

KCM-8GT Digital Level Indicator instruction manual

1.Features:

1.1.Input Sensor Types

Can be connect the following sensors and signals to the universal input.

The defaulted input type is fixed by factory, user can't modify himself only can choose one kind of input type. For example the controller support PT100 so user can only connect controller by pt100 sensor.

-TC: K, J, T, E, S, R

-RTD: Pt100, CU50

-Current input (analog input): 4 to 20 mA DC, 0 to 20 mA DC, 0 to 5v, 1 to 5v

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.

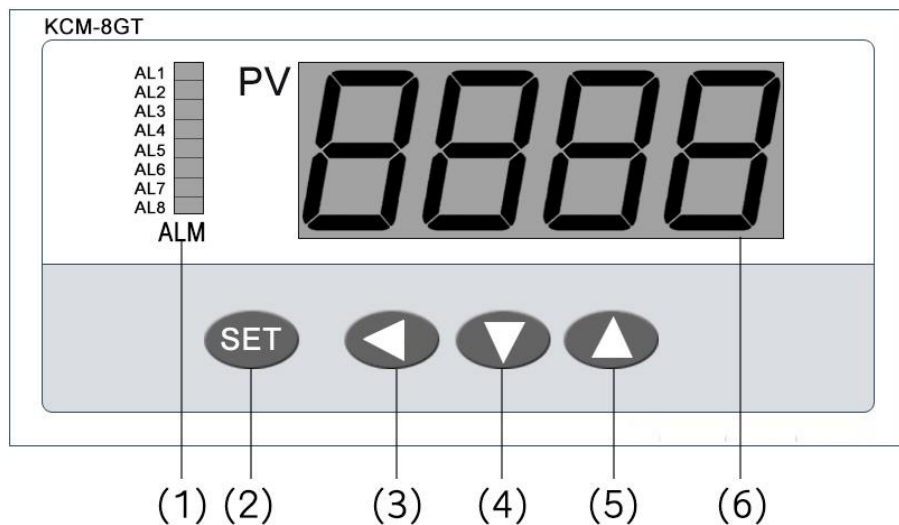
1.4 Sampling Time: 1 sec or 0.1 sec(OPTIONAL)

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 Shift key: Shift digits when settings are changed

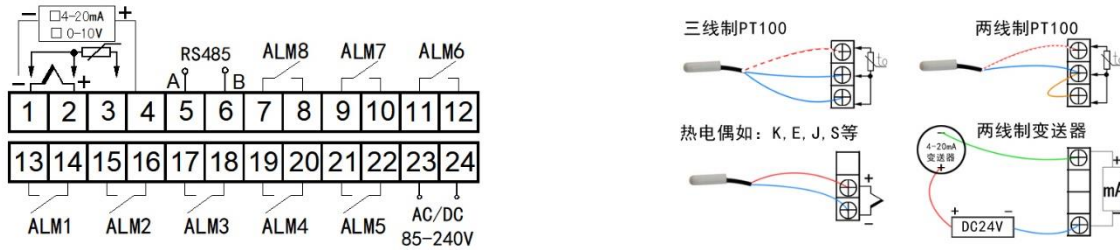
5 Up key: Increase numerals.

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

4 Down key: Decrease numerals

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

3. Terminal Arrangement:



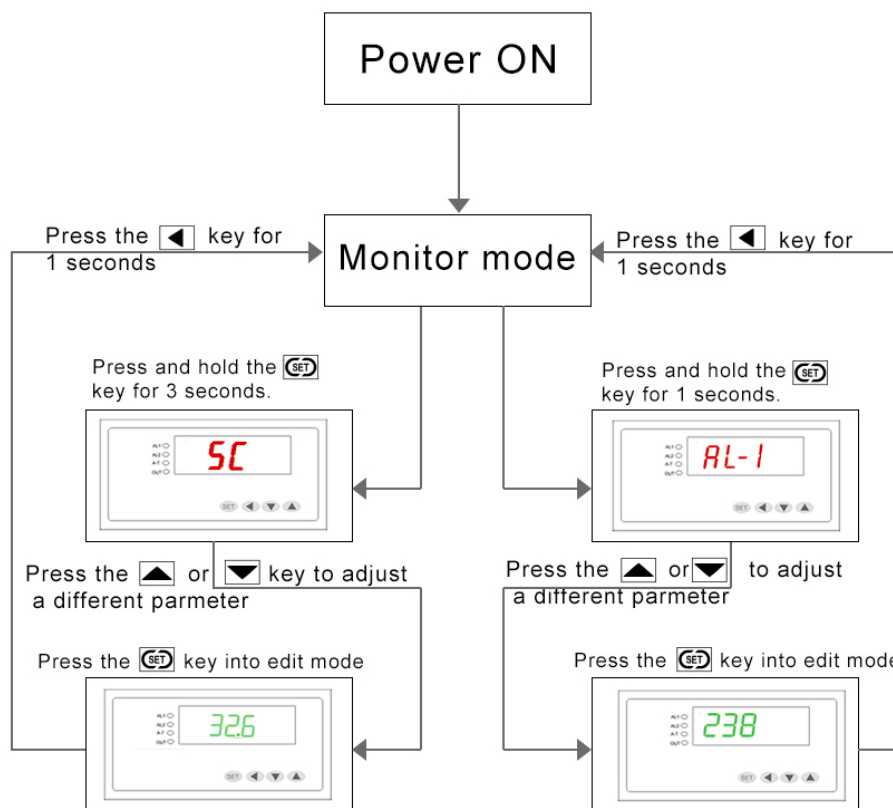
This wiring diagram is offered for example purposes only.
 PS: Correct terminal arrangement depend on the actual model.

4.Parameters

ID	Code	Name	Setting range	Manual	Ex-Factory
0	AL-1	Set value for Alarm 1 to Alarm 2	P-SL~P-SH	Refer to ALP1 to ALP8	100.0
1	AL-2				150.0
2	AL-3				200.0
3	AL-4				250.0
4	AL-5				300.0
5	AL-6				350.0
6	AL-7				400.0
7	AL-8				450.0
Second level menu					
8	LoLk	Set data lock	0~250	LOCK=18, all the parameter can be set. Otherwise, all the parameter can't be set	18
9	HY-1	Alarm Differential gap For Alarm 1 to Alarm 8	0.1~100.0	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.	0.5
10	HY-2				
11	HY-3				
12	HY-4				
13	HY-5				
14	HY-6				
15	HY-7				
16	HY-8				
17	SC	PV Bias	±100.0	The value set in the PV bias is added to the actual input value to correct the input value.	0.0
18	dP	Decimal point position	0~3	Set the position of the decimal point for the measured value to be displayed.	1
19	PS-H	Input range high	P-SL~9999	If the input type is dc 4-20mA, The controller is displayed after the Input and Input range.	999.9
20	PS-L	Input range low	0~P-SH		0.0
21	PF	Digital Filter	0~99	This is a 1st-order lay filter by software prepared in order to reduce fluctuations of measured value (PV) by noise.	20
22	ALP1	Alarm function for Alarm1 to Alarm 8	0~2	0: Alarm function OFF; 1: Process high alarm; 2: Process low alarm;	1
23	ALP2				
24	ALP3				

25	<i>ALP4</i>				
26	<i>ALP5</i>				
27	<i>ALP6</i>				
28	<i>ALP7</i>				
29	<i>ALP8</i>				
30	<i>Pb-H</i>	Transmission high	PS-L~9999	Transmission Output limiter high	9999
31	<i>Pb-L</i>	Transmission low	0 ~PS-H	Transmission Output limiter low	0
30	<i>Addr</i>	Address	0~64	Communication address	1
31	<i>bAud</i>	Baud rate	—	1200; 2400; 4800; 9600;	9600

5.Operation



5.1 Basic Setting Level:

After electrifying, press "SET" key for 1 second, user can see the First setting area. Press ▼,▲ can adjust serial number of the parameter, then press "SET" confirm and modify the setting value of this menu.

Meanwhile press◀,▼,▲ user can adjust the parameter's value, Press "SET" to confirm and save data.

Switch to Serial number modifying status to finish the adjustment. User can quit setting area during the serial number modifying status by pressing ◀ key

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

After electrifying, press "SET" key for 3 second, user can see the Second setting area. Press ▼,▲ can adjust serial number of the parameter, then press "SET" confirm and modify the setting value of this menu.

Meanwhile press ◀,▼,▲ user can adjust the parameter's value, Press "SET" to confirm and save

data.

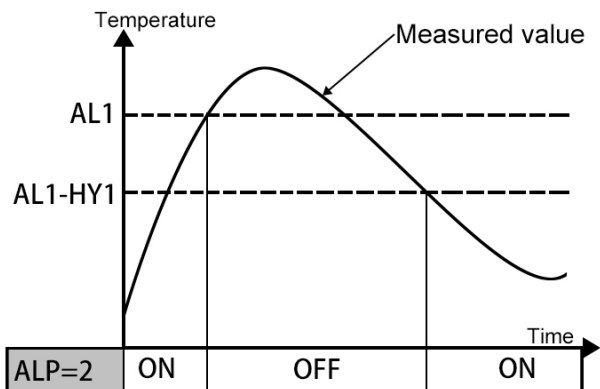
Switch to Serial number modifying status to finish the adjustment. User can quit setting area during the serial number modifying status by pressing ◀ key.

6. Alarm function

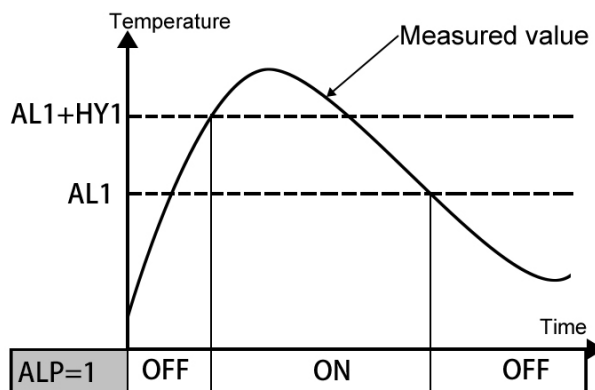
Alarm (ALM) function sets up the alarm status when the measured value (PV) or the deviation reaches the alarm set values. In the alarm status, the alarm output is output from the digital output terminals, and the alarms are used to drive the equipment danger signals or the safety equipment.

Alarm (ALM) function	Alarm status[ON]	Alarm status[OFF]
Process high alarm	Measured value>Alarm set value	Measured value<Alarm set value
Process low alarm	Measured value<Alarm set value	Measured value>Alarm set value

Process low alarm:



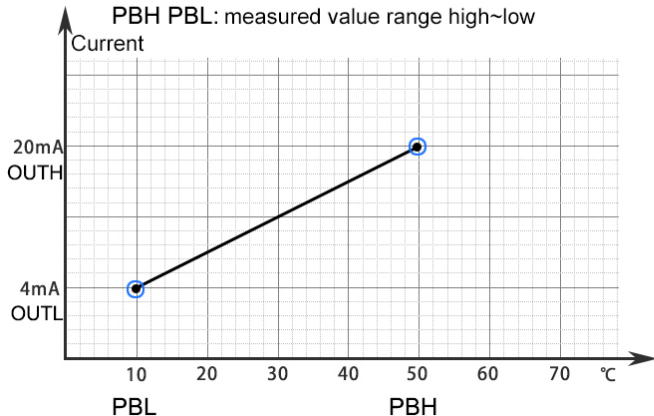
Process high alarm:



7. Transmission outputs and analogue inputs(OPTIONAL):

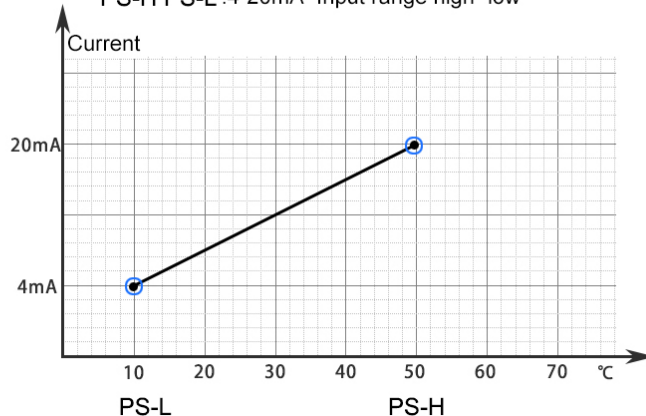
Transmission output

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



8. Host communication based on MODBUS-RTU protocol

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.

8.1 Communication Mode:

Data bit length	Stop bits	Parity bit	Communication time interval
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8-bit (Binary)	1,2	NONE	300ms
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8.2 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

8.3 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 8.2. 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

8.4 Read holding registers [03H]

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

Slave address	Function code	Register address	Quantity	CRC16
	03H		The setting must be 1	
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				

8.5 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
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				

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.
- The Communication time interval less than 300ms.

8.7 Register address list:

Symbol	Decimal point	Real Register	Holding Register
Messured value(PV)	YES	1001H	44098
Alarm output	NO	1201H	44610
Controller parameters (Refer to 3. Parameters)			
AL-1	YES	0000H	40001
AL-2	YES	0001H	40002
AL-3	YES	0002H	40003
AL-4	YES	0003H	40004
... And so on			
baud	NO	001FH	40032

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