

OKY DVC Driver

Supported version

TOP Design Studio

V1.0 or higher



CONTENTS

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

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

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Select a TOP model and an external device.

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Describes how to set the TOP communication.

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Describes how to set up communication for external devices.

5. Cable table [Page 10](#)

Describes the cable specifications required for connection.

6. Supported addresses [Page 11](#)

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

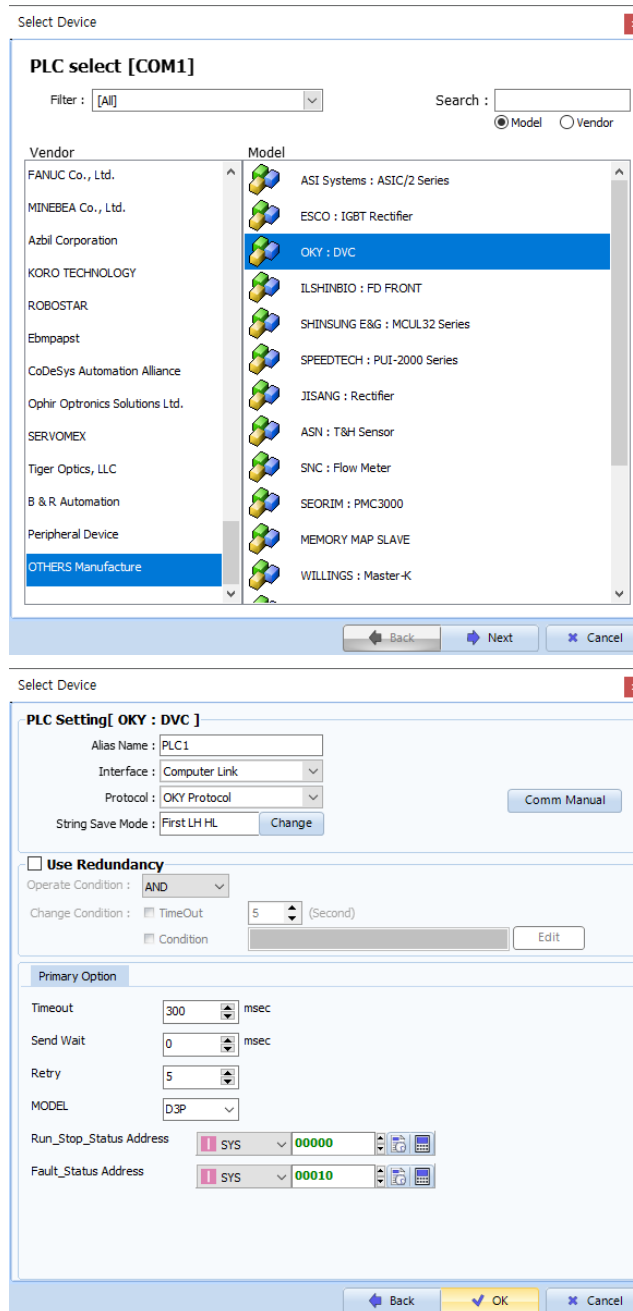
1. System configuration

The system configuration of TOP and "OKY DVC" is as follows.

Series	CPU	Link I/F	Communication method	Communication setting	Cable
OKY DVC	-	-	RS-232C	3. TOP communication setting 4. External device setting	5. Cable table

2. External device selection

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



Settings		Contents					
TOP	Model	Check the TOP display and process to select the touch model.					
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "OTHERS Manufacture".					
	PLC	Select an external device to connect to TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: black; color: white;">Model</th> <th style="background-color: black; color: white;">Interface</th> <th style="background-color: black; color: white;">Protocol</th> </tr> </thead> <tbody> <tr> <td>OKY DVC</td> <td>Computer Link</td> <td>OKY Protocol</td> </tr> </tbody> </table> <p>Please check the system configuration in Chapter 1 to see if the external device you want to connect is a model whose system can be configured.</p>	Model	Interface	Protocol	OKY DVC	Computer Link
Model	Interface	Protocol					
OKY DVC	Computer Link	OKY Protocol					

3. TOP communication setting

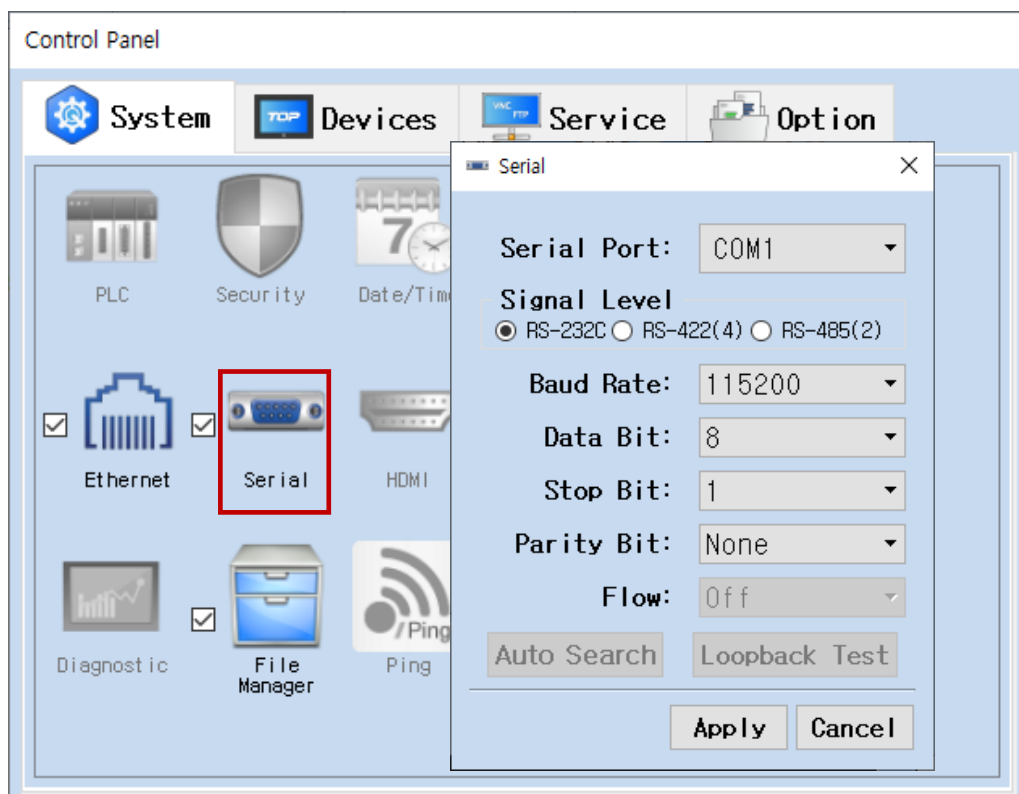
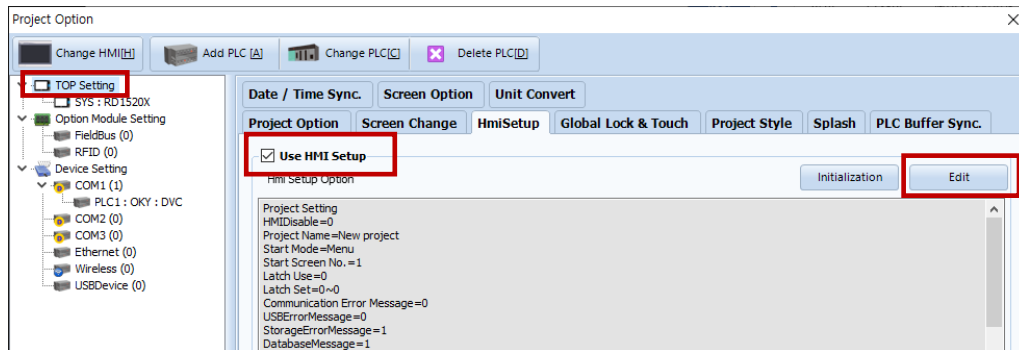
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project properties > TOP settings] → [Project option > Check "Use HMI settings" > Edit > Serial]

– Set the TOP communication interface in TOP Design Studio.



Items	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	
Baud Rate		115200	
Data Bit		8	
Stop Bit		1	
Parity Bit		None.	

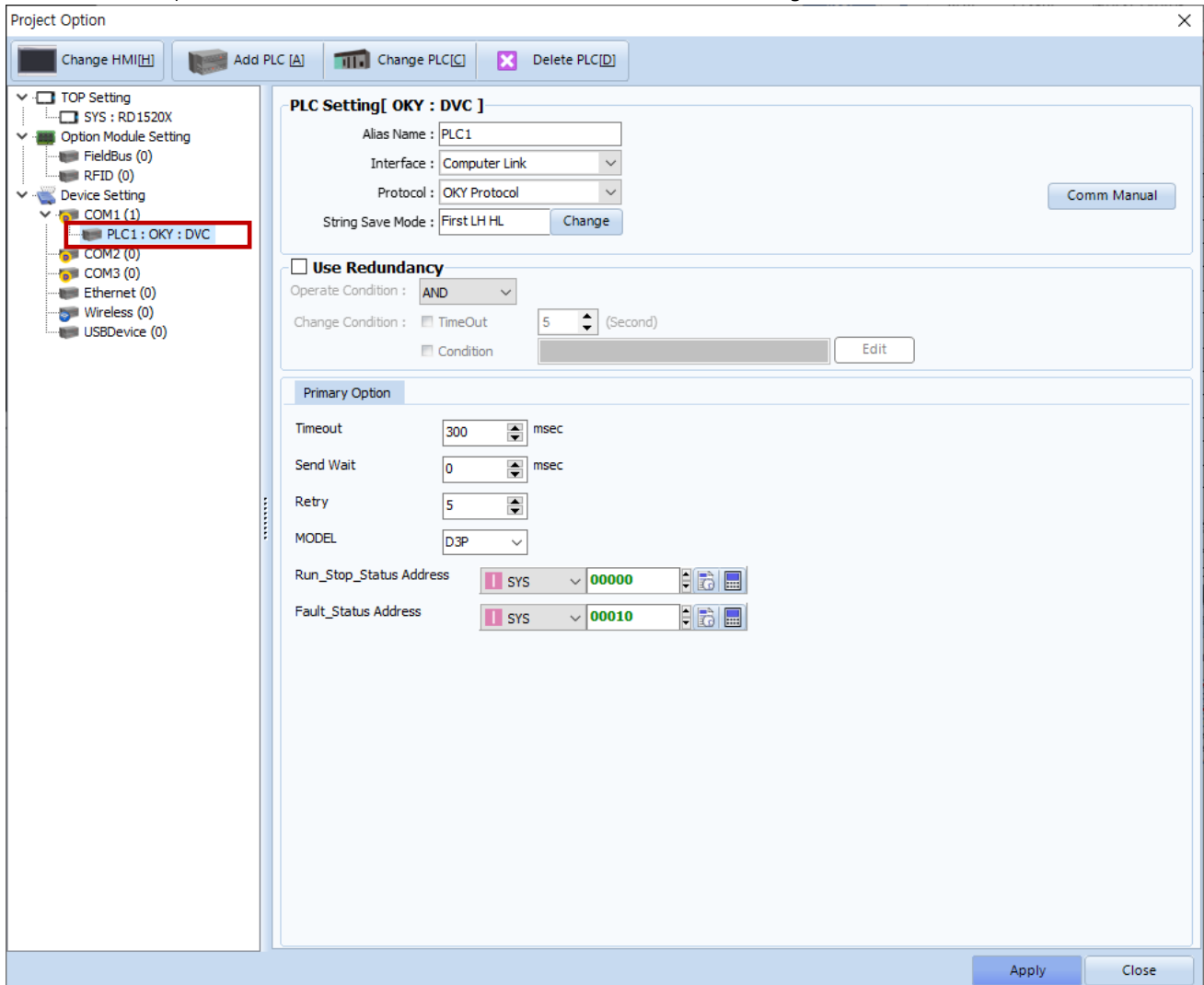
* The above settings are examples recommended by the company.

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

(2) Communication option setting

■ [Project > Project properties > PLC settings > COM > "PLC1 : OKY-DVC"]

– Set the options of the MELSERVO J4 Series communication driver in TOP Design Studio.



Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External device selection".
Protocol	Select "OKY Protocol".	
MODEL	Select a corresponding model.	
Run_Stop_Status_Address	Set the Run-Stop status address.	
Fault_Status_Address	Set the Fault status address.	

3.2. Communication setting in TOP

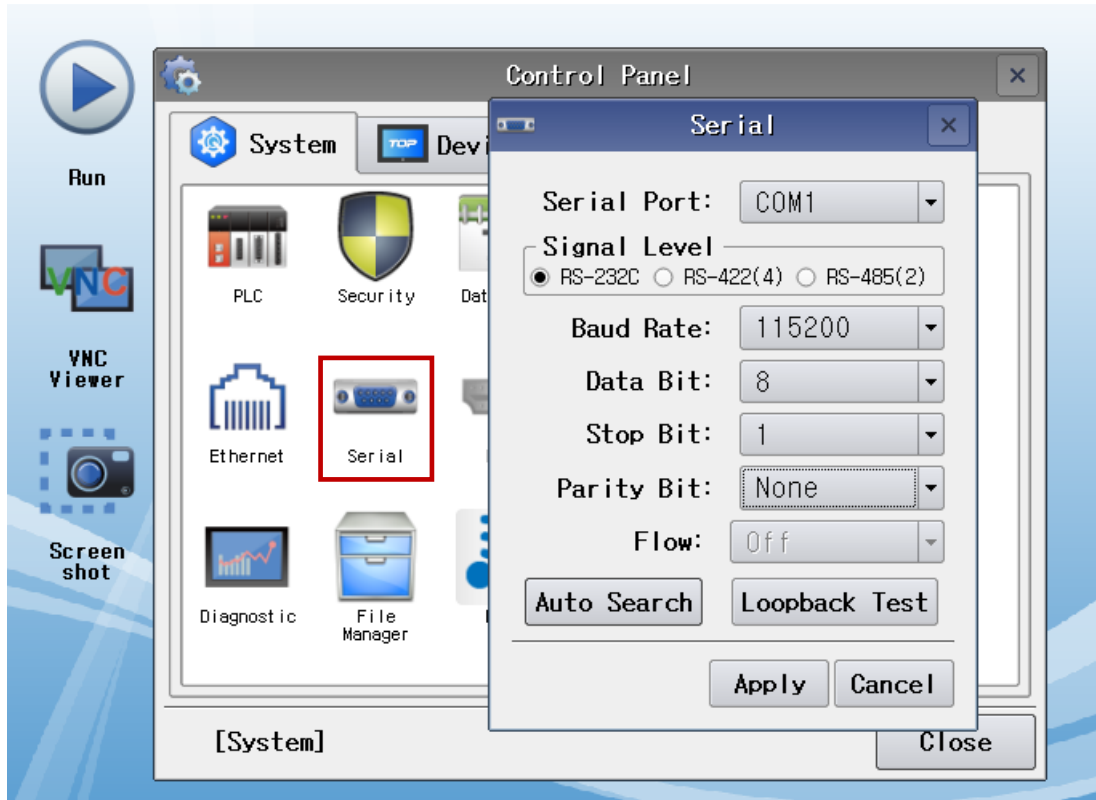
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

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



(1) Communication interface setting

- [Main screen > Control panel > Serial]



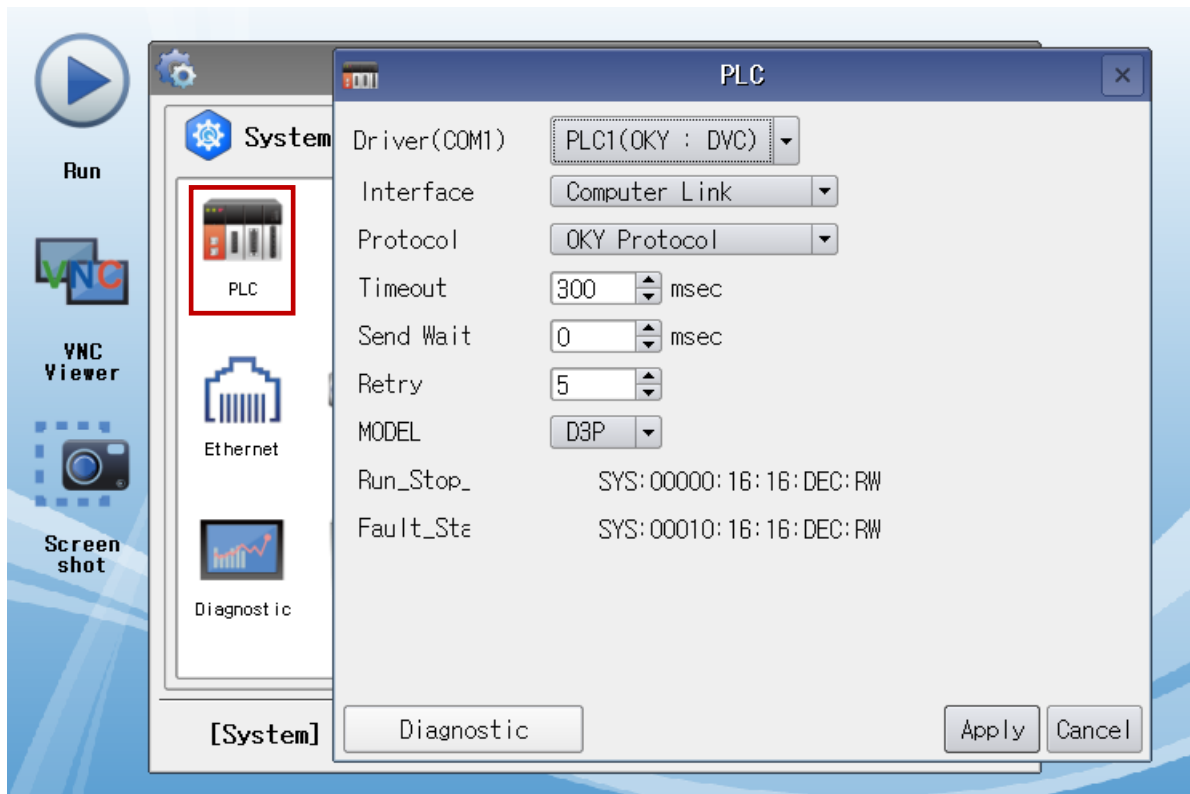
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	
Baud Rate		115200	
Data Bit		8	
Stop Bit		1	
Parity Bit		None.	

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

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

(2) Communication option setting

■ [Main screen > Control panel > PLC]



Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External device selection" .
Protocol	Select "OKY Protocol".	
MODEL	Select a corresponding model.	
Run_Stop_Status_Address	Set the Run-Stop status address.	
Fault_Status_Address	Set the Fault status address.	

3.3 Communication diagnostics

- Check the interface setting status between the TOP and an external device.
 - Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
 - Check if the COM port settings you want to use in [Control Panel > Serial] are the same as those of the external device.
- Diagnosis of whether the port communication is normal or not
 - Touch "Communication diagnostics" in [Control Panel > PLC].
 - The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

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

■ Communication diagnostics sheet

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

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

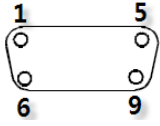
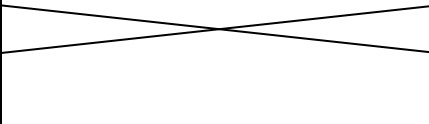
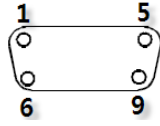
4. External device setting

Refer to the vendor's user manual to identically configure the communication settings of the external device to that of the TOP.

5. Cable table

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

■ RS232C (1:1 connection)

TOP COM			Cable connection	External device		
Pin arrangement* <i>Note 1)</i>	Signal name	Pin number		Pin number	Signal name	Pin arrangement* <i>Note 1)</i>
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	CD	1		1	CD	 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>
	RD	2		2	RD	
	SD	3		3	SD	
	DTR	4		4	DTR	
	SG	5	5	5	SG	
	DSR	6	6	6	DSR	
	RTS	7	7	7	RTS	
	CTS	8	8	8	CTS	
		9	9	9		

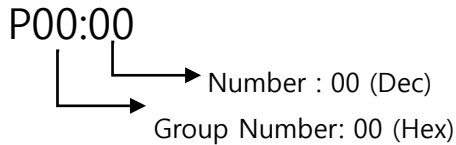
**Note 1)* The pin arrangement is as seen from the connecting side of the cable connection connector.

6. Supported addresses

The devices available in TOP are as follows:

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

Parameter List(P Device)



<Monitoring Group : 01H>

- Read Only
- Word Data

- (1) Input Voltage(RS)
- (2) Input Voltage(ST)
- (3) Input Voltage(TR)
- (4) Input Current(R)
- (5) Input Current(S)
- (6) Input Current(T)
- (7) Output Voltage(UV)
- (8) Output Voltage(VW)
- (9) Output Voltage(WU)
- (10) Output Current(U)
- (11) Output Current(V)
- (12) Output Current(W)
- (13) Inverter Voltage(UV)
- (14) Inverter Voltage(VW)
- (15) Inverter Voltage(WU)
- (16) Inverter Current(U)
- (17) Inverter Current(V)
- (18) Inverter Current(W)
- (19) Rectifier Current(R): DVC not applied
- (20) Rectifier Current(S): DVC not applied
- (21) Rectifier Current(T): DVC not applied
- (22) DC-Link Voltage(chargeVoltage)
- (23) Input Apparent Power
- (24) Input Active Power
- (25) Input Reactive Power
- (26) Input Power Factor
- (27) Output Apparent Power
- (28) Output Active Power
- (29) Output Reactive Power

- (30) Output Power Factor
- (31) Heat Sink Temperature(Inverter)
- (32) Heat Sink Temperature(Converter)
- (33) Frequency
- ~~(34) M_RUN_STATUS_2 //2016.6.27 deleted~~
- (34) Output Energy Low Byte //2016.6.27 added
- (35) Output Energy High Byte //2016.6.27 added

(51) DI Status : Bit format

- D0 : set when DI1 on
- D1 : set when DI2 on
- D2 : set when DI3 on

(52) DO Status

- D0 : set when DO1 on
- D1 : set when DO2 on
- D2 : set when DO3 on

(53) M_RUN_STOP_STATUS (RUN/STOP Status)

- D0 : RUN : set when System Run or reset when System Stop
- D1: RUN_REC: set when Rectifier Run or reset when Rectifier Stop: DVC not applied
- D2: RUN_INV: set when Inverter Run or reset when Inverter Stop: DVC not applied
- D3 : BYP : set when bypass state(Line)
- D4 : INV : set when inverting
- D5 : INIT : set when system initialization
- D6 : EMS : set when Emergency Stop state
- D7 : SYSTEM_OFF : set when System off

(54) Fault Status

- D0: OC_REC: set when Rectifier Device short fault: DVC not applied
- D1: TripI_REC: set when Rectifier Software OC: DVC not applied
- D2 : OC_INV : set when Inverter Device short fault
- D3 : TripI_INV : set when Inverter Software OC
- D4 : OV : Vdc Over Voltage
- D5 : LV : Vdc Low Voltage(Trip_V)
- D6: OL: Over Load -> Check the load current
- D7 : OT : Over Temperature
- D8 : PFL : set when Utility power fail(Sag/Swell)
- D9 : SFLT : set when system fault(Critical Fault)
- D10 : PH_FREQ_ERROR : Phase /Frequency Check Error

(55) Total Sag/Swell Count: Total Sag in case of DVC

(56) Power Fail Count: Currently not applied

(57) Sag/Swell Level: Self-calculation expression in the failure history graph viewer

(58) Sag/Swell Duration: Sag Duration in case of DVC

<Operation Group : 10H>

- Write Only
- Byte Data
- (1) RUN/STOP
 - D0 : set when System RUN or reset when System STOP
 - D1 : set when Rectifier Run or reset when Rectifier Stop
 - D2 : set when Inverter Run or reset when Inverter Stop
- (2) Trip Release : "0x01" when Trip Release or "0x00" when No Trip Release
- (3) Set Default Parameter : "0x01" when Default Parameter
- (4) Clear Event History : "0x01" when Clear Event History
- (5) Clear Fault Trace : "0x01" when Clear Fault Trace
- (6) Check Phase : "0x01" when recheck phase**
- (7) Clear Energy Meter : "0x01" When Clear Energy Meter**

<Parameter Group: 20H> (User-changeable parameters: none)

- Read/Write
- Word Data
- For calibration
- (1) Input Voltage Gain(RS): 50–150% (Administrator: Enabled, User: Disabled)
- (2) Input Voltage Offset(RS): -1000–+1000(Maximum value 12bit) (Administrator: Enabled, User: Disabled)
- (3) Input Voltage Gain(ST) (Administrator: Enabled, User: Disabled)
- (4) Input Voltage Offset(ST) (Administrator: Enabled, User: Disabled)
- (5) Input Voltage Gain(TR) (Administrator: Enabled, User: Disabled)
- (6) Input Voltage Offset(TR) (Administrator: Enabled, User: Disabled)
- (7) Input Current Gain(R) (Administrator: Enabled, User: Disabled)
- (8) Input Current Offset(R) (Administrator: Enabled, User: Disabled)
- (9) Input Current Gain(S) (Administrator: Enabled, User: Disabled)
- (10) Input Current Offset(S) (Administrator: Enabled, User: Disabled)
- (11) Input Current Gain(T) (Administrator: Enabled, User: Disabled)
- (12) Input Current Offset(T) (Administrator: Enabled, User: Disabled)
- (13) Output Voltage Gain(UV) (Administrator: Enabled, User: Disabled)
- (14) Output Voltage Offset(UV) (Administrator: Enabled, User: Disabled)
- (15) Output Voltage Gain(VW) (Administrator: Enabled, User: Disabled)
- (16) Output Voltage Offset(VW) (Administrator: Enabled, User: Disabled)
- (17) Output Voltage Gain(WU) (Administrator: Enabled, User: Disabled)
- (18) Output Voltage Offset(WU) (Administrator: Enabled, User: Disabled)
- (19) Output Current Gain(U) (Administrator: Enabled, User: Disabled)**
- (20) Output Current Offset(U) (Administrator: Enabled, User: Disabled)**
- (21) Output Current Gain(V) (Administrator: Enabled, User: Disabled)**
- (22) Output Current Offset(V) (Administrator: Enabled, User: Disabled)**
- (23) Output Current Gain(W) (Administrator: Enabled, User: Disabled)**
- (24) Output Current Offset(W) (Administrator: Enabled, User: Disabled)**
- ~~(25) Inverter Voltage Gain(UV) (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(26) Inverter Voltage Offset(UV) (Administrator: Enabled, User: Disabled) //D3P Not used~~

- ~~(27) Inverter Voltage Gain(VW) (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(28) Inverter Voltage Offset(VW) (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(29) Inverter Voltage Gain(WU) (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(30) Inverter Voltage Offset(WU) (Administrator: Enabled, User: Disabled) //D3P Not used~~
- (31) Inverter Current Gain(U) (Administrator: Enabled, User: Disabled)
- (32) Inverter Current Offset(U) (Administrator: Enabled, User: Disabled)
- (33) Inverter Current Gain(V) (Administrator: Enabled, User: Disabled)
- (34) Inverter Current Offset(V) (Administrator: Enabled, User: Disabled)
- (35) Inverter Current Gain(W) (Administrator: Enabled, User: Disabled)
- (36) Inverter Current Offset(W) (Administrator: Enabled, User: Disabled)
- ~~(37) Rectifier Current Gain(R): DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(38) Rectifier Current Offset(R): DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(39) Rectifier Current Gain(S): DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(40) Rectifier Current Offset(S): DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(41) Rectifier Current Gain(T): DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(42) Rectifier Current Offset(T): DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~
- (43) DC-Link Voltage Gain (Administrator: Enabled, User: Disabled)
- (44) DC-Link Voltage Offset (Administrator: Enabled, User: Disabled)
- ~~(45) DC Link Current Gain: DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~
- ~~(46) DC Link Current Offset: DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~
- (47) H/S Temp. Gain(Inverter) (Administrator: Enabled, User: Disabled)
- (48) H/S Temp. Offset(Inverter) (Administrator: Enabled, User: Disabled)
- ~~(49) H/S Temp. Gain(Converter): DVC Not applied (Administrator: Enabled, User: Disabled) //Change~~
- (49) H/S Temp. Gain(Bypass) (Administrator: Enabled, User: Disabled)
- ~~(50) H/S Temp. Offset(Converter): DVC Not applied (Administrator: Enabled, User: Disabled) //Change~~
- (50) H/S Temp. Offset(Bypass): (Administrator: Enabled, User: Disabled)

<Parameter Group: 30H> (User-changeable parameters: 8, 9, 10, 13, 22)

- Read/Write

- Word Data

- (1) Rated DC Voltage: 100–1000V (Administrator: Enabled, User: Disabled)
- (2) Rated Voltage: 100–1000V (Administrator: Enabled, User: Disabled)
- (3) Rated Voltage Gain: -10–+10% (Administrator: Enabled, User: Disabled)
- (4) Rated Power: 0–1000kVA (Administrator: Enabled, User: Disabled)
- (5) RatedFreq: 50/60 Hz: Read Only (Administrator: Disabled, User: Disabled)
- (6) Max Charge Voltage: 100–1000V (Administrator: Enabled, User: Disabled)
- (7) Min Charge Voltage: 100–1000V: For displaying the charging rate (Administrator: Enabled, User: Disabled)
- (8) Discharge Time: 0–10sec (0: disable, not 0: enable) (Administrator: Enabled, User: Enabled)
- (9) Sag Fault Voltage: 50–90% (Administrator: Enabled, User: Enabled)
- (10) Sag Hysteresis Voltage: 0–5% (Administrator: Enabled, User: Enabled)

~~(11) Swell Fault Voltage: 110~150%: DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~

~~(12) Swell Hysteresis Voltage: 0~5%: DVC Not applied (Administrator: Enabled, User: Disabled) //D3P Not used~~

(13) Sag/Swell Detection Count: 0~20, Sag_x_cnt, Sag_rst_cnt integrated into one //D3P only displays Sag.

(Administrator: Enabled, User: Enabled)

(14) Min Comp. Volt. Level -> Discharge Stop Voltage: 100~1000V: Discharge voltage

(Administrator: Enabled, User: Disabled)

(15) AutoTripRelease: "0/1": disable/enable (Administrator: Enabled, User: Disabled)

(20) RUN/STOP Input Source (Administrator: Enabled, User: Disabled)

0x00 : KEYPAD

0x01 : DI

0x02 : MODUBUS

(21) Remote (Administrator: Enabled, User: Disabled)

Disable: Regardless of RUN/STOP Input Source, RUN/STOP is possible only by keypad.

Enable: RUN/STOP is possible by DI or MODBUS. Unconditional when entering STOP in the Keypad.

STOP

(22) Fault Trace Type (Administrator: Enabled, User: Enabled)

0x00 : Voltage Only

0x01 : Voltage & Current

<Event Group : 40H>

- Read/Write

- Word Data

(1) Year | Month(M | L)

(2) Day | Hour

(3) Min | Sec

- Read Only

- Word Data

(11) Software Version

(12) Software Year

(13) Software Month

(14) Software Day

(21) Fault Index

(22) Fault Year | Fault Month(M | L)

(23) Fault Day | Fault Hour

(24) Fault Min | Fault Sec

(25) Fault Code

F1: Rectifier Device short fault: DVC not applied

F2: Rectifier Software OC: DVC not applied

F3 : Inverter Device short fault

F4 : Inverter Software OC

F5 : Vdc Over Voltage

F6: Vdc Low Voltage(Trip_V) -> In case of DVC, it is displayed as Trip_V. In case of SLC, it is checked only during Run after Vdc_ref of Rectifier reaches the final value.

F7: Over Load -> Check the load current

F8 : Over Temperature

F9: Utility power fail(Sag/Swell): Not display Swell in case of DVC

F10 : Utility Normal

F11 : Out of Frequency

F12 : Emergency Stop

F13 : System Off

(26) Total Sag/Swell Count: In case of DVC, it is displayed as Total Sag Count.

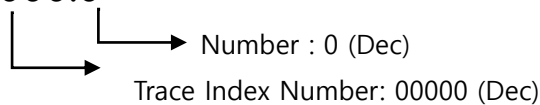
(27) Power Fail Count

(28) Sag/Swell Level: %: : In case of DVC, it is displayed as Sag Level.

(29) Sag/Swell Duration: ms: In case of DVC, it is displayed as Sag Duration.

Fault History Read (H Device)

H00000:0



(1) Fault Index

(2) Fault Year

(3) Fault Month

(4) Fault Day

(5) Fault Hour

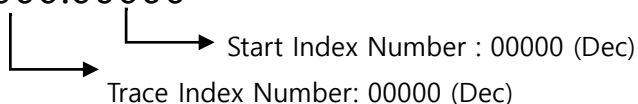
(6) Fault Min

(7) Fault Sec

(8) Fault Code

Fault Trace Read(T Device)

T00000:00000



(1) Input Voltage(RS)

(2) Input Voltage(ST)

(3) Input Voltage(TR)

(4) Output Voltage(UV)

(5) Output Voltage(VW)

(6) Output Voltage(WU)

- (7) DC-Link Voltage
- (8) Input Current(R)
- (9) Input Current(S)
- (10) Input Current(T)
- (11) Output Current(U)
- (12) Output Current(V)
- (13) Output Current(W)