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*We reserve the right to change the information in this manual without prior notice

DELTA

DOP Series HMI Connection Manual

DELTA ELECTRONICS, INC.

RusAutomation

DOP Series
HMI Connection Manual

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

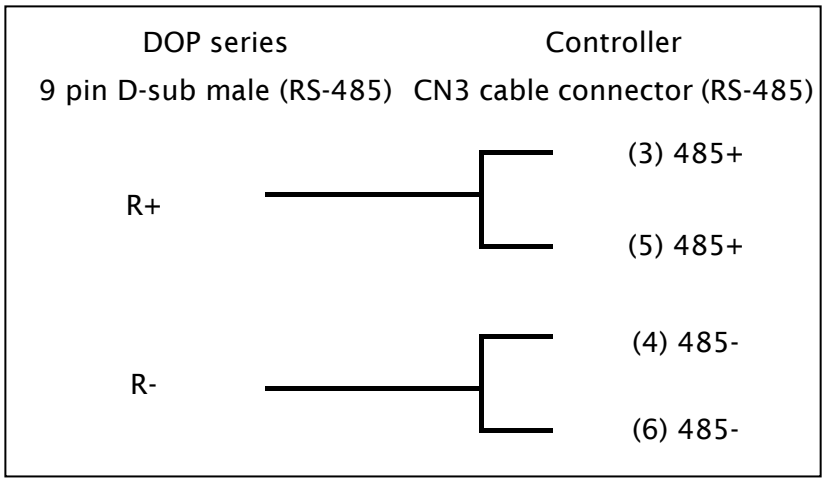
d. RS-422 (DOP-B Series)

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

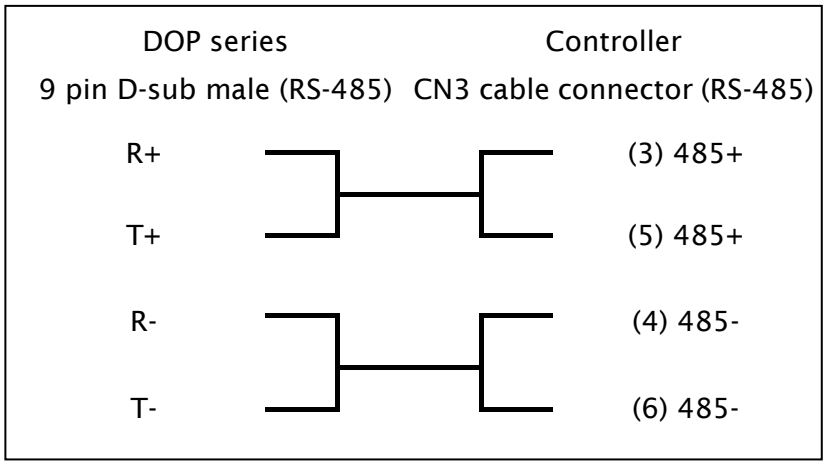
e. RS-485 (DOP-A/AE Series)

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

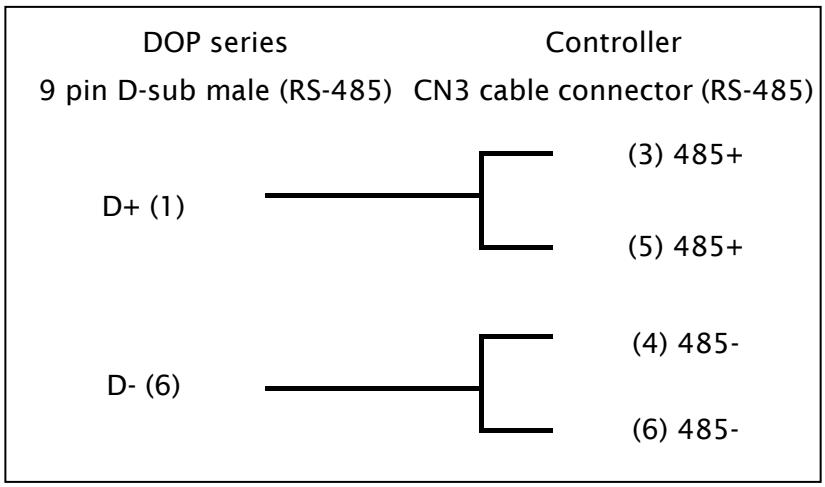
f. RS-485 (DOP-AS57 Series)



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

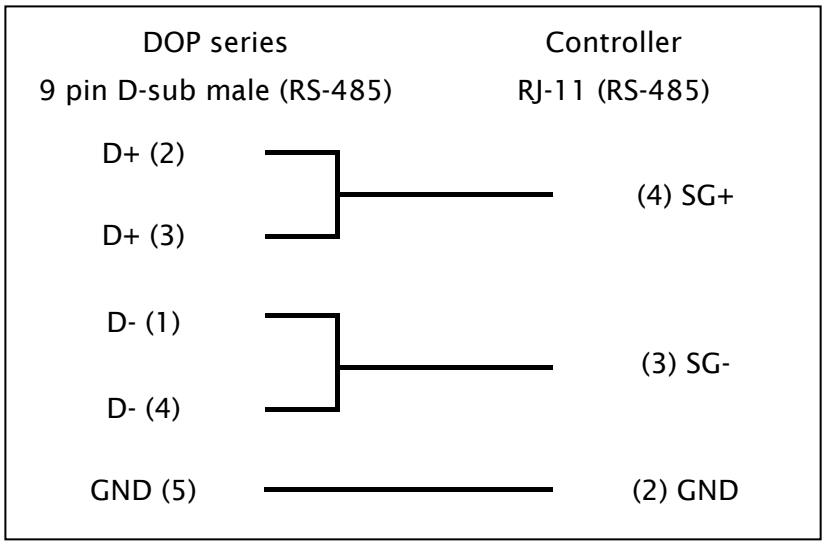


h. RS-485 (DOP-B Series)

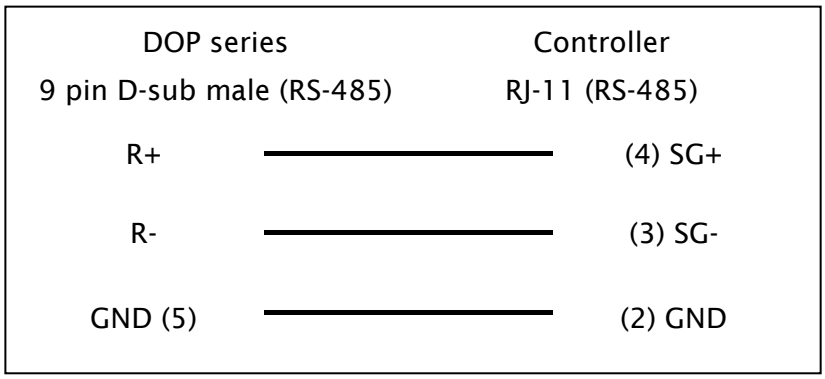


Delta AC Motor Dirve

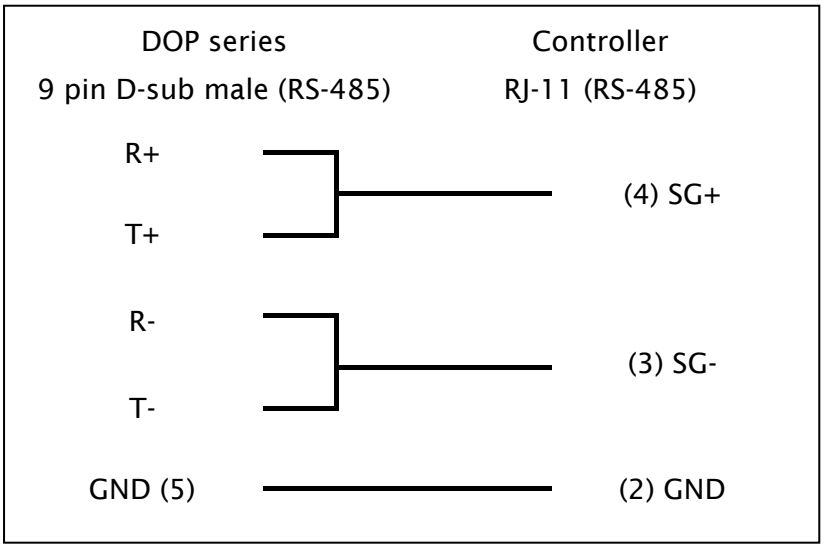
a. RS-485 (DOP-A/AE Series)



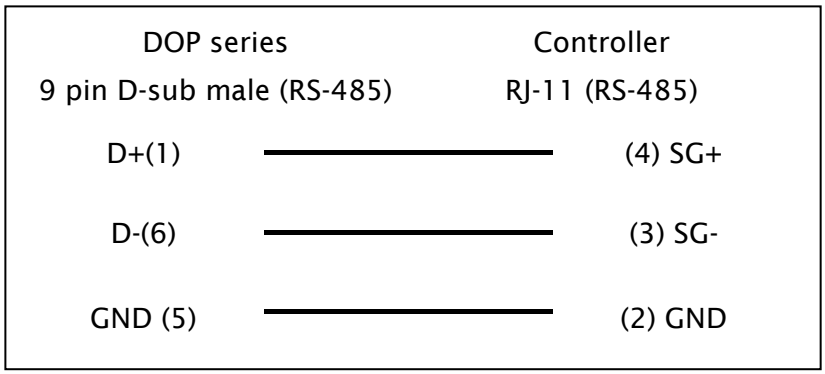
b. RS-485 (DOP-AS57 Series)



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

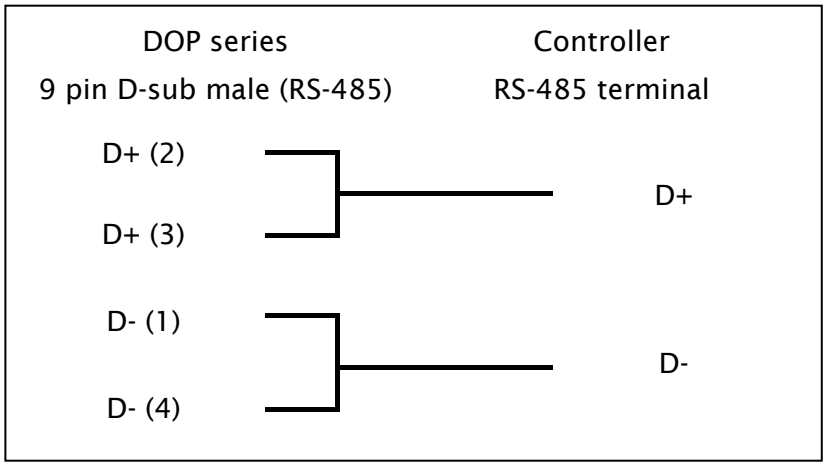


d. RS-485 (DOP-B Series)

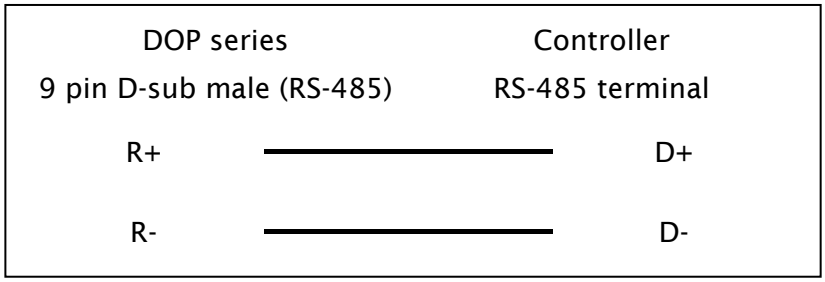


Temperature Controller

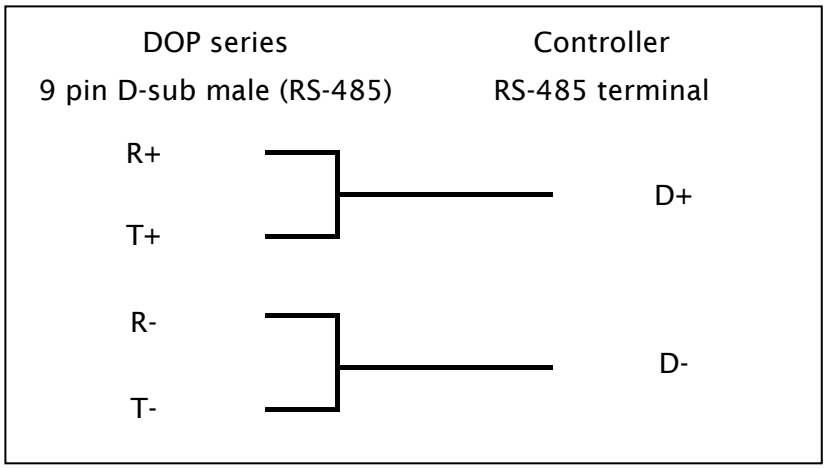
a. RS-485 (DOP-A/AE Series)



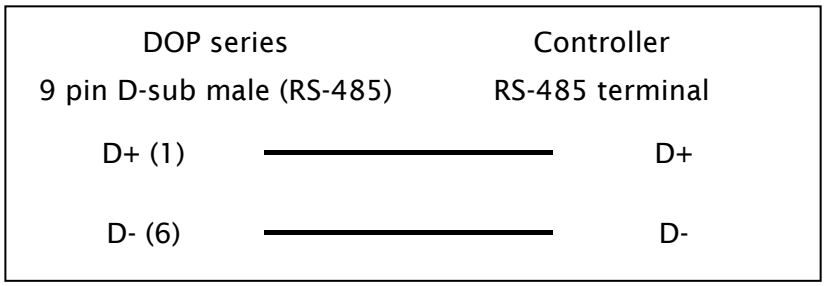
b. RS-485 (DOP-AS57 Series)



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_X**n	**PLC_X**0 – **PLC_X**360	Word	Octal, 1
PLC Communication Address Y	**PLC_Y**n	**PLC_Y**0 – **PLC_Y**360	Word	Octal, 1
PLC Communication Address M	**PLC_M**n	**PLC_M**0 – **PLC_M**1520, **PLC_M**1536 – **PLC_M**4080	Word	1
PLC Communication Address S	**PLC_S**n	**PLC_S**0 – **PLC_S**1008	Word	1

b. Contacts

Type	Format	Read/Write Range	Note
	Word No.(n) 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.b	**TEMP_CTRL**-0.0 – **TEMP_CTRL**-6000.F	Hexadecimal
Servo Digital Input	**SERVO_DI**-b	**SERVO_DI**-1 – **SERVO_DI**-8	2
Servo Digital Output	**SERVO_DO**-b	**SERVO_DO**-1 – **SERVO_DO**-5	2
PLC Communication Address X	**PLC_X**b	**PLC_X**0 – **PLC_X**377	Octal
PLC Communication Address Y	**PLC_Y**b	**PLC_Y**0 – **PLC_Y**377	Octal
PLC Communication Address M	**PLC_M**b	**PLC_M**0 – **PLC_M1**535, **PLC_M**1536 – **PLC_M**4095	
PLC Communication Address S	**PLC_S**b	**PLC_S**0 – **PLC_S1**023	
PLC Communication Address T	**PLC_T**b	**PLC_T**0 – **PLC_T**255	
PLC Communication Address C	**PLC_C**b	**PLC_C**0 – **PLC_C**255	
Temperature Controller Bit Communication Address	**TEMP_CTRLB**-b	**TEMP_CTRLB**-800 – **TEMP_CTRLB**-8FF	Hexadecimal
Discrete Outputs	**RWB**-b	**RWB**-0 – **RWB**-FFFF	Hexadecimal
Discrete Inputs	**RB**-b	**RB**-0 – **RB**-FFFF	Hexadecimal
Discrete Outputs	**B**b	**B**1 – **B**10000	
Discrete Inputs	**B**b	**B**10001 – **B**20000	

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:

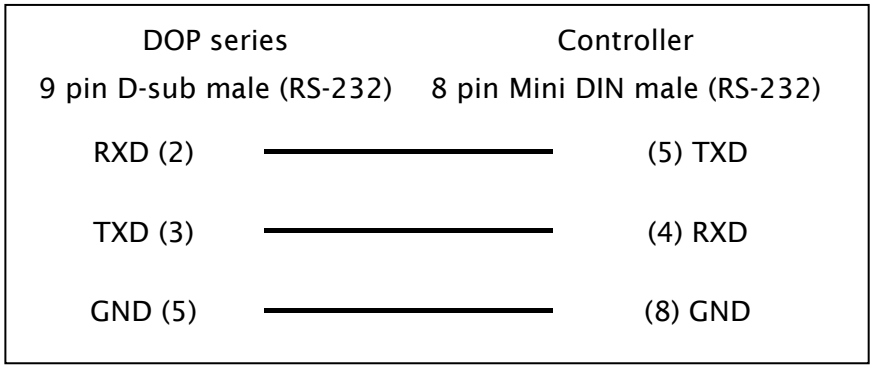
Baud Rate: 9600. 7. Even. 1

Controller Station Number: 1

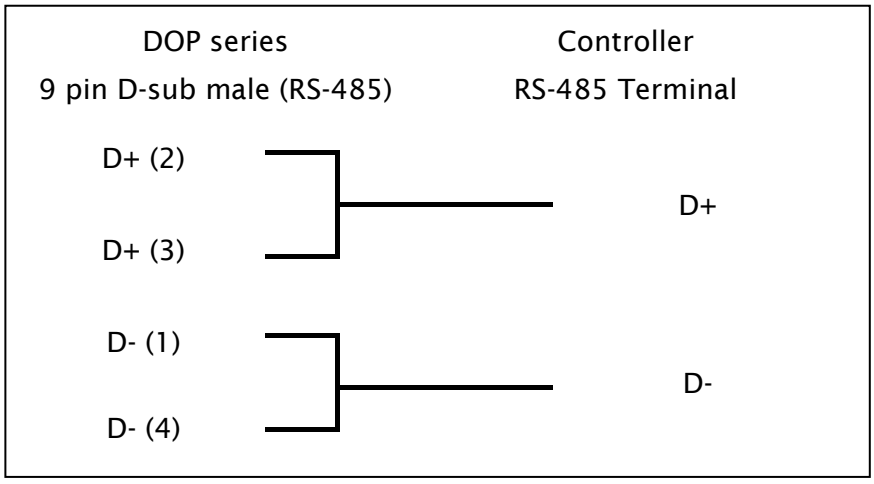
Control Area / Status Area: D0/D10

Connection

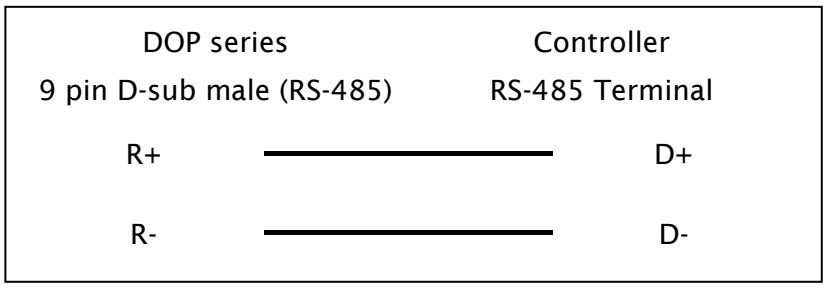
a. RS-232 (DOP-A/AE/AS, DOP-B Series)



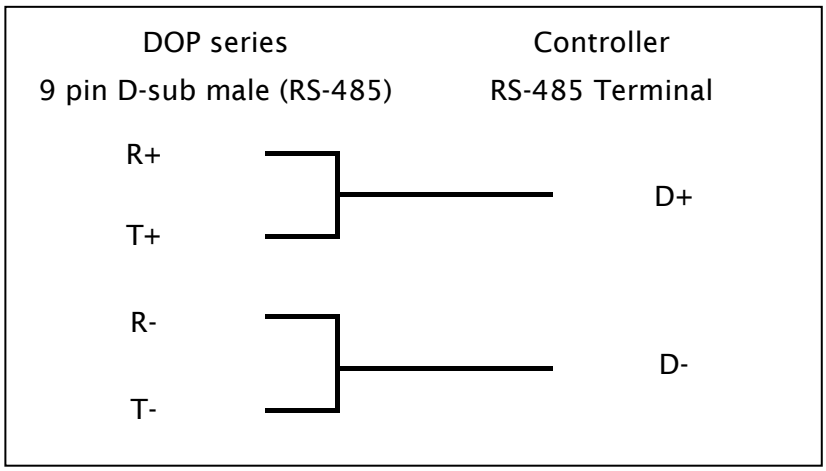
b. RS-485 (DOP-A/AE Series)



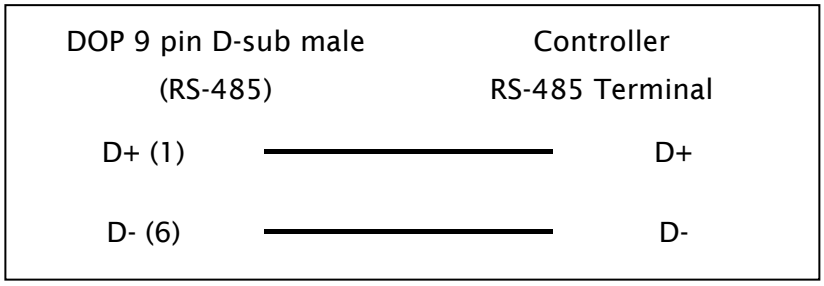
c. RS-485 (DOP-AS57 Series)



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	**X**n	**X**0 – **X**360	Word	Octal, 1
Y_Data	**Y**n	**Y**0 – **Y**360	Word	Octal, 1
M_Data	**M**n	**M**0 – **M**1520, **M**1536 – **M**4080	Word	1
S_Data	**S**n	**S**0 – **S**1008	Word	1
T_Register	**T**n	**T**0 – **T**255	Word	
C_Register	**C**n	**C**0 – **C**199	Word	
D_Register	**D**n	**D**0 – **D**9999	Word	
HC_Register	**C**n	**C**200 – **C**255	Word	

b. Contacts

Type	Format	Read/Write Range	Note
	Bit No. (b)		
X_Data	**X**b	**X**0 – **X**377	
Y_Data	**Y**b	**Y**0 – **Y**377	
M_Data	**M**b	**M**0 – **M**4080	
S_Data	**S**b	**S**0 – **S**1023	
T_Coil	**T**b	**T**0 – **T**255	
C_Coil	**C**b	**C**0 – **C**255	

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	**X**n	**X**0 – **X**360	Word	**Octal, 1**
Y_Data	**Y**n	**Y**0 – **Y**360	Word	**Octal, 1**
M_Data	**M**n	**M**0 – **M**1520, **M**1536 - **M**4080	Word	**1**
S_Data	**S**n	**S**0 – **S**1008	Word	**1**
T_Register	**T**n	**T**0 – **T**255	Word	
C_Register	**C**n	**C**0 – **C**199	Word	
D_Register	**D**n	**D**0 – **D**9999	Word	
HC_Register	**C**n	**C**200 – **C**255	Word	

b. Contacts

Type	Format	Read/Write Range	Note
	Bit No. (b)		
X_Data	**X**b	**X**0 – **X**377	
Y_Data	**Y**b	**Y**0 – **Y**377	
M_Data	**M**b	**M**0 – **M**4080	
S_Data	**S**b	**S**0 – **S**1023	
T_Coil	**T**b	**T**0 – **T**255	

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	**BR**-0 – **BR**-63	**W4**00001 – **W4**00064
Timer Register	**T**-0 – **T**-15	**W4**05633 – **W4**05648
Counter Register	**C**-0 – **C**-15	**W4**07681 – **W4**07696
I/O Module Control Register	**RCR**-0 – **RCR**-399	**W4**12289 – **W4**12689
Input Relay	**RX**-0 – **RX**-255	**B1**01025 – **B1**01280
Output Relay	**RY**-0 – **RY**-255	**B0**01281 – **B0**01536
Timer Relay	**T**-0 – **T**-15	**B0**05633 – **B0**05648
R Relay	**R**-0 – **R**-15	**B0**06401 – **B0**06416
Counter Relay	**C**-0 – **C**-15	**B0**07681 – **B0**07696

Delta Solectria Inverter

HMI Factory Setting:

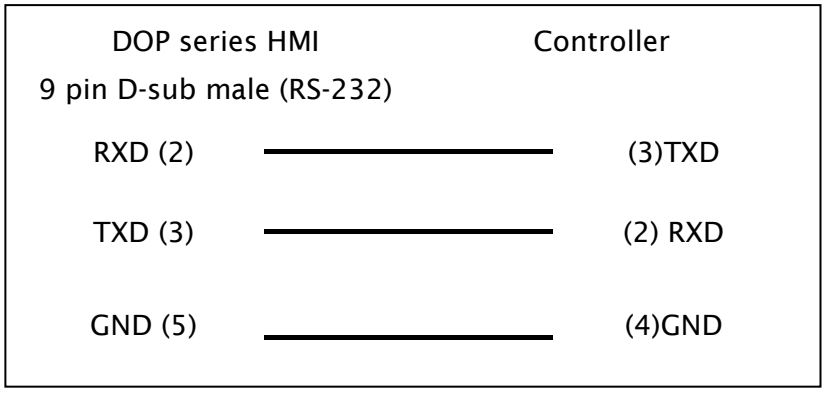
Baud Rate: 19200. 8. None. 1

Controller Station Number: 1

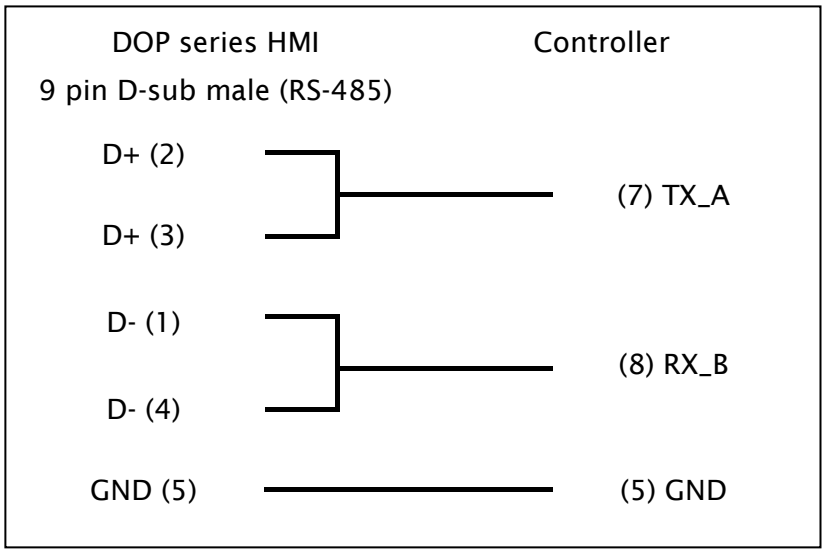
Control Area / Status Area: None/ None

Connection

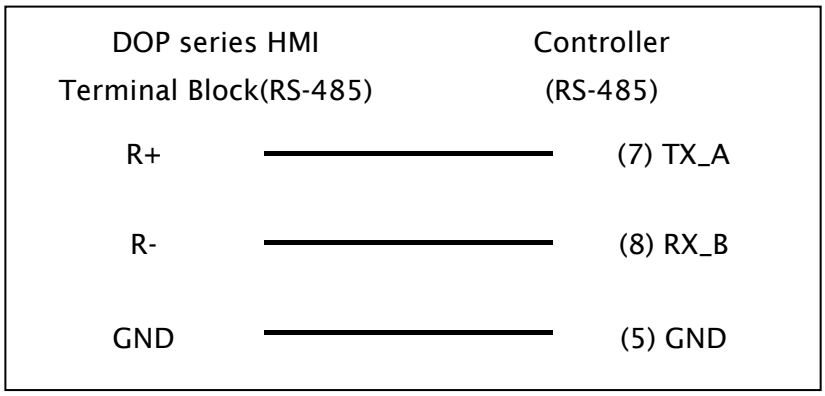
a. RS-232 (DOP-A/AE/AS, DOP-B Series)



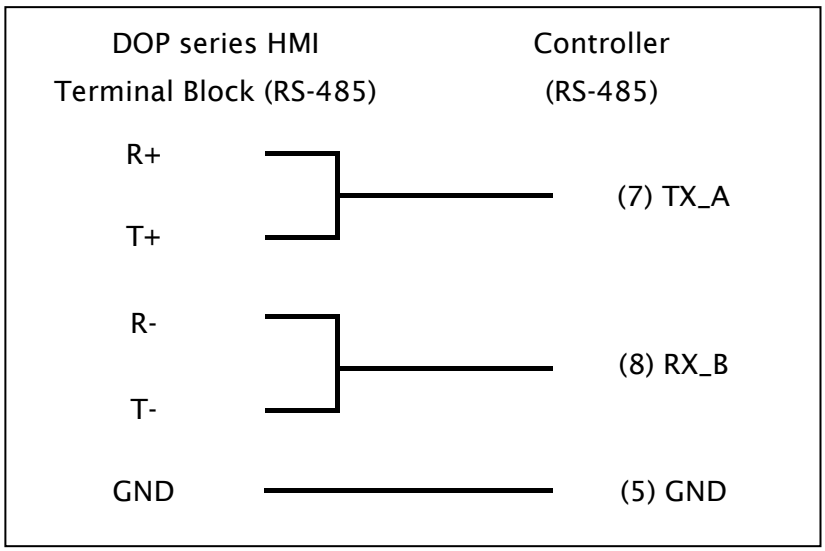
b. RS-485 (DOP-A/AE Series)



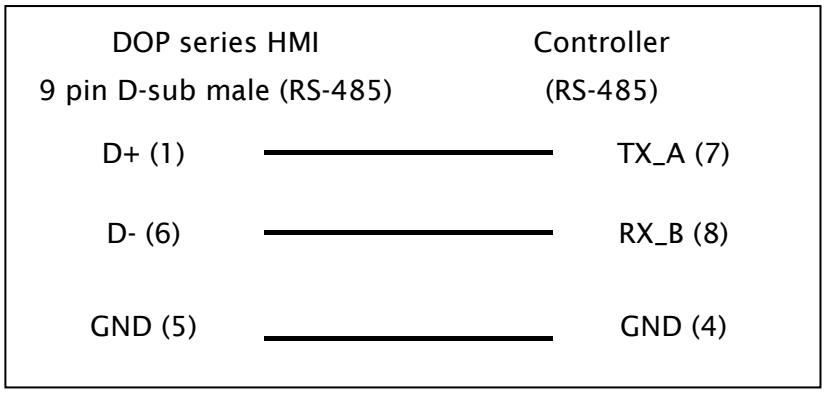
c. RS-485 (DOP-AS57 Series)



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) sub-command(m)			
Command Group	**CMDB**n:m	**CMDB**1:1 – **CMDB**255:127	Byte	
Command Group	**CMDW**n:m	**CMDW**1:1 – **CMDW**255:127	Word	
Command Group	**CMDD**n:m	**CMDD**1:1 – **CMDD**255:127	Double Word	

b. Contacts

Type	Format	Read/Write Range	Note
	Command(n) Sub-Command(m) Bit No.(b)		
Command Group	**CMDB**n:m/b	**CMDB**1:1/0 – **CMDB**255:127/7	
Reset Group Data	**RST**b	**RST**1 – **RST**255	

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.