

KCM-84A Digital Level Indicator instruction manual

1.Features:

1.1 Input Type:

Thermocouple (temperature input): K, J, T, E, S,R,B

Resistance thermometer (temperature input): Pt100, CU50

Current input (analog input): 4 ~ 20 mA DC, 0 ~ 10 mA DC

NTC :KTY84-130, NTC100K ,NTC 10K, NTC 5K ...

Tip:The input signal is single fixed by factory. For example the controller input signal is Current (4-20mA) so the controller only can work with 4-20mA sensor. As another example, the controller input signal is Pt100 so the controller only can work with Pt00 sensor, so it can't work with another sensor such as Cu50.

1.2. Alarms Outputs(ON/OFF control)

Relay contact: 250 V AC, 3 A (Resistive load).

1.3.Standard Alarms

Can be output an alarm when the measured value reaches a specified value.

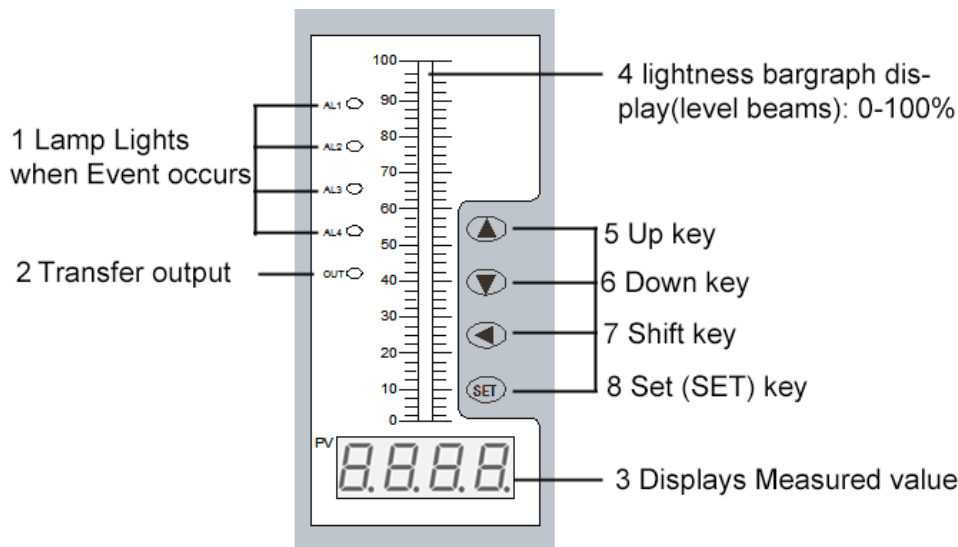
1.4 Sampling Time: 1 sec or 0.1 sec(OPTIONAL)

1.5.Use this controller within the following allowable range:

Allowable ambient temperature: -0 to +55 °C

Allowable ambient humidity: 5 to 85 % RH.

2.Parts Description:



1 ALMS: lamp Lights when Event occurs

3 PV display: Displays Measured value (PV) or various Parameter symbols

5 Up key: Increase numerals.

7Shift key: Shift digits when settings are changed.

2 Output lamp: Lights when output is turned on

4 Bar-graph display: Displays Measured value as 0-100%

6 Down key: Decrease numerals

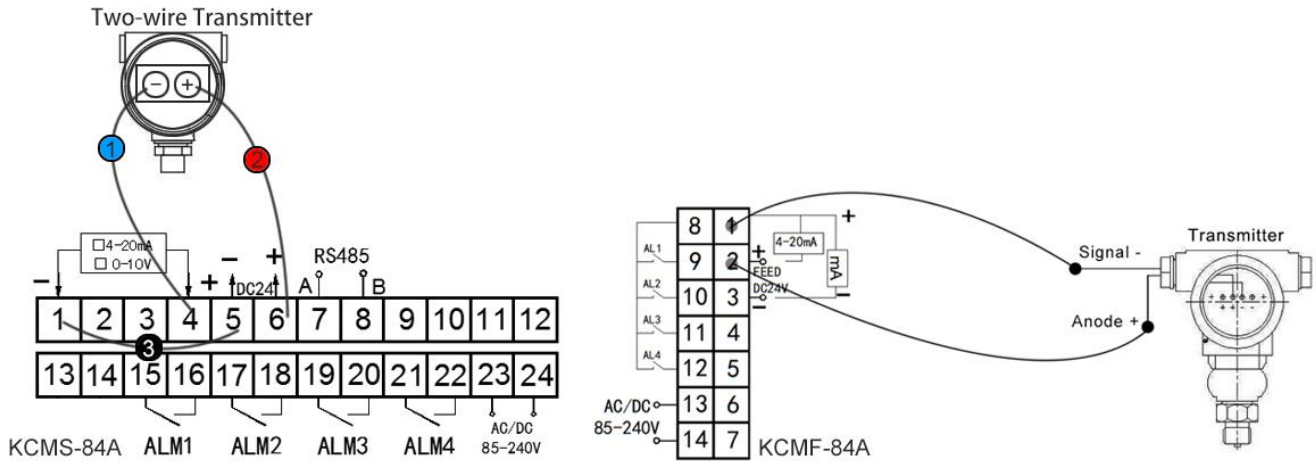
8 Set (SET) key: Used for Parameter calling up and set value registration.

3. Dimensions:

M:160×80mm panel cutout :152×76mm(horizontal)
 MA:96×96mm panel cutout :92×92mm
 MF:96×48mm panel cutout :92×45mm(horizontal)
 MR: 88×107×59mm DIN 35 rail mounting socket

MS:80×160mm panel cutout :76×152mm(vertical)
 MD:72×72mm panel cutout :68×68mm
 ME:48×96mm panel cutout :45×92mm(vertical)

4. Terminal Arrangement:



This wiring diagram is offered for example purposes only.

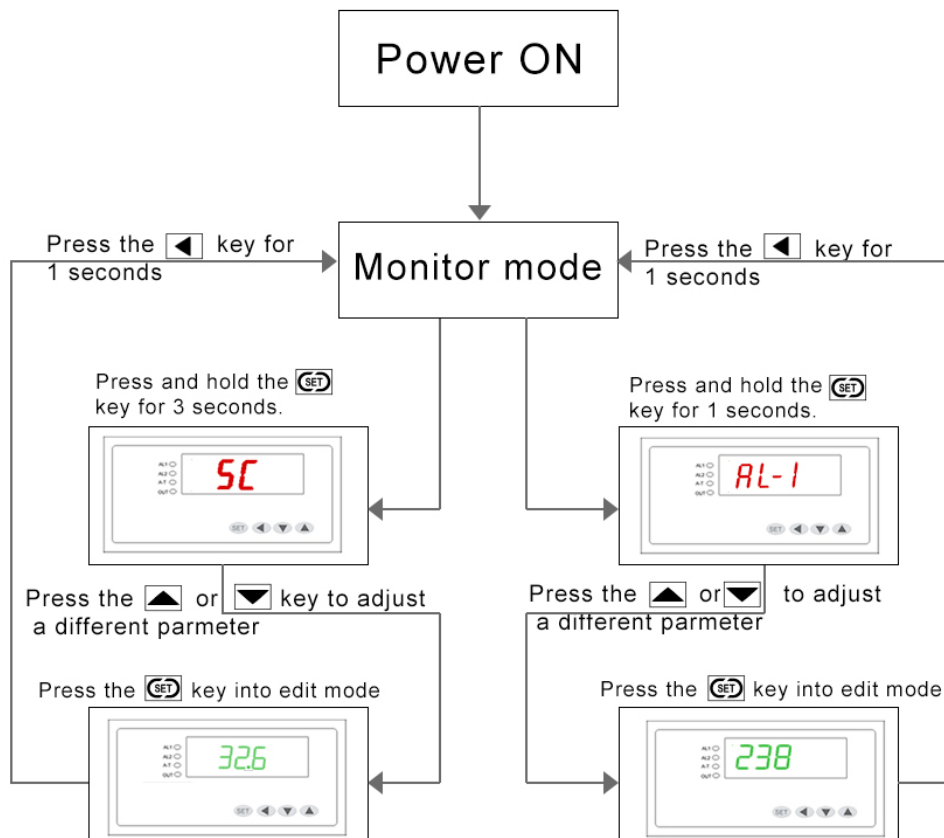
Tip: Correct terminal arrangement depending on the actual model.

5.Parameters

ID	Code	Name	Manual	Setting range	Ex-Factory
1	AL-1	Alarm1 Setting value	Refer to ALP1	P-SL~P-SH	300
2	ALHI	Alarm1 Setting value	When alp=3 or =4, the parameter will be display	P-SL~P-SH	300
	HY-1	Alarm Differential gap	Relay contact may repeat its turning ON and OFF due to input fluctuation if measured value (PV) is near the alarm set value. the differential gap setting can prevent the relay contact from ON or OFF repetition.	0.1~100.0	-
3	AL-2	Alarm2 SV	Refer to ALP2	P-SL~ P-SH	300
4	HY-2	Alarm2 HY	Alarm2 Differential gap	0.1~100.0	-
5	AL-3	Alarm3 SV	Refer to ALP3	P-SL~ P-SH	300
6	HY-3	Alarm3 HY	Alarm3 Differential gap	0.1~100.0	-
7	AL-4	Alarm4 SV	Refer to ALP4	P-SL~ P-SH	300
8	HY-4	Alarm4 HY	Alarm4 Differential gap	0.1~100.0	-
9	LOCK	Set data lock	LOCK=18, all the parameter can be set. Otherwise, all the parameter can't be set	0~50	0
Second level menu					
10	SC	PV Bias	The value set in the PV bias is added to the actual input value to correct the input value.	±20.0	0.0


11	<i>dP</i>	Decimal point position	Set the position of the decimal point for the measured value to be displayed.	0~3	0
12	<i>PS-H</i>	Input range high	The control is displayed after the Input type and Input range.	P-SL~9999	999.9
13	<i>PS-L</i>	Input range low		-1999~P-SH	0
14	<i>GS-H</i>	Bar-Graph high	Light Bar-Graph(scale) Display high limit and lower limit.	G-SL~P-SH	999.9
15	<i>GS-L</i>	Bar-Graph low		P-SL~G-SH	0
16	<i>PF</i>	Digital Filter	This is a 1st-order lay filter by software prepared in order to reduce fluctuations of measured value (PV) by noise.	0~99	20
17	<i>ALP1</i>	Alarm1 type	0: Alarm function OFF; 1: Process high alarm; 2:Process low alarm; Refer to 6. Alarm function	0~2	1
18	<i>ALP2</i>	Alarm2 type			
19	<i>ALP3</i>	Alarm3 type			
20	<i>ALP4</i>	Alarm4 type			
21	<i>Pb-H</i>	Transmission high	Transmission Output limiter high	P-SL~P-SH	-
22	<i>Pb-L</i>	Transmission low	Transmission Output limiter low		-
22	<i>outH</i>	Output limiter high	The min value and max value of output current for transmission output	outL~200	200
23	<i>outL</i>	Output limiter low		0~outH	0
24	<i>Addr</i>	Address	Communication address	0~255	1
25	<i>bAud</i>	Baud rate	1200; 2400; 4800; 9600;	-	9600

6.Operation




6.1 Basic Setting Level:

Parameter switching

Step 1: Press the  key for 1 second to enter into the basic setting level. The first parameter symbols ($AL - l$) will be display on the LED display

Step 2: Press the \blacktriangledown key ,the display changes to the next parameter

Press the \blacktriangle key, the display changes to the previous parameter

Step 3: Press the  key confirm and modify the setting value.

Parameter value setting

Step 4: Press \blacktriangleleft key to go to a different digit.

Parameters value can be changed by pressing the \blacktriangledown key or the \blacktriangle key.


Press the  key , the new value will be stored and return to the parameter switching display.

Return to the PV monitor display

Step5: Press \blacktriangleleft key to exit setting level, when parameter switching display mode.


6.2 The Second setting Level (Second level menu setting):

Parameter switching

Step 1: Press the  key for 3 second to enter into the basic setting level. The parameter symbols ($LoLH$) will be display on the LED display

Step 2: Press the \blacktriangledown key ,the display changes to the next parameter

Press the \blacktriangle key, the display changes to the previous parameter

Step 3: Press the  key confirm and modify the setting value.

Parameter value setting

Step 4: Press \blacktriangleleft key to go to a different digit.

Parameters value can be changed by pressing the \blacktriangledown key or the \blacktriangle key.

Press the  key , the new value will be stored and return to the parameter switching display.

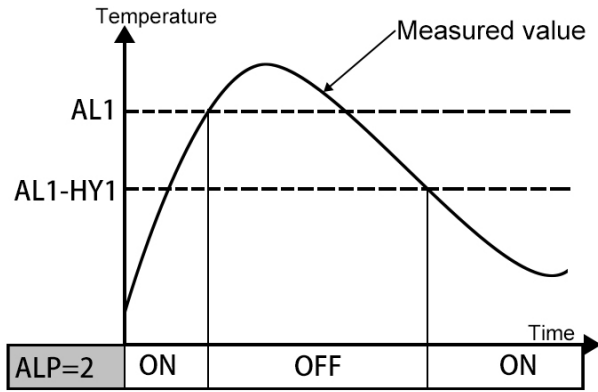
Return to the PV monitor display

Step5: Press \blacktriangleleft key to exit setting level, when parameter switching display mode.

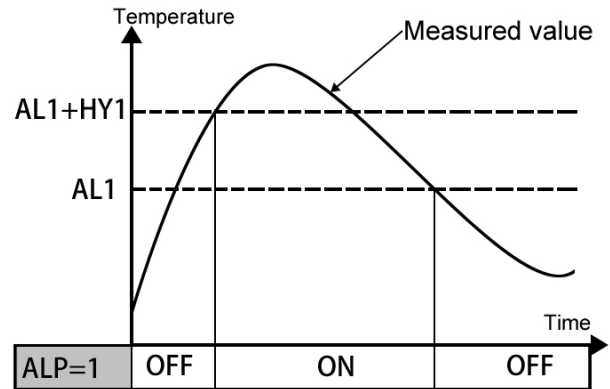
7. Alarm function

$ALP1$	Alarm status[ON]	Alarm status[OFF]
ALP1=1	$PV \geq AL - l$	$PV < AL - l - HY - l$
ALP1=2	$PV \leq AL - l$	$PV > AL - l + HY - l$
ALP1=3	$PV \leq AL - l$ OR $PV \geq ALHl$	$AL - l + 0.5 <$ OR $< ALHl - 0.5$
ALP1=4	$AL - l \leq PV \leq ALHl$	$PV < AL - l - 0.5$ OR $PV > ALHl + 0.5$
**If the sensor is broken and alp=5 or alp=6, alarm relay is disconnected in all situations.		
ALP1=5	$PV \geq AL - l$	$PV < AL - l - HY - l$
ALP1=6	$PV \leq AL - l$	$PV > AL - l + HY - l$

Process low alarm:



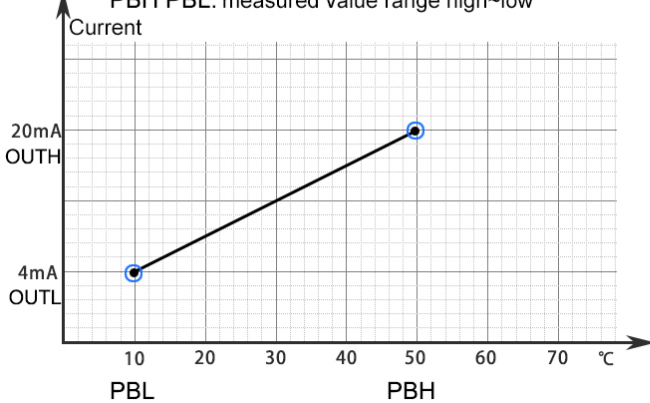
Process high alarm:



8. Transmission output and analogue input [OPTIONAL]:

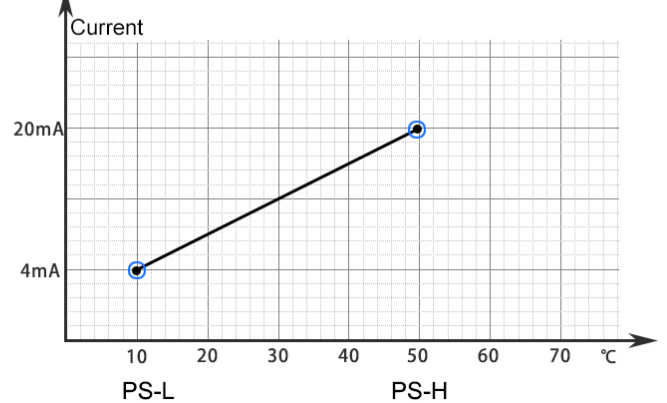
Transmission output

OUTH OUTL: Output limiter high~low
PBH PBL: measured value range high~low



4-20mA input

PS-H PS-L :4-20mA Input range high~low



9. Host communication based on MODBUS-RTU protocol [OPTIONAL]

The master controls communication between master and slave. A typical message consists of a request (query message) sent from the master followed by an answer (response message) from the slave. When master begins data transmission, a set of data is sent to the slave in a fixed sequence. When it is received, the slave decodes it, takes the necessary action, and returns data to the master.

9.1 Communication Mode:

Data bit length	Stop bits	Parity bit	Communication time interval
8-bit (Binary)	1,2	NONE	300ms

9.2 Message length of each function (Unit: byte):

Function code (Hexadecimal)	Function	Query message		Response message	
		Min	Max	Min	Max
03H	Read holding registers	8	8	7	7
06H	Preset single register	8	8	8	8

9.3 Message format

Slave address	The slave address is a number from 1 to 255 manually set at the front key panel of the controller.
Function code	Refer to 9.2. Message length of each function
Data	The data to execute the function specified by the function code is sent to the slave and corresponding data returned to the master from the slave.
CRC-16	CRC-16: Cyclic Redundancy Check

9.4 Read holding registers [03H]

The query message specifies the starting register address and quantity of registers to be read.

Slave address	Function code 03H	Register address	Quantity The setting must be 1	CRC16
<p>Example: The contents of the holding register 1001H are the read out from slave address 1. Query message: 01 03 10 01 00 01 D1 0A Response message: 01 03 02 00 FD 79 C5 Explain: 00FD=253, is processed as 25.3</p>				

9.5 Preset single register [06H]

The query message specifies data to be written into the designated holding register. Only R/W holding registers can be specified. The controller EEPROM had a life span of data written to the EEPROM less than 1000,000 times

Slave address	Function code	Register address	Write data	CRC16
<p>Example: Data is written into the holding register 0001H(AL-1) of slave address 1. Query message: 01 06 00 02 FF 38 68 28 Response message: 01 06 00 02 FF 38 68 28 When input ALM1 set value is -20.0, -20.0 is processed as -200, -200=0000H-00C8H=FF38H</p>				

8.6 No response

The slave ignores the query message and does not respond when:

- The slave address in the query message does not coincide with any slave address settings.
- The CRC code of the master does not coincide with that of the slave.
- Transmission error such as overrun, framing, parity and etc., is found in the query message.
- Set the Response Timeout >200ms and Delay between polls >200ms.

9.7 Register address list:

Symbol	Decimal point	Real Register	Holding Register
Measured value(PV)	YES	1001H	44098
Alarm output	NO	1201H	44610
Controller parameters (<i>Refer to 5. Parameters</i>)			
Alarm 1	YES	0000H	40001
HY-1	YES	0001H	40002
AL-2	YES	0002H	40003
HY-2	YES	0003H	40004
... And so on			
Address	NO	0018H	40025
bAud	NO	0019H	40026

Refer to this link for more information on MODBUS-RTU Communication Protocol:

<http://www.kcmeter.com/servicesread.asp?id=4>

Or scan QR code for more information:



Model and Suffix Code:

Specifications	Model and Suffix Code							
Model	KC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SIZE	80×160mm panel cutout :76×152mm 96×96mm panel cutout :92×92mm 96×48mm panel cutout :92×45mm(horizontal) 48×96mm panel cutout :45×92mm(vertical) 72×72mm panel cutout :68×68mm 88×107×59mm DIN 35 rail mounting socket	MS MA MF ME MD MR						
Sampling Time	Sampling Time: 0.1 sec Sampling Time: 1 sec	8EX 8						
Number of alarm	4 Alarm relay out	4						
Input Type	Thermocouple: K, E,J, R, S, T,WR25,N,RTD : Pt100, Cu50 DC voltage : 0 -5V, 1-5V , Current 0-10 mA, 4-20 Ma NTC 10K3950 3435 ,KTY 84-130 150 Specify a input type when ordering	PT K A NTC						
Power supply voltage	100 to 240V AC 24V DC						<input type="checkbox"/>	1
Communications	NONE RS-485(2-wire system: MODBUS-RTU) RS-232(3-wire system: MODBUS-RTU) Transfer Output: the measured value (PV) as a 4 - 20 mA transfer output. Measured value Data logger						<input type="checkbox"/>	RS RX BS LG

Character Symbols : This manual indicates 9-segment display characters as shown below.

A	B	C	D	E	F	G	H	I	J	K	L	M
<i>A</i>	<i>b</i>	<i>C</i>	<i>d</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>	<i>K</i>	<i>L</i>	<i>M</i>
N	O	P	Q	R	S	T	U	Y				
<i>n</i>	<i>o</i>	<i>p</i>	<i>q</i>	<i>r</i>	<i>s</i>	<i>t</i>	<i>u</i>	<i>y</i>				