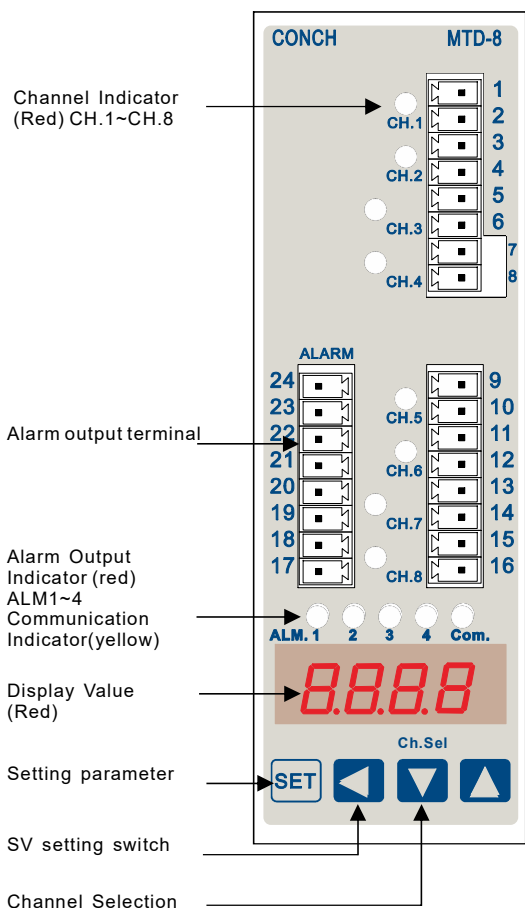


## Product Feature Description

1. Eight channels thermocouple input module. Input type and measurement range can be selected channel by channel. Up to sixteen modules connection in series.
2. Provide 4 sets actual relay output as alarm output, ALM1,2,3 output can be assigned to any channel or control by communication. ALM4 is for communication disconnection output. Each relay can be planned as normal open (N.O) or normal close(N.C).
3. Provide 3 sets logic alarm AL1,AL2,AL3 for each channel. The output status of logic alarm can assign to actual relay.
4. Parameter setting can be edited directly on panel without software. Provide parameter anti-write protection mechanism, set up by channel LOCK parameter.
5. Serial communication (RS-485) with ModBus protocol RTU mode. Can continuously read/write 32 pieces data. Built-in 32 consecutive address general purpose register. User can plan the discontinuous parameter into continuous read zone, to speed up the read speed.
6. DC24V power. Channels are isolated to each other. Panel display can show PV, error status, alarm output status, communication status etc information. Modify or inquiry parameter value via press keys.
7. All input and output are Euro Style Terminal Blocks, easily for wiring and maintenance.

## Panel Description



## Product Specification

Power	DC24V+-20%
Power Consumption (≒)	5W@24V
Weight(g)(≒)	220
Storage/Operation Ambient	0~65°C/0~50°C, 20~90%RH
Power Failure Memory	EEPROM, 10 years
Display Precision	0.2%FS± 1Dig
Display Character Height	8mm(red)
Alarm Output	Relay contact point 3A,250VAC
Channel Isolation	Between channel:350Vdc Channel between power and communication output:10KVdc
Input Type	Thermocouple, refer to below list
Sampling Rate	0.15 second per Channel (Respectively)

## Input Type Code List

Input	Code	measurement range	Code	measurement range
Thermocouple	00/K1	-199.9~400.0°C/-199.9~752.0°F	01/K2	-199~1200°C/-199~2192°F
	02/J1	-199.9~400.0°C/-199.9~752.0°F	03/J2	-199~1000°C/-199~1832°F
	04/B1	0~1820°C/0~3308°F	05/R1	0~1700°C/0~3092°F
	06/S1	0~1700°C/0~3092°F	07/E1	0~800°C/0~1472°F
	08/N1	0~1300°C/0~2372°F	09/T1	-199.9~400.0°C/-199.9~752.0°F
	10/W3	0~2300°C/0~4172°F	11/W5	0~2000°C/0~3632°F
	12/PL2	0~1390°C/0~2534°F		

**Dimension & Installation (Unit:mm)**

Fig. 1 Tilt the module to the left. Stick the base into the din rail. Pressing the module to make it horizontal to the din rail.

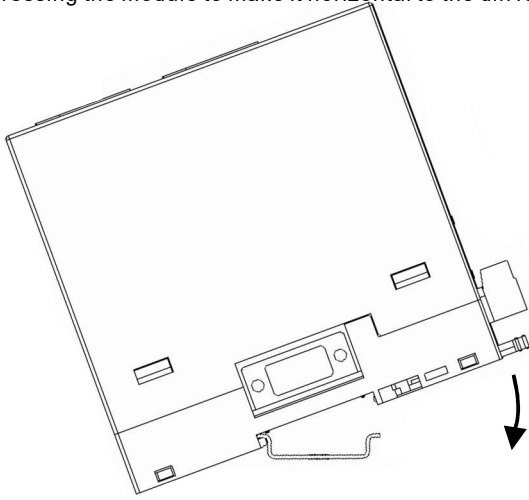


Fig. 2 Pushed the bottom fixed plate of module into din rail following the direction of the arrow.

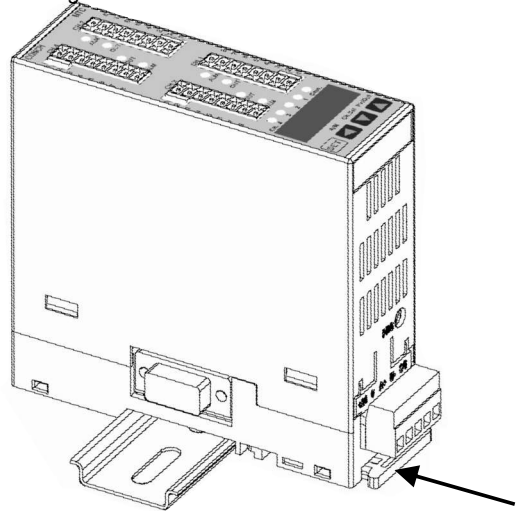


Fig. 3 Can Connect modules in series

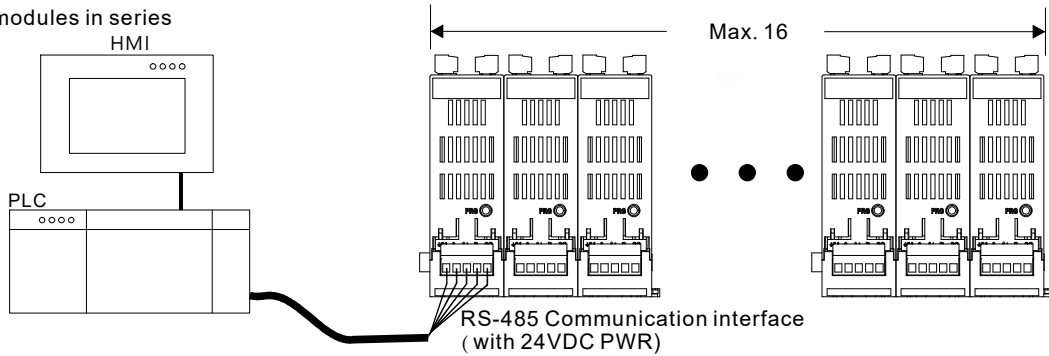
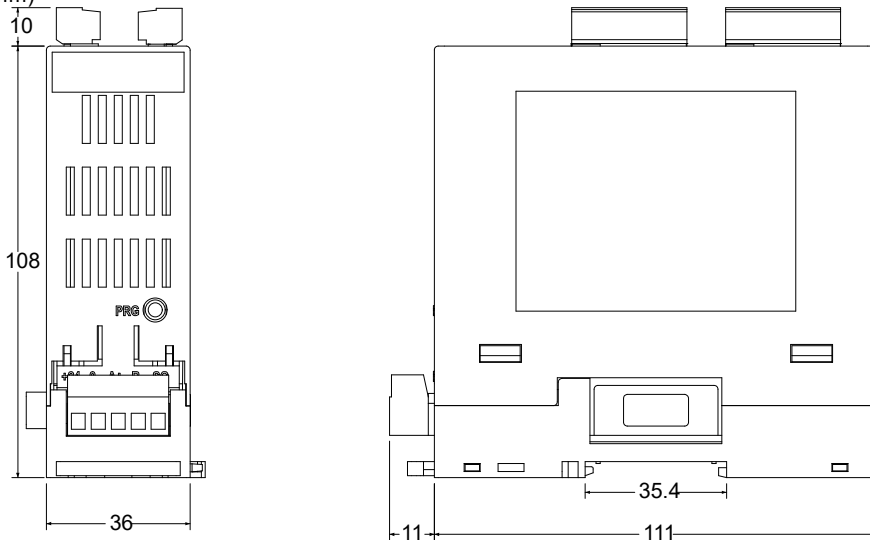
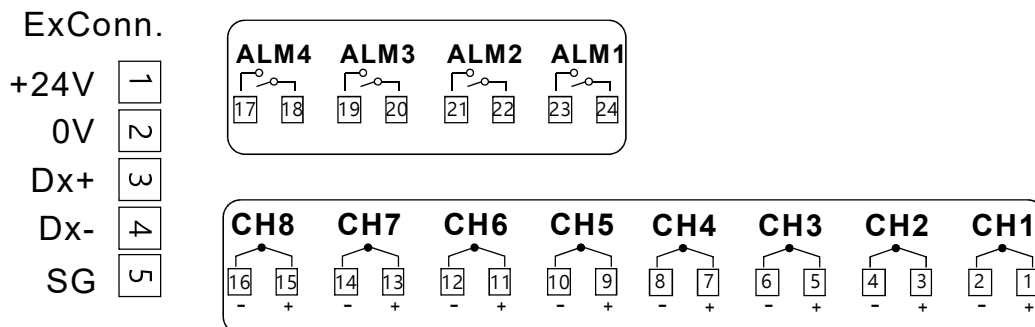


Fig. 4 Dimension (mm)



**Wiring diagram**

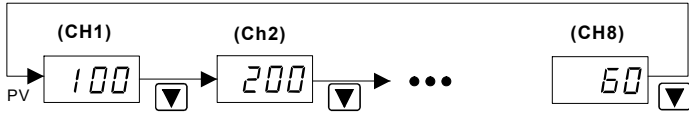


## Panel Display & Parameter Setting

Indicator lamp indicates the selected channel. Display show the PV of each channel.  
All parameters can be configured by panel keys.  
Parameter is divided into 7 levels(0~6).  
Using different keys or compound key to enter the different level parameter setting.  
Parameter [LOCK] is used to open which levels allow users to set.

### Channels Selection

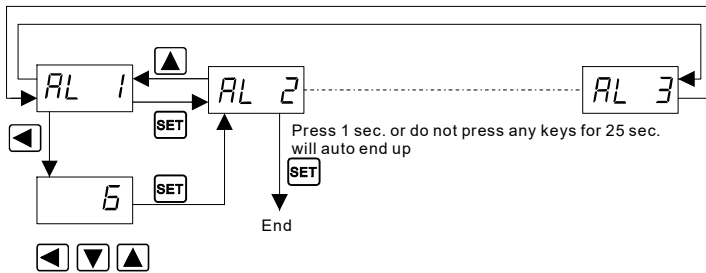
In the general mode, press key to select the channel, indicators lamp indicates the current selected channel. Display show the PV of each channel.



### Set up the operation rules

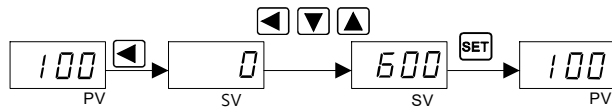
After selecting the channel(s), enter the parameter levels. The display will show the first parameter name of the level. Press key to select the next, and so no. if reach to the bottom terminal of the level, return to the first parameter.  
Press key to back to previous parameter if reach to the first parameter of the level, return to the bottom terminal parameter.  
Press key to display the parameter value. Using to modify the parameter.  
Press key to complete the setting, and display the next parameter.  
Press key for 1 sec. to exit the level, and end up the setting mode.

**Note: Each level's parameters will be in accordance with the model. Parameter planning situation to auto masking failure parameters. The actual setting might be different with each levels' contents.**



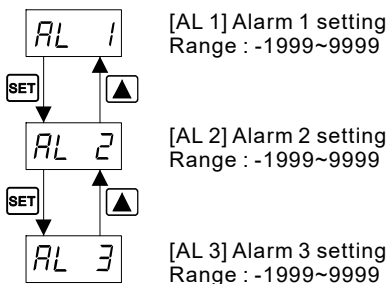
### Level 1 Parameter setting

Quick setting levels, directly press key to set up the temperature target value SV, press key to end the setting.



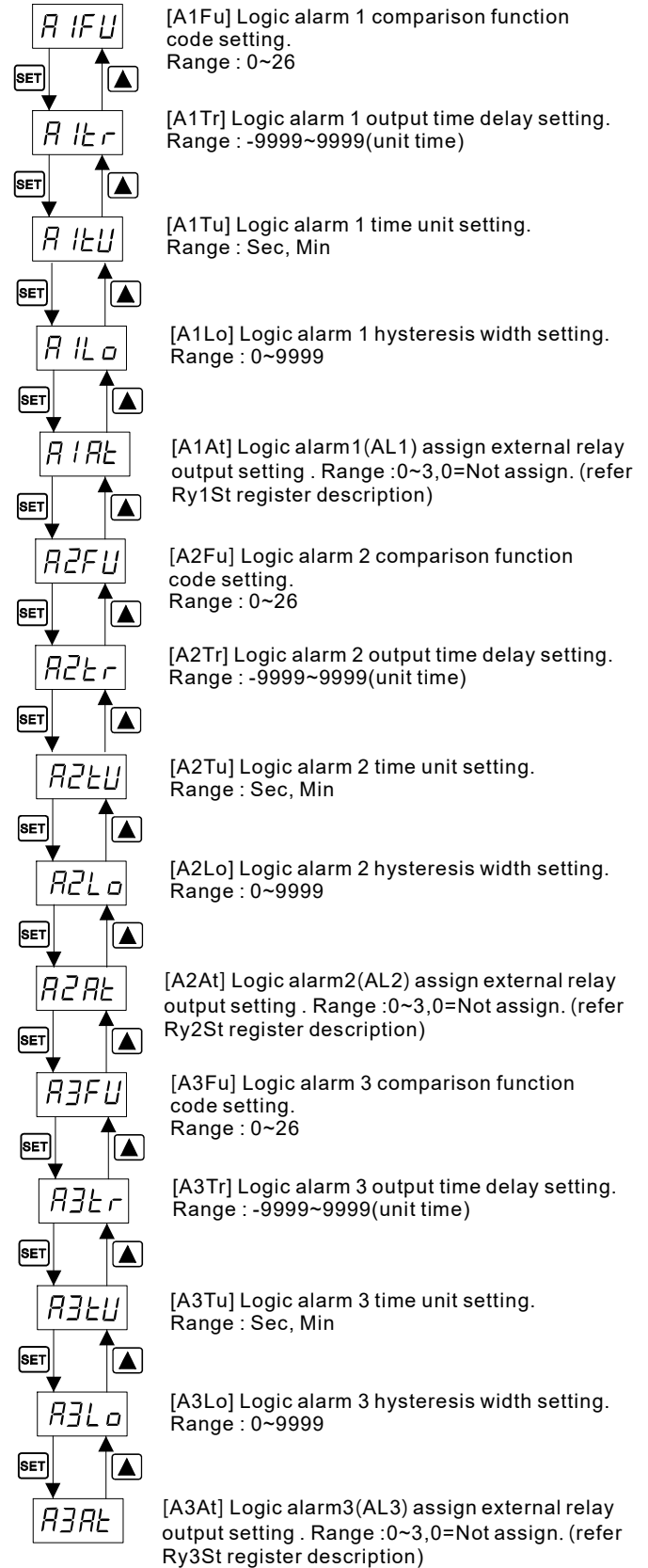
### Level 2 Parameter setting

Alarm parameter. Press key to enter.



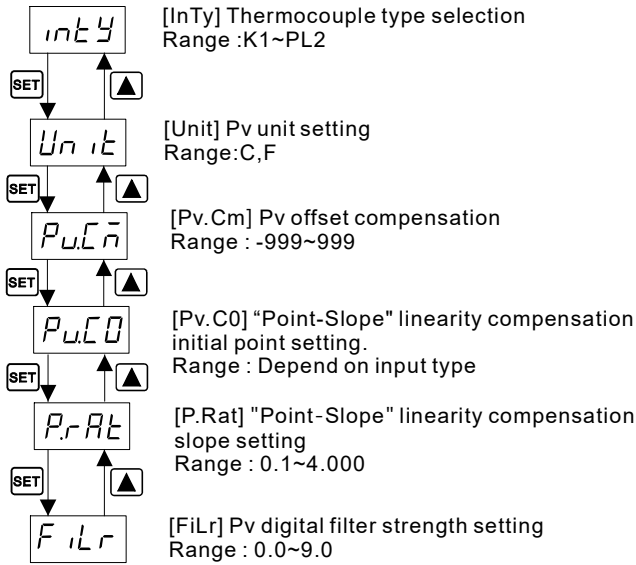
### Level 3 parameter setting

Relevant to comparison alarm function setting. Press key 1.5 sec. to enter.



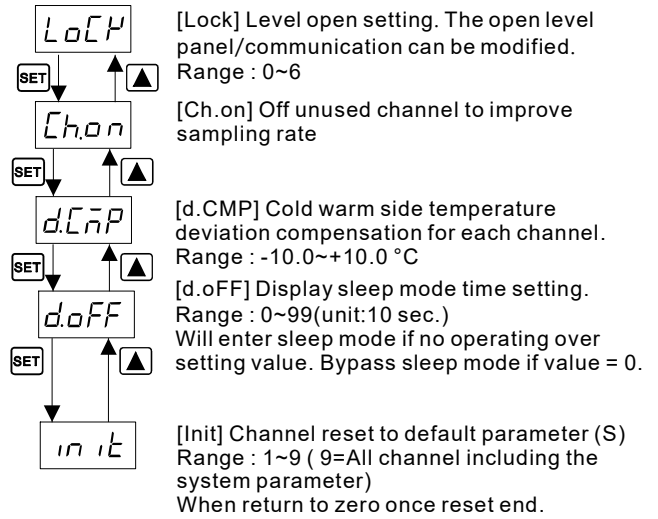
## ● Level 4 Parameter setting

Input selection and calibration setting. Press **SET** + **▼** 1.5 sec to enter.



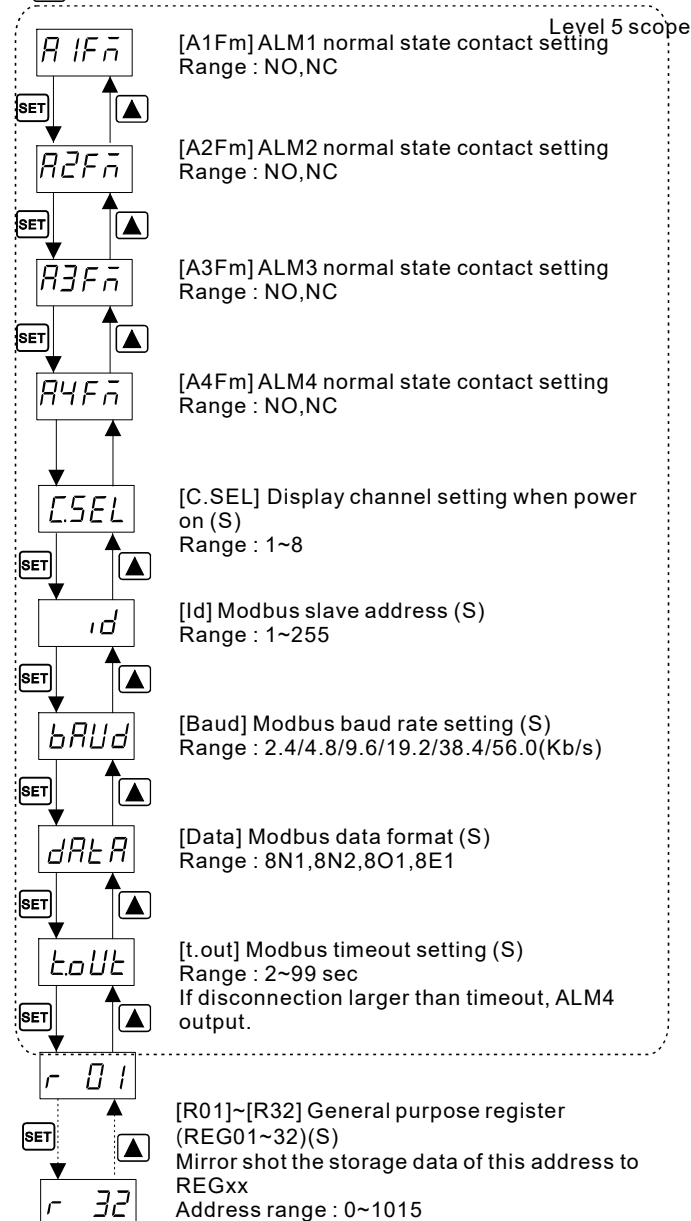
## ● Level 0, system parameter (S) setting

Level management, communication, default value. Press **▲** 3 sec. to enter.



## ● Level 5,6 Parameter setting

Peripheral hardware engineering parameter setting. Press **SET** + **▲** 1.5 sec to enter.



## ■ PV Deviation Compensation

Parameter PvCm, PvC0, PrAt can compensate PV display error.

Equation:

$$PV(\text{new}) = PrAt * (PV(\text{old}) - PvCm - PvC0) + PvC0$$

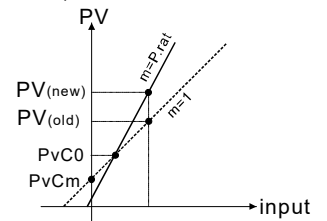
Example:

At room temperature, actual temperature is 28, but controller shows 30.

Set PvCm = -2(degree) compensation, when heating, the actual high temperature is 210, but the controller shows 200?

1. Set PvC0=28.

2. Calculate P.rat ramp = (210-28)/(200-28) = 1.058



## Alarm output function

26 types of alarm output. 00=Disable temperature alarm function. Odd numbers represents that the first alarm output is disable after start up.

No.	Relative Deviation Comparison		Relative Deviation Comparison		Relative Deviation Comparison
01 02					
03 04					
05 06					
07 08					
09 10					

### Alarm Output Time Setting

Parameter A1Tr~A3Tr control the alarm output duration separately. When output condition is established, start time delay. Positive and negative time, different function in output.

1. Set negative value, example -9, represent when "ON" condition established, the alarm action after delay 9 sec.
2. Set 0 sec., represent "ON" condition established, the alarm action immediate.
3. Set positive value, example 10, represent when "OFF" condition established, the alarm change from "On" to "Off" after 10 sec.

■Parameter Register Communication Address List

Field Description:

Address	Level	Display Name	Property	Description	Setting Range	R/W	Default
---------	-------	--------------	----------	-------------	---------------	-----	---------

C: Channel parameter, address adjacent.  
 e.g. SV address 0000~0007 and so on.  
 S: System parameter

R:Readable  
 W:Writeable

After INIT  
 Default Value

0-6: According LOCK setting, the parameter whether an set up or write. If it's blank, it won't be control by LOCK, and panel cannot

Display typeface/Parameter character

Register address (Decimal)

**Note: When panel enter the setting mode, communication cannot change any parameters. ModBus address must add 40001.**

Address	Level	Display Name	Property	Description	Setting Range	R/W	Default
0000   0007	1	Sv	C	Temperature Target Value Setting.	SvL~SvH	R/W	
0008   0015	2	AL 1	C	AL 1 Value Setting.	-1999~9999	R/W	0
0016   0023	2	AL 2	C	AL 2 Value Setting.	-1999~9999	R/W	0
0024   0031	2	AL 3	C	AL 3 Value Setting.	-1999~9999	R/W	0
0032   0039	3	A1Fu	C	Logic ALM1 (AL1) comparison output function code setting. Refer to ALM function description.	0~26	R/W	2
0040   0047	3	A1Tr	C	Logic ALM1(AL1) output time delay setting. Refer to ALM function description.	-1999~9999 Unit time	R/W	0
0048   0055	3	A1Tu	C	Logic ALM1(AL1) output time unit setting. 0=second, 1=minute	0~1	R/W	0
0056   0063	3	A1Lo	C	Logic ALM1(AL1) hysteresis width setting. Refer to ALM function description.	00~9999	R/W	0
0064   0071	3	A2Fu	C	Logic ALM2 (AL2) comparison output function code setting. Refer to ALM function description.	0~26	R/W	2
0072   0079	3	A2Tr	C	Logic ALM2(AL2) output time delay setting. Refer to ALM function description.	-1999~9999 Unit time	R/W	0
0080   0087	3	A2Tu	C	Logic ALM2(AL2) output time unit setting. 0=second, 1=minute	0~1	R/W	0
0088   0095	3	A2Lo	C	Logic ALM2(AL2) hysteresis width setting. Refer to ALM function description.	00~9999	R/W	0

Address	Level	Display Name	Property	Description	Setting Range	R/W	Default
0096   0103	3	A3Fu	C	Logic ALM3 (AL3) compare output function code setting. Refer to ALM function description.	0~26	R/W	2
0104   0111	3	A3Tr	C	Logic ALM3(AL3) output time delay setting. Refer to ALM function description.	-1999~9999 Unit time	R/W	0
0112   0119	3	A3Tu	C	Logic ALM3(AL3) output time unit setting. 0=second, 1=minute	0~1	R/W	0
0120   0127	3	A3Lo	C	Logic ALM3(AL3) hysteresis width setting. Refer to ALM function description.	0~9999	R/W	0
0128   0135	4	InTy	C	Input signal type code selection Refer to input type code list	0~12	R/W	1(K2)
0136   0143	4	Unit	C	Pv value unit setting. 0=Celsius, 1=Fahrenheit	0~1	R/W	0
0144   0151	4	PvCm	C	Pv value deviation drift offset calibration (Pv=Pv+PvCm)	-999~999	R/W	0
0152   0159	4	PvC0	C	Pv "Point-Slope" linearity compensation initial point setting.	Depend on input	R/W	0
0160   0167	4	PvRat	C	Pv "Point-Slope" linearity compensation slope setting.	0.1~4.000	R/W	1.000
0168   0175	4	FiLr	C	Digital filter magnitude. The larger filter value, the more stable, but response slowly.	0~9.0	R/W	0.2
0176	5	A1Fm	S	Actual alarm 1(ALM1)normal state contact setting. 0=N.O, 1=N.C.	0~1	R/W	0
0177	5	A2Fm	S	Actual alarm 2(ALM2)normal state contact setting. 0=N.O, 1=N.C.	0~1	R/W	0
0178	5	A3Fm	S	Actual alarm 3(ALM3)normal state contact setting. 0=N.O, 1=N.C.	0~1	R/W	0
0179	5	A4Fm	S	Actual alarm 4(ALM4)normal state contact setting. 0=N.O, 1=N.C.	0~1	R/W	0

Address	Level	Display Name	Property	Description	Setting Range	R/W	Default
0183	5	CSEL C.Sel	S	Display channel setting when power on.	1~8	R/W	1
0184	5	t.out t.out	S	Communication disconnection time value setting. ALM4 will not output within setting value.	2~99 second	R/W	5 sec
0185   0216	0	r 01 r 32 r01~r32	S	General Purpose Register (REG01~32) Define the parameter address. Will copy r01~r32 data into REG01~REG32	0~1015	R/W	0
0217   0224	0	d.CMP d.CMP	C	Cold warm side temperature deviation compensation for each channel.	-10.0~+10.0 °C	R/W	0
0225   0232	0	Lock Lock	C	Parameter level protect setting. When level lower than the setting value, the parameter group level is read only. Cannot write.	0~6	R/W	6
0233   0240	3	A1At A1At	C	Assigned logic AL1 to actual relay for output Not assigned when equal to 0(Refer Ry1St register) <sup>Note</sup>	0~3	R/W	0
0241   0248	3	A2At A2At	C	Assigned logic AL2 to actual relay for output Not assigned when equal to 0(Refer Ry2St register) <sup>Note</sup>	0~3	R/W	0
0249   0256	3	A3At A3At	C	Assigned logic AL3 to actual relay for output Not assigned when equal to 0(Refer Ry3St register) <sup>Note</sup>	0~3	R/W	0

Note : A1At~A3At parameter for each channel can repeatedly assign to actual relay. (For example, A1At on channel 1 and A3At on channel 5 can assign to actual Relay 1 at the same time.) Relay will off only when all logic alarms status are 0. Please pay attention.



■Channel State Register Address Table

Address	Level	Display Name	Property	Description	Setting Range	R/W	Default																																	
0512	None	WrPro	S	Parameter whether power-off memory. 0:none memory,1:memory (Parameter change on Panel will be remember when power off)	0~1	R/W	1																																	
0513	None	PnLock	S	Panel parameter setting protection. 0: can setup, 1: cannot setup. But can change to see parameter for each channel.	0~1	R/W	0																																	
0514 0515 0516	None	Ry1St Ry2St Ry3St	S	Actual alarm current state1,2,3 (relay)current status: Output assigned by AxAT channel parameter Bit 0~7 represent channel1~8 error output state, 0=none, 1=Alarm assigned. Bit 8 can change by communication. When write 0,BIT 8=0, write 1,BIT8=1(other BIT do not change) When register value>0, Alarm output. Equal to 0,alarm not output.  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Com</td><td>Ch8</td><td>Ch7</td><td>Ch6</td><td>Ch5</td><td>Ch4</td><td>Ch3</td><td>Ch2</td><td>Ch1</td> </tr> <tr> <td colspan="8" style="text-align: center;">Bit15</td> <td colspan="8" style="text-align: center;">Bit0</td> </tr> </table>	0	0	0	0	0	0	0	0	Com	Ch8	Ch7	Ch6	Ch5	Ch4	Ch3	Ch2	Ch1	Bit15								Bit0								0~01FF/0,1 (Hexadecimal )	R/W	—
0	0	0	0	0	0	0	0	Com	Ch8	Ch7	Ch6	Ch5	Ch4	Ch3	Ch2	Ch1																								
Bit15								Bit0																																
0520   0527	None	AL1St	C	Logic AL1 current status; 0:Off, 1:On.	0~1	R	—																																	
0528   0535	None	AL2St	C	Logic AL2 current status; 0:Off, 1:On.	0~1	R	—																																	
0536   0543	None	AL3St	C	Logic AL3 current status; 0:Off, 1:On.	0~1	R	—																																	
0544-- 0551	None	A1TrLeft	C	Logic alarm 1 output delay time countdown. (Unit: second or minute)	-1999~9999	R	—																																	
0552-- 0559	None	A2TrLeft	C	Logic alarm 2 output delay time countdown. (Unit: second or minute)	-1999~9999	R	—																																	
0560-- 0567	None	A3TrLeft	C	Logic alarm 3 output delay time countdown. (Unit: second or minute)	-1999~9999	R	—																																	
0568   0575	None	ErrCode	C	Channel abnormal code. Abnormal state defined by bit position :  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>2<sup>15</sup></td><td>2<sup>14</sup></td><td>2<sup>13</sup></td><td>2<sup>12</sup></td><td>2<sup>11</sup></td><td>2<sup>10</sup></td><td>2<sup>9</sup></td><td>2<sup>8</sup></td><td>2<sup>7</sup></td><td>2<sup>6</sup></td><td>2<sup>5</sup></td><td>2<sup>4</sup></td><td>2<sup>3</sup></td><td>2<sup>2</sup></td><td>2<sup>1</sup></td><td>2<sup>0</sup></td> </tr> </table> 2 <sup>0</sup> [AdEr] : A/D circuit breakdown 2 <sup>1</sup> [CjEr] : Cold temperature compensation diode failure 2 <sup>2</sup> [Open]: Sensor breakdown/Input signal exceed positive value 2 <sup>3</sup> [ -Or] : Input signal exceed negative value 2 <sup>4</sup> [ -OL] : Display value exceed negative value 2 <sup>5</sup> [ OL] : Display value exceed positive value	2 <sup>15</sup>	2 <sup>14</sup>	2 <sup>13</sup>	2 <sup>12</sup>	2 <sup>11</sup>	2 <sup>10</sup>	2 <sup>9</sup>	2 <sup>8</sup>	2 <sup>7</sup>	2 <sup>6</sup>	2 <sup>5</sup>	2 <sup>4</sup>	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>	---	R	—																	
2 <sup>15</sup>	2 <sup>14</sup>	2 <sup>13</sup>	2 <sup>12</sup>	2 <sup>11</sup>	2 <sup>10</sup>	2 <sup>9</sup>	2 <sup>8</sup>	2 <sup>7</sup>	2 <sup>6</sup>	2 <sup>5</sup>	2 <sup>4</sup>	2 <sup>3</sup>	2 <sup>2</sup>	2 <sup>1</sup>	2 <sup>0</sup>																									
0576   0583	None	Pv	C	Current temperature value. (Unit and Precision configure by Unit,PvPnt)	---	R	—																																	
0584   0591	None	PvPnt	C	Present value decimal point precision	0~1	R	—																																	
0592	None	CjT	S	Cold junction diode temperature value(one decimal place)	Room Temp(°C)	R	—																																	
0600   0631	None	REG01   REG32	S	General purpose register area By parameter R01~R32 appoint address value save into the general purpose register area	---	R	—																																	