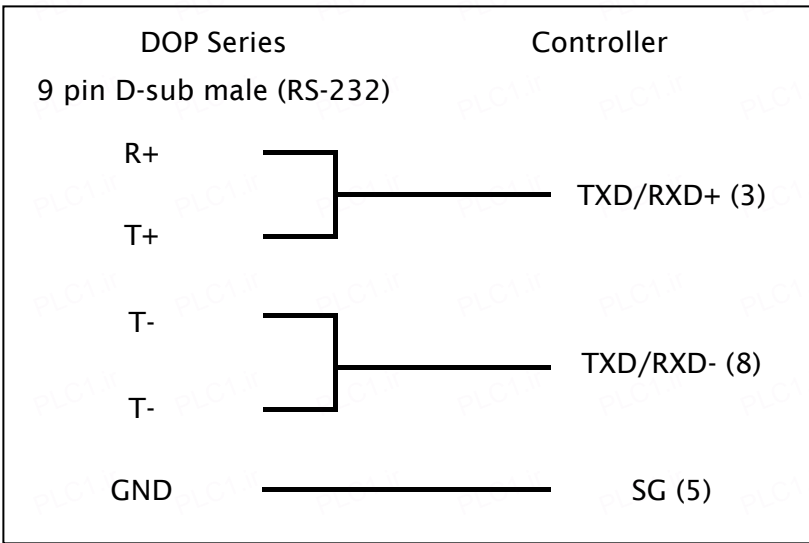
#### a. RS-485 (DOP-A/AE Series)



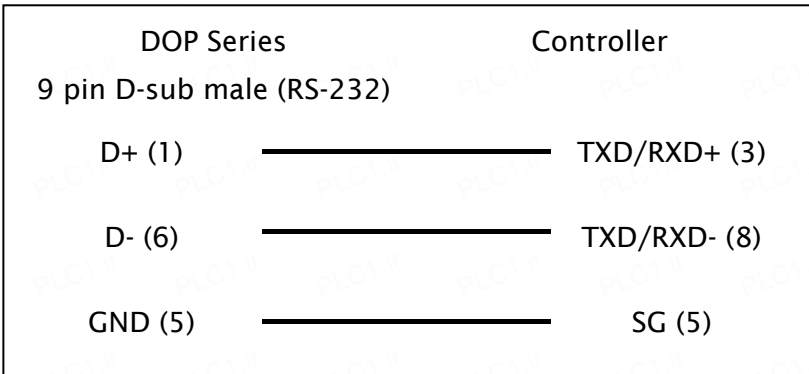
#### b. RS-485 (DOP-AS57 Series)



**c. RS-485 (DOP-AS35/AS38 Series)**



**d. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type          | Format                     | Read/Write Range             | Data Length | Note              |
|---------------|----------------------------|------------------------------|-------------|-------------------|
|               | Word No.(n)<br>Bank No.(m) |                              |             |                   |
| Input Image   | IWn                        | IW0 - IW65534                | Word        |                   |
|               | IDn                        | ID0 - ID65532                | Double Word |                   |
| Output Image  | QWn                        | QW0 - QW65534                | Word        |                   |
|               | QDn                        | QD0 - QD65532                | Double Word |                   |
| Internal Bits | MWn                        | MW0 - MW65534                | Word        |                   |
|               | MDn                        | MD0 - MD65532                | Double Word |                   |
| Data Area     | DBm.DBWn                   | DB1.DBW0 -<br>DB255.DBW65534 | Word        | <a href="#">5</a> |
|               | DBm.DBDn                   | DB1.DBD0 -<br>DB255.DBW65532 | Double Word | <a href="#">5</a> |

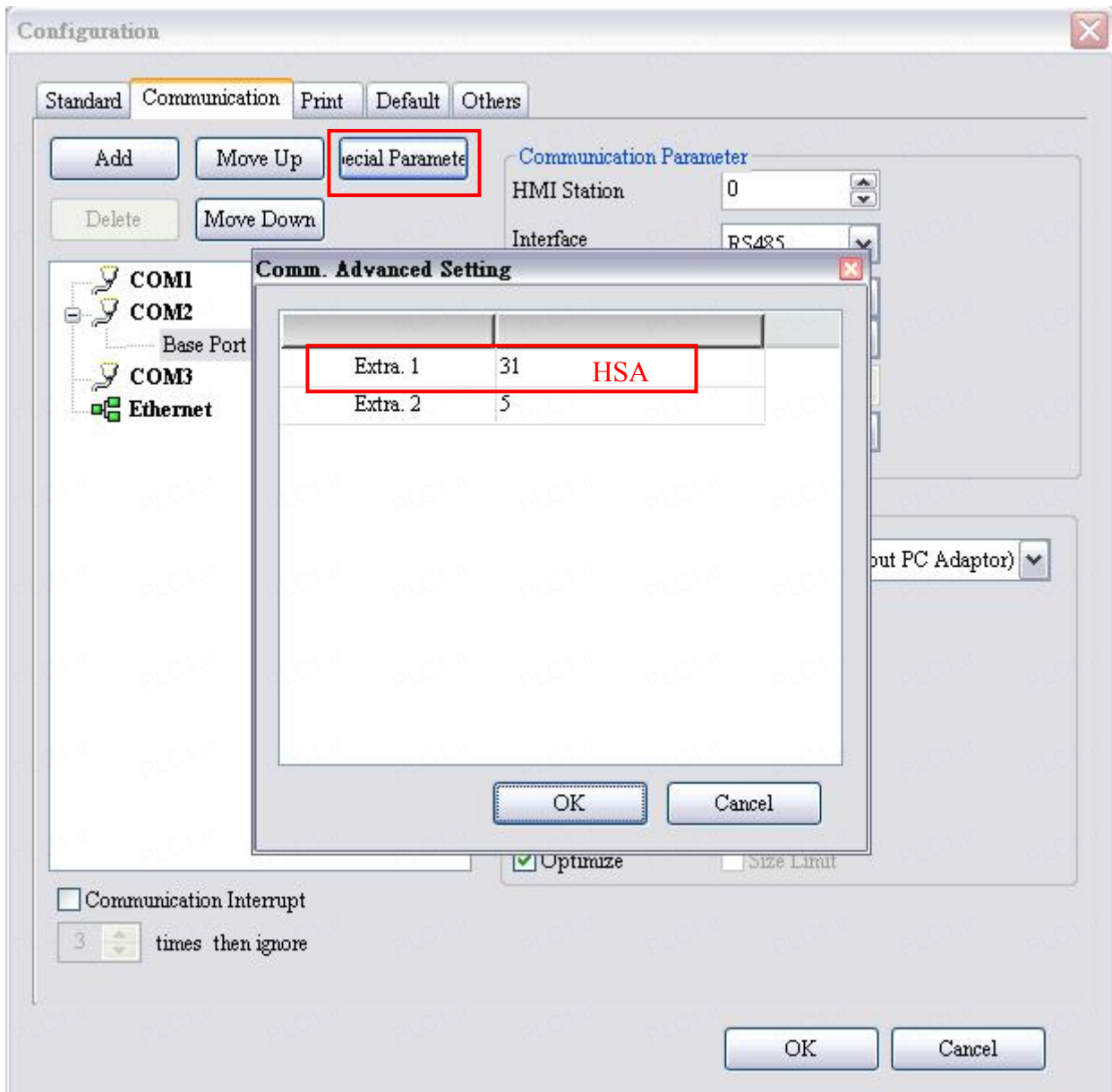
| Type             | Format                     | Read/Write Range | Data Length | Note              |
|------------------|----------------------------|------------------|-------------|-------------------|
|                  | Word No.(n)<br>Bank No.(m) |                  |             |                   |
| Data Area (DB10) | DBWn                       | DBW0 - DBW65534  | Word        |                   |
|                  | DBDn                       | DBD0 - DBD65532  | Double Word |                   |
|                  | VWn                        | VW0 - VW65534    | Word        |                   |
|                  | VDn                        | VD0 - VD65532    | Double Word |                   |
| Timer            | Tn                         | T0 - T65535      | Word        | <a href="#">6</a> |
| Counter          | Cn                         | C0 - C65535      | Double Word | <a href="#">6</a> |

**b. Contacts**

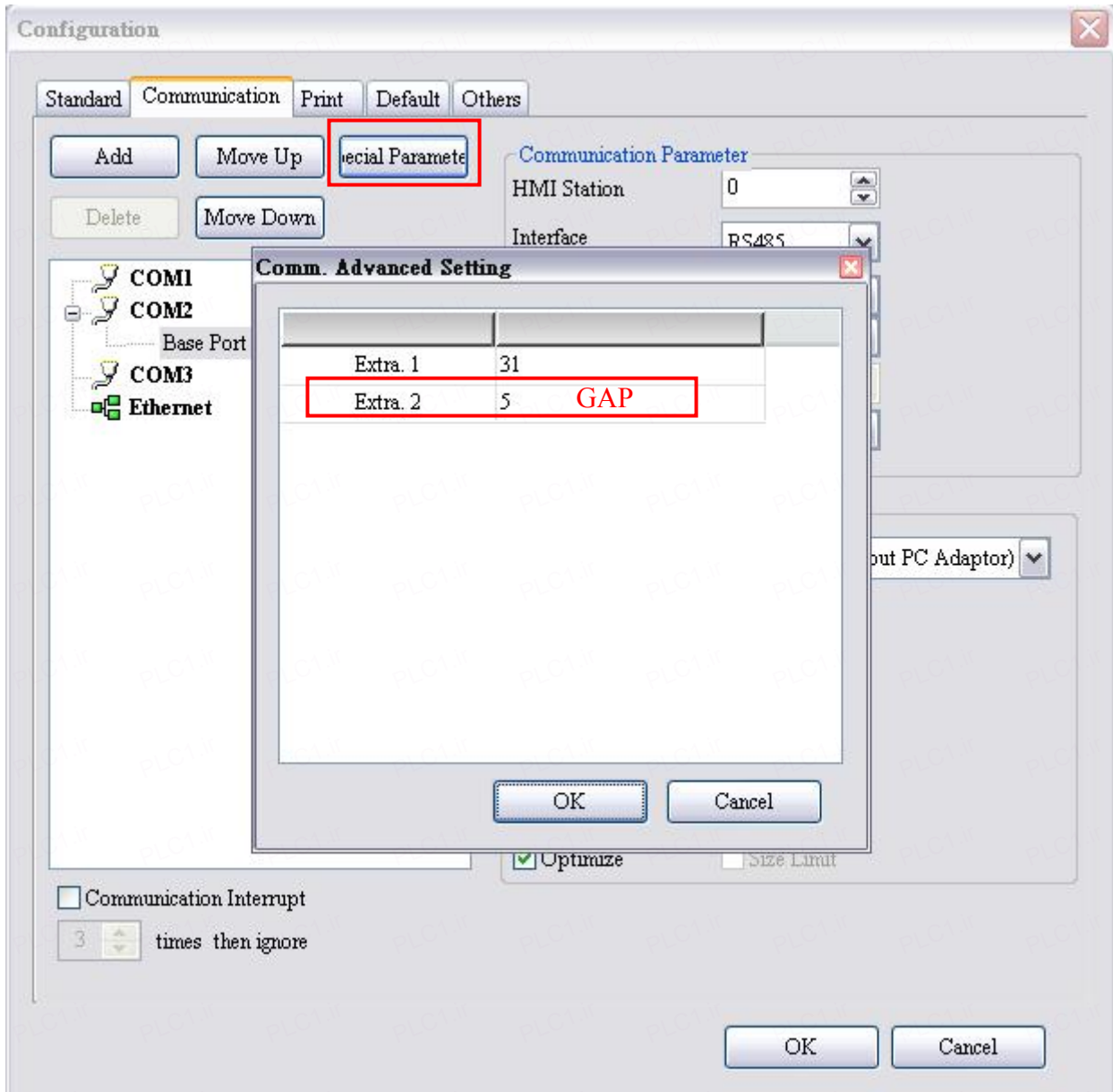
| Type             | Format                                   | Read/Write Range              | Note              |
|------------------|--|-------------------------------|-------------------|
|                  | Word No.(n)<br>Bank No.(m)<br>Bit No.(b) |                               |                   |
| Input Image      | In.b                                     | I0.0 - I65535.7               |                   |
| Output Image     | Qn.b                                     | Q0.0 - Q65535.7               |                   |
| Internal Bits    | Mn.b                                     | M0.0 - M65535.7               |                   |
| Data Area        | DBm.DBXn.b                               | DB1.DBX0.0 - DB255.DBX65535.7 | <a href="#">5</a> |
| Data Area (DB10) | DBXn.b                                   | DBX0.0 - DBX65535.7           |                   |
|                  | Vn.b                                     | V0.0 - V65535.7               |                   |

 **NOTE**

- 1) This communication protocol only supports 19200 bps. Only one COM port can use this communication protocol for one project (it supports COM2 and COM3 ports, but it does not support COM1 port).
- 2) This communication protocol supports multiple HMI to multiple PLC connection. However, it is still recommend connecting a maximum of four HMI to a PLC at a time. A connection of more than four HMI would cause low baud rate and time out error may occur.
- 3) In order to set Highest Station Address(HSA) click Option > Configuration > Communication > Special Parameters> Extra. The default setting for HSA is 31, max. value is 126 and Min. value is 2. The setting for HSA must be in consistent with PLC setting.



- 4) In "Special Parameter", click on "Extra" to update GUF coefficient of GAP in setting 2. The GUF coefficient is the frequency of the HMI checking the existence of controller within the communication network. If coefficient is larger, the frequency of update will be low, in another word, it takes longer waiting time for other devices to join the network. The default setting of GUF is 5, maximum value is 31 and minimum value is 1. If multiple HMI connections are required, it is recommended to lower GUF coefficient in order to shorten the waiting time of newly joined HMI and to prevent the error of "network can not be joined".



- 5) PLC needs to enable DB memory (DBm.DBWn · DBm.DBn · DBm.DBXn.b) before DB data can be read.
- 6) The valid digit of value for Timer is only up to 3 digits. If a value input is more than 3 digits, the Timer will regards the highest 3 (decimal) and replace the rest by 0. For example, a value 12345 will be written as 12300 in PLC.
- 7) The valid digit of value for Counter is to 3 digits. If a value input is more than 3 digits, the Counter will regards the first 3 digits and leave out the rest. For example, a value 12345 will be written as 123 in PLC.

## Taian TP02 PLC

### HMI Factory Setting:

Baud rate: 19200, 7, None, 1  
 Controller Station Number: 1  
 Control Area / Status Area: V1 / V10

### Connection

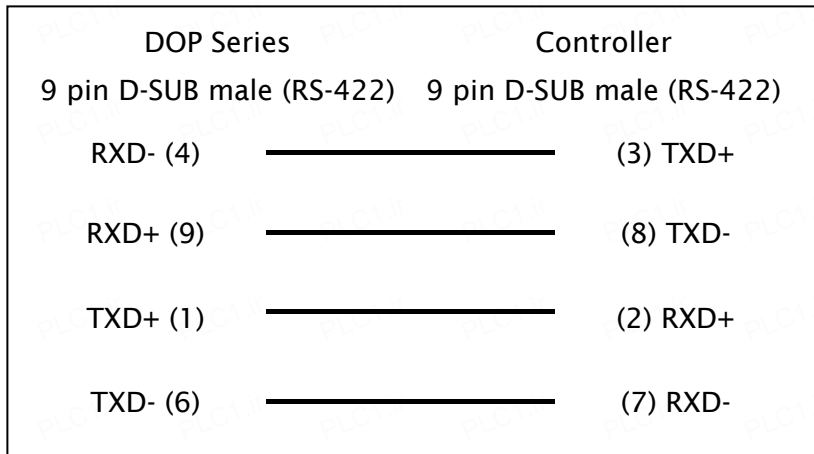
#### a. RS-422 (DOP-A/AE Series)

| DOP Series                |       | Controller                |
|---------------------------|-------|---------------------------|
| 9 pin D-SUB male (RS-422) |       | 9 pin D-SUB male (RS-422) |
| RXD+ (2)                  | ————— | (3) TXD+                  |
| RXD- (1)                  | ————— | (8) TXD-                  |
| TXD+ (3)                  | ————— | (2) RXD+                  |
| TXD- (4)                  | ————— | (7) RXD-                  |

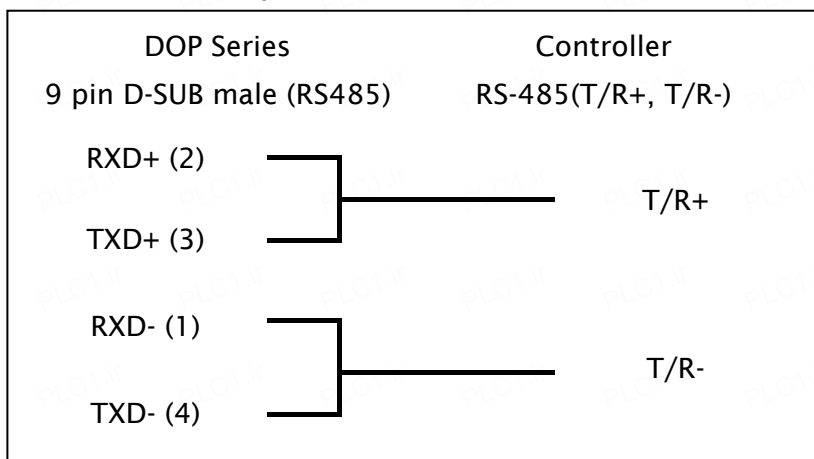
#### b. RS-422 (DOP-AS35/AS38/AS57 Series)

| DOP Series             |       | Controller                |
|------------------------|-------|---------------------------|
| Terminal Block(RS-422) |       | 9 pin D-SUB male (RS-422) |
| R+                     | ————— | (3) TXD+                  |
| R-                     | ————— | (8) TXD-                  |
| T+                     | ————— | (2) RXD+                  |
| T-                     | ————— | (7) RXD-                  |

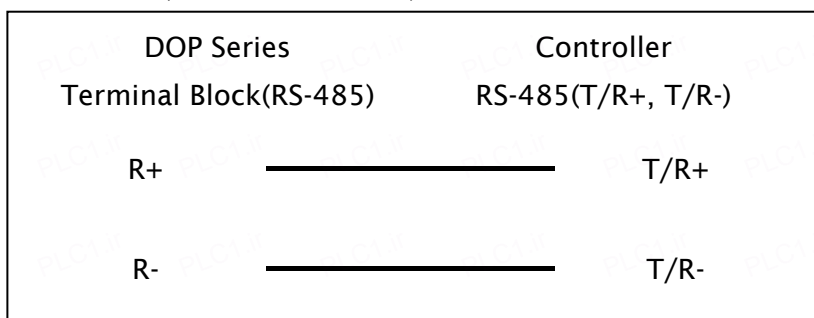
**c. RS-422 (DOP-B Series)**



**d. RS-485 (DOP-A/AE Series)**

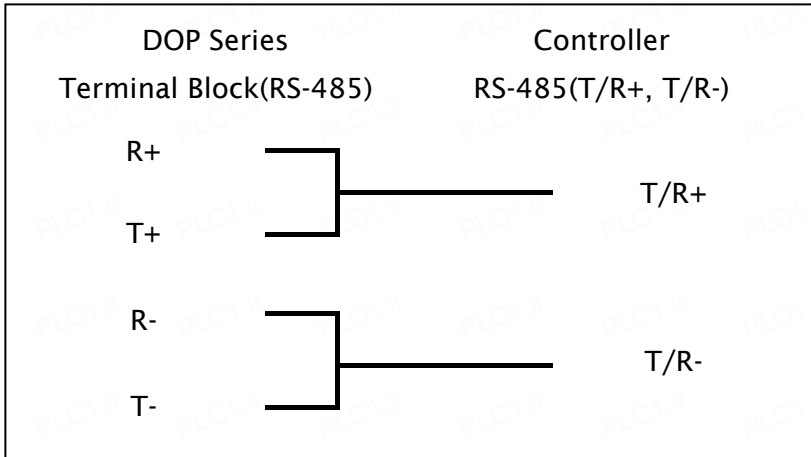


**e. RS-485 (DOP-AS57 Series)**

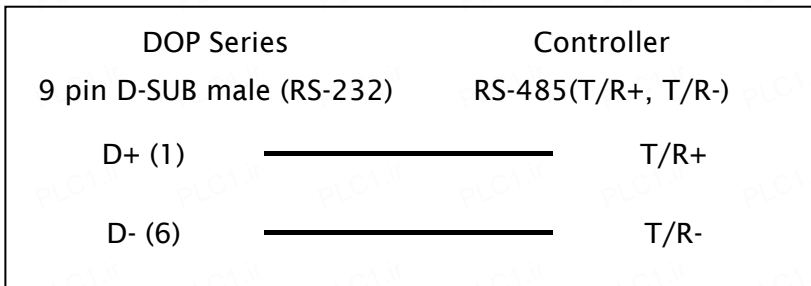




**f. RS-485 (DOP-AS35/AS38 Series)**



**g. RS-485 (DOP-B Series)**



**Definition of PLC Read/Write Address**

**a. Registers**

| Type           | Format      | Read/Write Range | Data Length | Note              |
|----------------|-------------|------------------|-------------|-------------------|
|                | Word No.(n) |                  |             |                   |
| WORD_DEVICE_X  | Xn          | X1 - X384        | Word        | <a href="#">1</a> |
| WORD_DEVICE_Y  | Yn          | Y1 - Y384        | Word        | <a href="#">1</a> |
| WORD_DEVICE_C  | Cn          | C1 - C2048       | Word        | <a href="#">1</a> |
| WORD_DEVICE_V  | Vn          | V1 - V1024       | Word        |                   |
| WORD_DEVICE_D  | Dn          | D1 - D2048       | Word        |                   |
| WORD_DEVICE_WS | WSn         | WS1 - WS128      | Word        |                   |
| WORD_DEVICE_WC | WCn         | WC1 - WC912      | Word        |                   |

**b. Contacts**

| Type          | Format     | Read/Write Range | Note |
|---------------|------------|------------------|------|
|               | Bit No.(b) |                  |      |
| BIT_DEVICE_X  | Xb         | X1 - X384        |      |
| BIT_DEVICE_Y  | Yb         | Y1 - Y384        |      |
| BIT_DEVICE_C  | Cb         | C1 - C2048       |      |
| BIT_DEVICE_SC | SCb        | SC1 - SC128      |      |

 **NOTE**

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- 1) The device address must be the multiple of 16 plus 1.

## Toshiba V Series Computer Link

### HMI Factory Setting:

Baud rate: 9600, 8, Odd, 1

Controller Station Number: 1 ([Note1](#))

Control Area / Status Area: D0 / D10

### Connection

| DOP Series<br>9 pin D-SUB male (RS-422) | Controller<br>25 pin male (RS-422) |
|---|------------------------------------|
| RXD+ (2)                                | (3)TXA                             |
| RXD- (1)                                | (11)TXB                            |
| TXD+ (3)                                | (2)RXA                             |
| TXD- (4)                                | (10)RXB                            |
|   | (4)CTSA                            |
|   | (5)RTXA                            |
|   | (12)CTSB                           |
|   | (13)RTSB-                          |

### Definition of PLC Read/Write Address

#### a. Registers

| Type                     | Format       | Read/Write Range | Data Length | Note                                  |
|--------------------------|--------------|------------------|-------------|---------------------------------------|
|                          | Word No. (n) |                  |             |                                       |
| External Input Register  | XWn          | XW0 - XW8191     | Word        |                                       |
| External Output Register | YWn          | YW0 - YW8191     | Word        |                                       |
| Special Register         | SWn          | SW0 - SW511      | Word        |                                       |
| Auxiliary Register       | RWn          | RW0 - RW4095     | Word        |                                       |
| Data Register            | Dn           | D0 - D4095       | Word        |                                       |
| File Register            | Fn           | F0 - F32767      | Word        | <a href="#">2</a> , <a href="#">3</a> |

**b. Contacts**

| Type                   | Format      | Read/Write Range | Note |
|------------------------|-------------|------------------|------|
|                        | Bit No. (b) |                  |      |
| External Input Device  | Xnb         | X00000 - X8191F  |      |
| External Output Device | Ynb         | Y00000 - Y8191F  |      |
| Special Device         | Snb         | S0000 - X511F    |      |
| Auxiliary Device       | Rnb         | R00000 - R4095F  |      |

 **NOTE**

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- 1) The valid controller station number is in the range of 1~32.
- 2) V2000- S2PU22/ S2PU32/ S2PU72 series do not support File Register.
- 3) V2000- S2PU82, V3000 series support File Register.

## Vigor M Series

### HMI Factory Setting:

Baud rate: 19200, 7, Even, 1  
 Controller Station Number: 0 ([Note1](#))  
 Control Area / Status Area: D0 / D10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

#### PROGRAMMER PORT

| DOP Series           |       | Controller           |
|----------------------|-------|----------------------|
| 9 pin D-SUB (RS-232) |       | USB TAPE A Connector |
| RXD (2)              | ————— | (3) TXD              |
| TXD (3)              | ————— | (2) RXD              |
| GND (5)              | ————— | (4) GND              |

#### COM PORT

| DOP Series           |       | Controller                  |
|----------------------|-------|-----------------------------|
| 9 pin D-SUB (RS-232) |       | 9 pin D-SUB female (RS-232) |
| RXD (2)              | ————— | (3) TXD                     |
| TXD (3)              | ————— | (2) RXD                     |
| GND (5)              | ————— | (5) GND                     |

### Definition of PLC Read/Write Address

#### a. Registers

| Type            | Format      | Read/Write Range | Data Length | Note                                |
|-----------------|-------------|------------------|-------------|-------------------------------------|
|                 | Word No.(n) |                  |             |                                     |
| Input Relay     | Xn          | X0 - X770        | Word        | Multiple of 8,<br><a href="#">2</a> |
| Output Relay    | Yn          | Y0 - Y770        | Word        | Multiple of 8,<br><a href="#">2</a> |
| Auxiliary Relay | Mn          | M0 - M5112       | Word        | <a href="#">2</a>                   |

| Type                         | Format      | Read/Write Range | Data Length | Note              |
|------------------------------|-------------|------------------|-------------|-------------------|
|                              | Word No.(n) |                  |             |                   |
| Special Relay                | Mn          | M9000 - M9248    | Word        | <a href="#">3</a> |
| Step Relay                   | Sn          | S0 - S992        | Word        | <a href="#">2</a> |
| Timer Present Value          | Tn          | T0 - T255        | Word        |                   |
| 16-bit Counter Present Value | Cn          | C0 - C199        | Word        |                   |
| 32-bit Counter Present Value | Cn          | C200 - C255      | Word        |                   |
| Data Register                | Dn          | D0 - D8191       | Word        |                   |
| Special Data Register        | Dn          | D9000 - D9248    | Word        |                   |

**b. Contacts**

| Type            | Format     | Read/Write Range | Note  |
|-----------------|------------|------------------|-------|
|                 | Bit No.(b) |                  |       |
| Input Relay     | Xb         | X0 - X777        | Octal |
| Output Relay    | Yb         | Y0 - Y777        | Octal |
| Auxiliary Relay | Mb         | M0 - M5119       |       |
| Special Relay   | Mb         | M9000 - M9255    |       |
| Step Relay      | Sb         | S0 - S999        |       |
| Timer Contact   | Tb         | T0 - T255        |       |
| Counter Contact | Cb         | C0 - C255        |       |
| Timer Coil      | TCb        | TC0 - TC255      |       |
| Counter Coil    | CCb        | CC0 - CC255      |       |

 **NOTE**

- 1) Controller Station Number :  
0: PROGRAMMER PORT, 1: COM PORT
- 2) The device address must be the multiple of 8.
- 3) The device address must be 9000 plus the multiple of 8.
- 4) VB Series is suitable for this driver.

## **VIPA PLC**

(Same as Siemens S7 300 PLC (with PC Adaptor))

## YOKOGAWA ACE PLC

### HMI Factory Setting:

Baud rate: 9600, 8, Even, 1 (ASCII mode)

Controller Station Number: 1

CPU No (HMI Station Number) : 0 ([Note2](#))

Control Area / Status Area: D1 / D10

### Connection

#### a. RS-232 (DOP-A/AE/AS, DOP-B Series)

It requires specific cable of YOKOGAWA ACE PLC

| DOP Series           |       | Controller            |  |
|----------------------|-------|-----------------------|--|
| 9 pin D-SUB (RS-232) |       | (RS-232 for YOKOGAWA) |  |
| RXD (2)              | ————— | TXD (1)               |  |
| TXD (3)              | ————— | RXD (2)               |  |
| GND (5)              | ————— | GND (5)               |  |

### Definition of PLC Read/Write Address

#### a. Registers

| Type           | Format      | Read/Write Range | Data Length | Note              |
|----------------|-------------|------------------|-------------|-------------------|
|                | Word No.(n) |                  |             |                   |
| WORD_DEVICE_X  | Xn          | X201 - X65464    | Word        | <a href="#">3</a> |
| WORD_DEVICE_Y  | Yn          | Y201 - Y65464    | Word        | <a href="#">3</a> |
| WORD_DEVICE_I  | In          | I1 - I16384      | Word        | <a href="#">4</a> |
| WORD_DEVICE_E  | En          | E1 - E4096       | Word        | <a href="#">4</a> |
| WORD_DEVICE_L  | Ln          | L1 - L65488      | Word        | <a href="#">4</a> |
| WORD_DEVICE_M  | Mn          | M1 - M9984       | Word        | <a href="#">4</a> |
| WORD_DEVICE_TP | TPn         | TP1 - TP3072     | Word        |                   |
| WORD_DEVICE_CP | CPn         | CP1 - CP3072     | Word        |                   |
| WORD_DEVICE_D  | Dn          | D1 - D8192       | Word        |                   |
| WORD_DEVICE_B  | Bn          | B1 - B32768      | Word        |                   |
| WORD_DEVICE_W  | Wn          | W1 - W65499      | Word        |                   |
| WORD_DEVICE_Z  | Zn          | Z1 - Z512        | Word        |                   |
| WORD_DEVICE_V  | Vn          | V1 - V64         | Word        |                   |



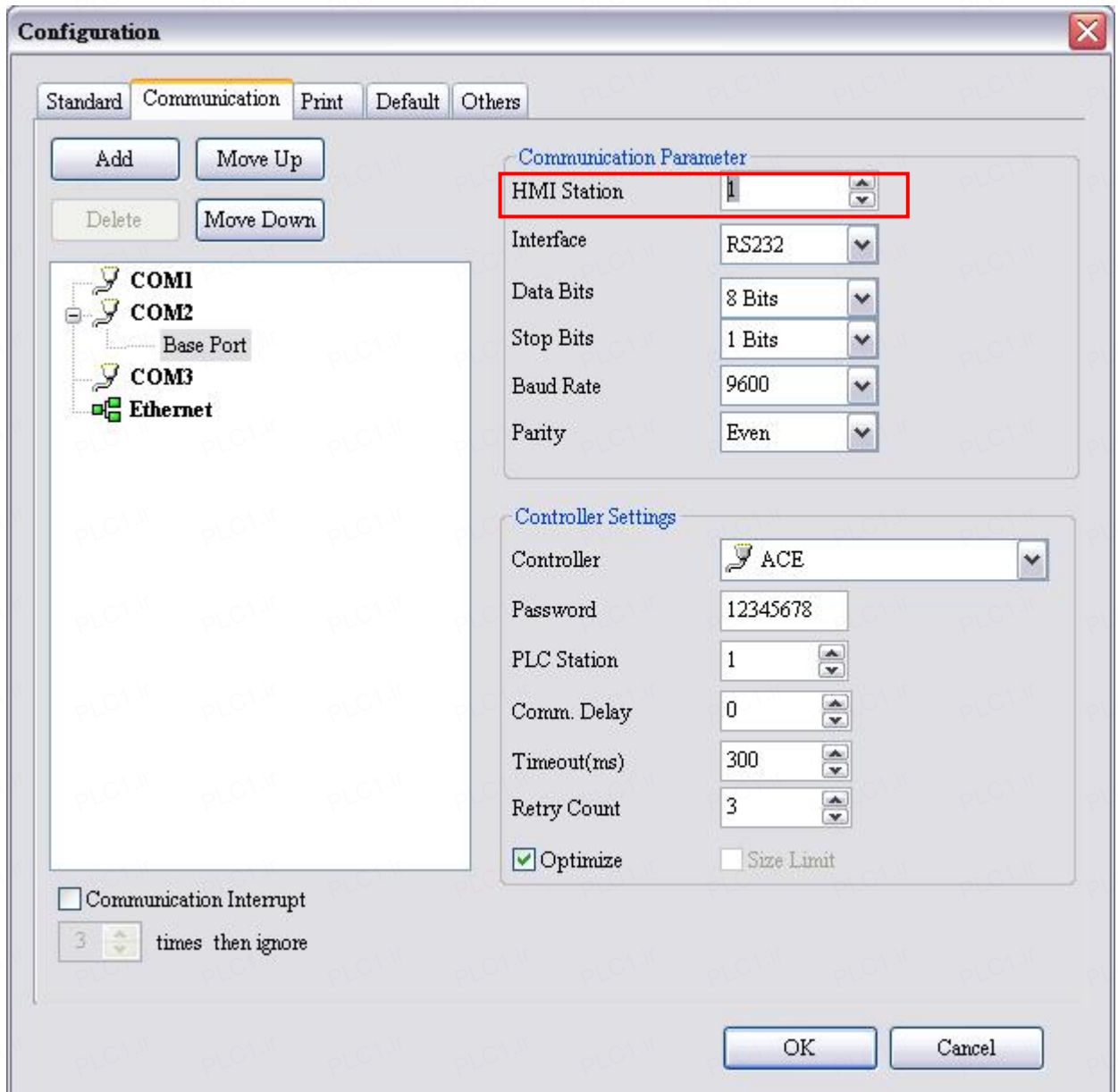
| Type           | Format      | Read/Write Range | Data Length | Note |
|----------------|-------------|------------------|-------------|------|
|                | Word No.(n) |                  |             |      |
| WORD_DEVICE_R  | Rn          | R1 - R4096       | Word        |      |
| WORD_DEVICE_TS | TSn         | TS1 - TS3072     | Word        |      |
| WORD_DEVICE_CS | CSn         | CS1 - CS3072     | Word        |      |

**b. Contacts**

| Type          | Format     | Read/Write Range | Note              |
|---------------|------------|------------------|-------------------|
|               | Bit No.(b) |                  |                   |
| Input Relay   | Xb         | X0 - X777        | Octal             |
| Output Relay  | Yb         | Y0 - Y777        | Octal             |
| BIT_DEVICE_X  | Xb         | X201 - X65464    | <a href="#">3</a> |
| BIT_DEVICE_Y  | Yb         | Y201 - Y65464    | <a href="#">3</a> |
| BIT_DEVICE_I  | Ib         | I1 - I16384      |                   |
| BIT_DEVICE_E  | Eb         | E1 - E4096       |                   |
| BIT_DEVICE_L  | Lb         | L1 - L65488      |                   |
| BIT_DEVICE_M  | Mb         | M1 - M9984       |                   |
| BIT_DEVICE_TU | TUb        | TU1 - TU3072     |                   |
| BIT_DEVICE_CU | CUb        | CU1 - CU3072     |                   |

**NOTE**

- 1) Set the PLC to “not using Checksum” and “not using End character”.
- 2) CPU number in this communication protocol represents HMI Station Number, the setting of CPU number must be greater than 1.



- 3) The last two digits of the device address must be the multiple of 16 + 1 but less than 65.
- 4) The device address must be the multiple of 16 + 1.