

TemcoLine Co.,Ltd.

Temperature Controller- T50/N50 Series

TL-Link Driver

Supported version TOP Design Studio V1.4.2 or higher



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

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

Describes how to set the TOP communication.

4. External device setting [Page 8](#)

Describes how to set up communication for external devices.

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Describes the cable specifications required for connection.

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

1. System configuration

The system configuration of TOP and "TemcoLine Co., Ltd. – Temperature Controller Series" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
T50	T52 T53 T54 T57 T59 N50	Terminal Port on CPU unit	RS485 (2 wire)	3.1 Settings example 1 (Page 4)	5.1. Cable table 1 (Page 8)

■ Connection configuration

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

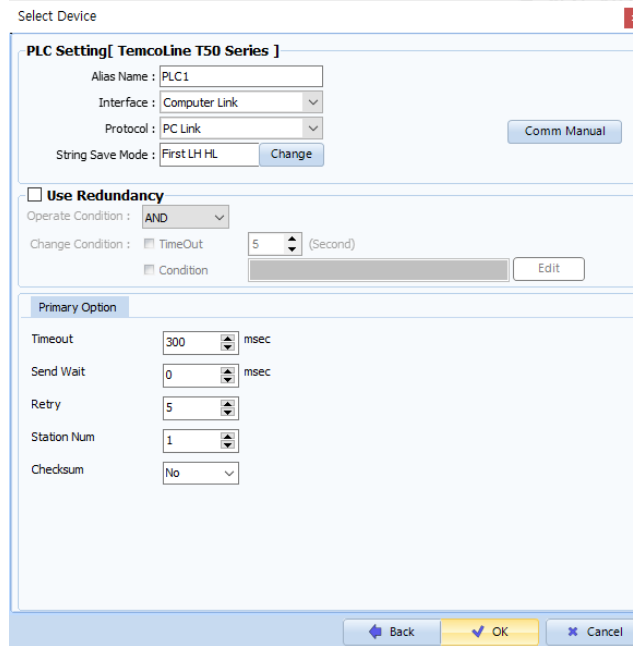
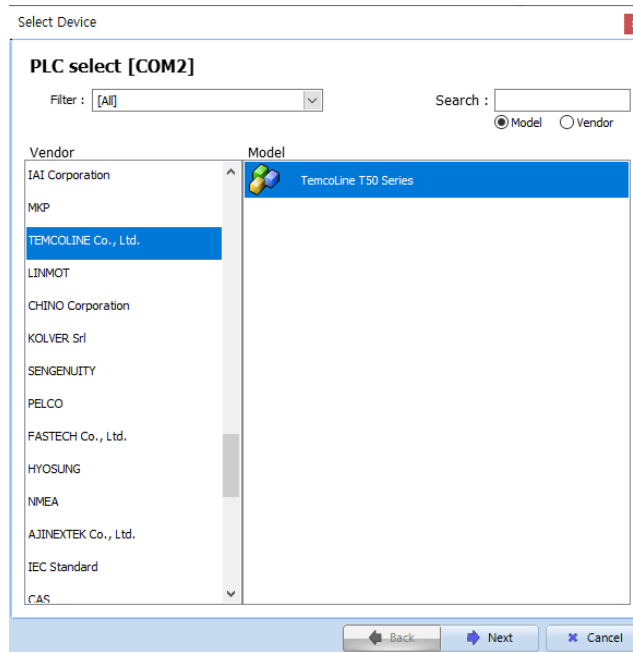


- 1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422/485 communication.



2. External device selection

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



Settings		Contents					
TOP-R	Model	Check the TOP-R display and process to select the touch model.					
External device	Vendor	Select the vendor of the external device to be connected to TOP-R. Select "TemcoLine".					
	PLC	Select an external device to connect to TOP-R. <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th>Model</th> <th>Interface</th> <th>Protocol</th> </tr> </thead> <tbody> <tr> <td>TemcoLine T50 Series</td> <td>Computer Link</td> <td>PC LINK</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	TemcoLine T50 Series	Computer Link
Model	Interface	Protocol					
TemcoLine T50 Series	Computer Link	PC LINK					

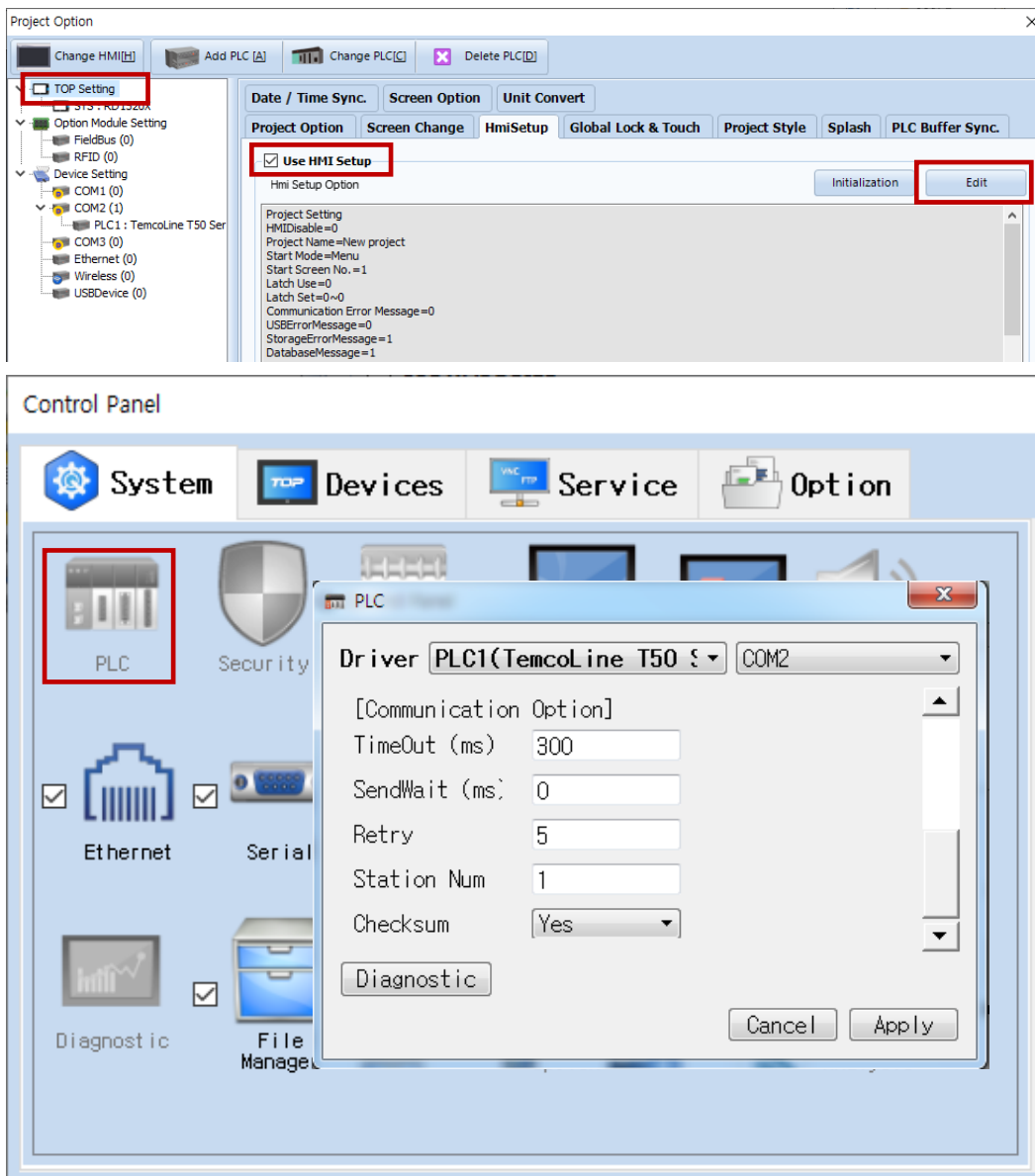
3. TOP-R Communication setting

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

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

- [Project > Project Property > TOP Setting] → [Project Option > "Use HMI Setup" Check > Edit > Serial]
- Set the TOP-R communication interface in TOP Design Studio.



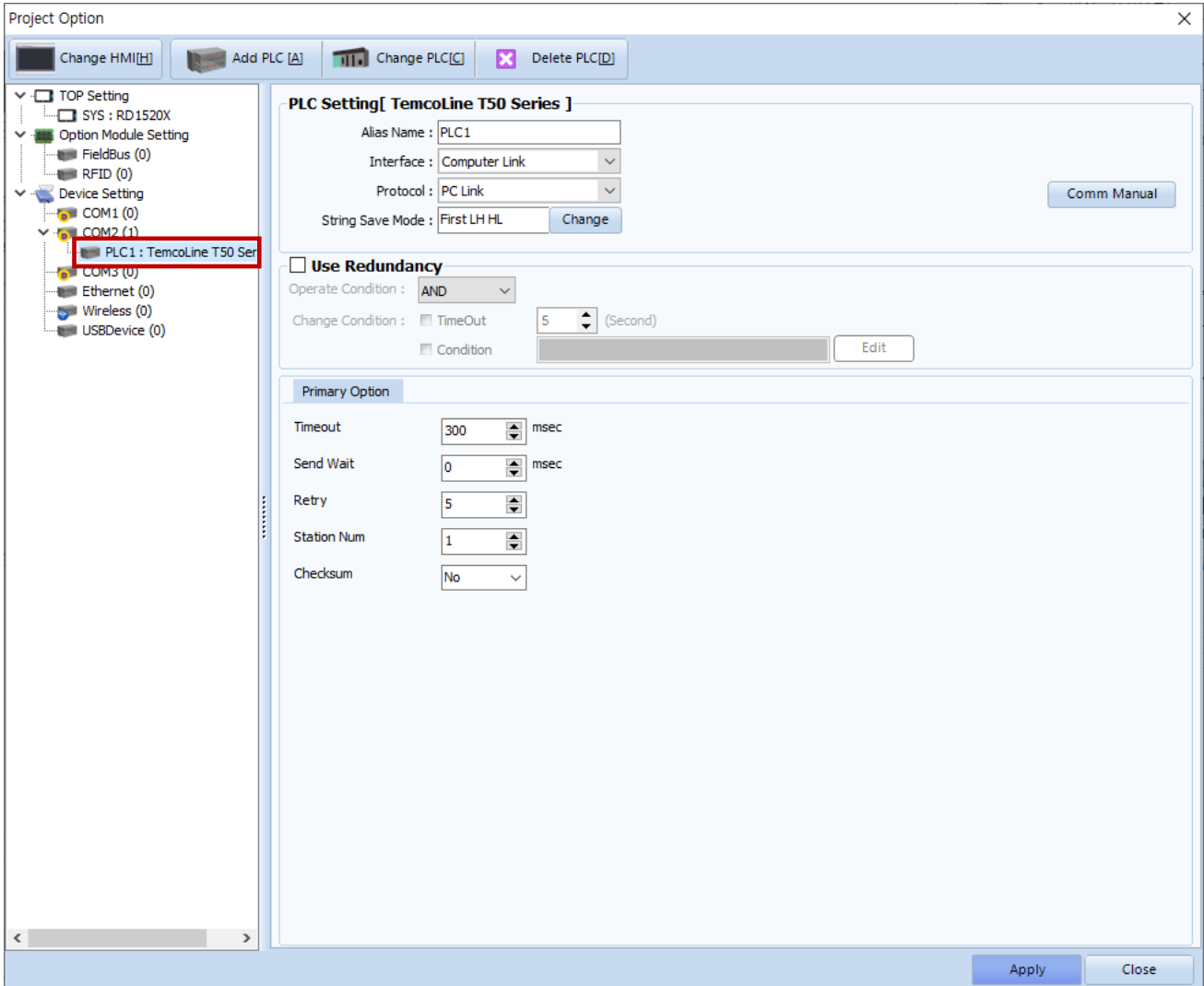
Items	TOP-R	External device	Remarks
Signal Level (port)	RS-485	RS-485	
Baud Rate	19200		
Data Bit	8		
Stop Bit	1		
Parity Bit	NONE		

* The above settings are examples recommended by the company.

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

(2) Communication option setting

- [Project > Project Property > Device Setting > COM > "PLC1 : FP Series"]
 - Set the options of the MICREX-SX Series communication driver in TOP Design Studio.



Items	Settings	Remarks
Interface	Select "Computer Link".	
Protocol	Select the serial communication protocol between the TOP-R and an external device.	
TimeOut (ms)	Set the time for the TOP-R to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP-R's receiving a response from an external device and sending the next command request.	
Retry	Number of redelivery attempts upon communication error	
Station num	Plc id num	
Checksum	Enable or disable checksum during communication	

3.2. Communication setting in TOP-R

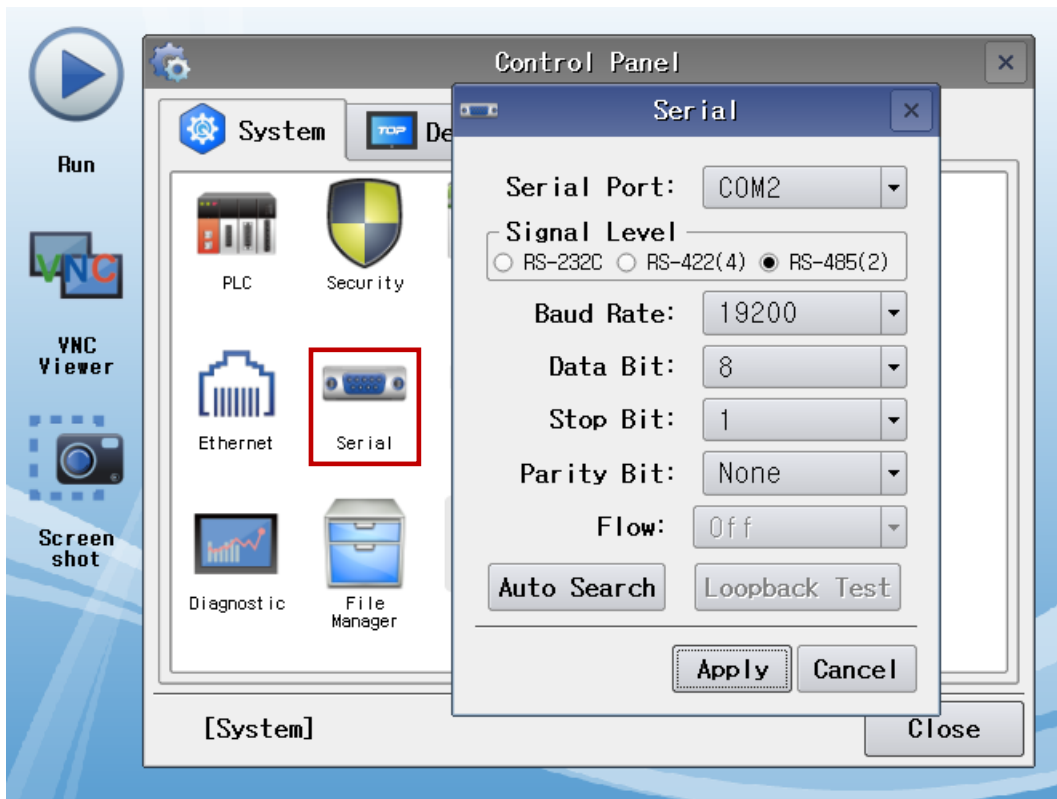
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- Touch the top of the TOP-R 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-R	External device	Remarks
Signal Level (port)	RS-485	RS-485	
Baud Rate	19200		
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-R and an external device.
Baud Rate	Select the serial communication speed between the TOP-R and an external device.
Data Bit	Select the serial communication data bit between the TOP-R and an external device.
Stop Bit	Select the serial communication stop bit between the TOP-R and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP-R and an external device.

3.3 Communication diagnostics

- Check the interface setting status between the TOP-R and an external device.
 - Touch the top of the TOP-R 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-R, 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-R	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

Configure the communication setting of the external device by referring to its user manual.

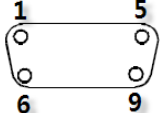
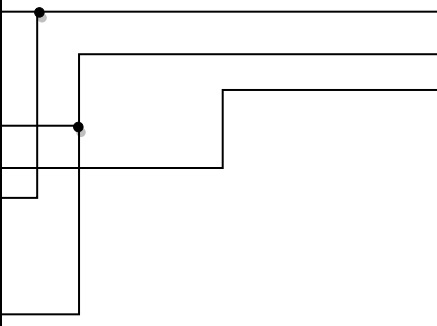
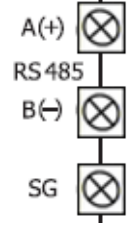
5. Cable table

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 "TemcoLine Co., Ltd.")

4.1. Cable table 1

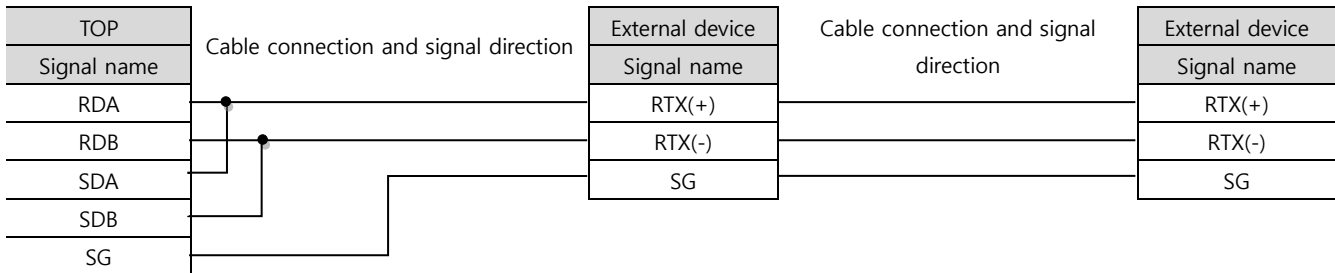
■ 1:1 connection

TOP COM Port (9 pin)

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

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

■ 1:N connection – Refer to 1:1 connection to connect in the following way.



6. Supported addresses

The devices available in TOP are as follows:

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

Device	Bit Address	Word Address	Remarks
D Register	D0000.00 – D9999.15	D0000 – D9999	
I Register	I0000 – I9999	—	

■ Reference: D Register Overview (For more details, refer to the user manual distributed by TemcoLine Co., Ltd.)

Register	Contents
	Configured as read-only range, user range
	0001(NPV) Current PV value
	0002(NSV) Current operating SV value
	0003(NRSV) Current operating Remote SV value
	0005(MVOUT) Current output volume
	0006 - 0007(CH1,2OUT) Output volume if HC-type
	0008(PIDNO) Current operating PID number
0001 – 0099	0009(ALMSTS) Current alarm status (BIT info)
	0010(STEPNO) Current step number during program operation
	0011(BRSEGTM) Current remaining time of the step during program operation
	0014-0015(HC1,2_CUR) Heater Cut value
	0016(ADESTS) Input processing error info (bit info)
	0017(ERRSTS) Input & AT error info (bit info)
	0018(MODSTS) Current operating status (bit info)
	0050-0099 User range (Read/Write feature)
	Operating status check and transition
0100 – 0199	0100 (OPMODE) 0 : Local, 1 : Program, 2 : Remote
	0101(PROG) 0 : Reset, 1 : Program Run
	0102(ZOM) 0 : Zone Off, 1 : Zone On
	0103(FUZY) 0 : Fuzzy Off, 1 : Fuzzy On
	0104(ARW) 0 : ARW Off, 1 : ARW On
	0106(DIS) Select DI
0200 – 0299	Program draft
0300 – 0399	SV & PID settings
0400 – 0499	Alarm parameter settings
0500 – 0599	Transfer & Remote parameter settings; Communication parameter check (0510 - 0516 : Read-only section)
0600 – 0699	Input/output parameter settings