KCM-XJ8/XJ16 channels digital indicator instrument manual

1. Features:

KCM-XJ16-8 series universal input　temperature circuit measuring instrument, support thermal resistance, thermocouple signal input; and support RS485 communication compatible with Modbus-RTU protocol.

1、 High accuracy：±0.5%F·S±1.0

2、Input Sensor Types　A：K　E　　J　　S　Pt1000　　Cu50

3、Temperature measurement range：

K（-30～1300℃）　E（-30～800℃）　　J（-30～1000℃）S(-30.0～1600.0℃)

Pt1000(-200～600℃)　　Cu50(-100～150℃)　4-20mA（-1999～9999℃）

4、Input channels: 1-16 input channels optional

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

6、Dimensions:

H×W×D (Unit: mm) 160×80×85 Panel cutout 152×76

7、Power supply:

AC 220V±10% 50HZ Power, consumption less than 5W

DC 24V

8、Use this controller within the following allowable range:

Allowable ambient temperature: 0 to 50 °C

Allowable ambient humidity:　35 to 85 % RH.

3. Parts Description:

1. CH display：Displays Channel No. or various Parameter symbols

2 PV display：Displays Measured value (PV) or various Parameter setvalues.

3. ALM :lamp Light when a channel Event occurs.

4. Up key：Increase numerals.

5. Down key：Decrease numerals.

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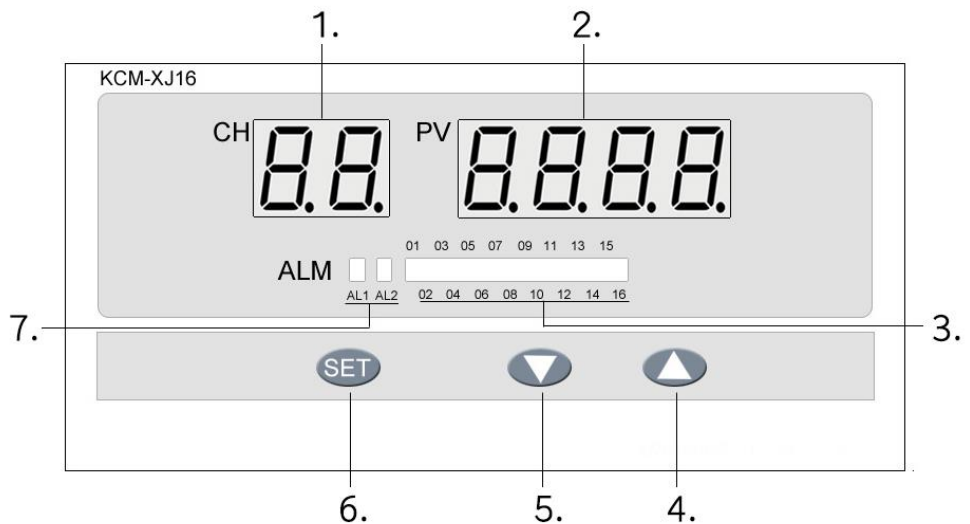
4. Operation

Press the key SET 3 seconds to enter into the main Parameters, the controller will display the Parameter code(1～23)in the window of CH, and display the Parameter data at PV window. Press Key ▲、▼to adjust the Parameters, and then press the Key SET to preserve.

It will be preserved of the data and withdrawal of the setting with no any operations automatically within 10 seconds.

Electronics Lock. All the Parameter can be revised when Lock=0;

4.2Setting value Level:

Press the key SET 1 seconds to enter into the SV Setting Mode. When the operation mode is the Auto-tuning mode, the Set value (SV) can be set.

5. Parameters：

ID	CODE	Name	Setting range	Manual	Factory value
0	LOCK	Password lock	0~50	LC＝18，Parameter can be set	18
1	Sn	Input type	一	A:CU50、Pt2、K、E、J、T B:4-20mA(input type is fixed by factory)	一
2	AH	Alarm1 set value		Measured value＞AL1 Process high alarm on	
3	AL	Alarm2 set value		Measured value＜AL2， Process low alarm on	
4	DP	Decimal point	0～1	Decimal position	1
5	LU	Channel count	1-16	How many channels to be measured	16
6	S1	Interval time	4~120s	Measurements interval of each route	
7	S2	Address	0~255	Communication address	1
8	BT	Baud rate	0~3	0：1200；　1：2400； 2：4800；　3：9600	3
9	OP	Communication	0-2	0:no output; 1:RS232 or RS485; 2:contact the micro-printer;	1
10	C1	Ch1 PV bias	-20～20	The value set in the PV bias is added to the actual input value to correct the input value.	0
11	C2	Ch2 PV bias	-20～20		
26	D6	Ch16 PV bias	-20～20		

6.Terminal configuration：
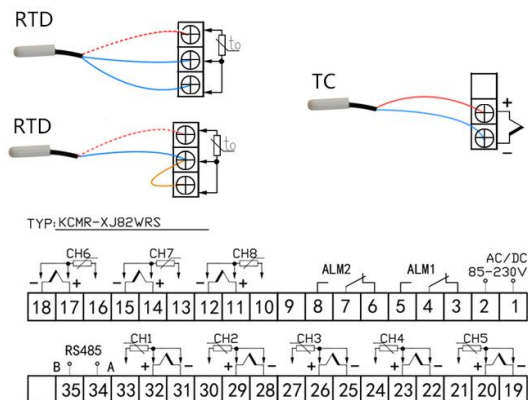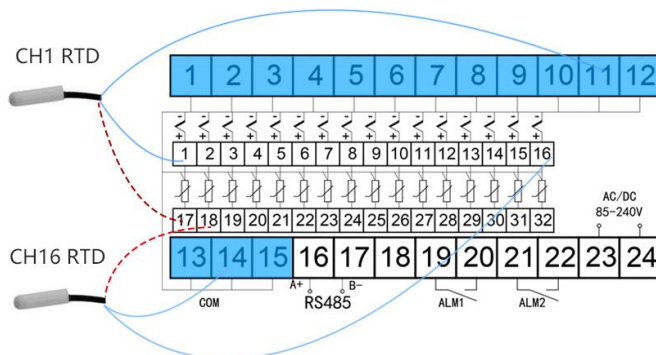
7. Host communication based on MODBUS-RTU protocol [OPTIONAL]

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.

7.1 Communication Mode:

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

7.2 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

7.3 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 **7.2. 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

7.4 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
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				

7.5 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				

7.6 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.

7.7 Register address list:

Symbol	Decimal point	Real Register	Holding Register
Messured value(PV)	YES	1001H~1010H	44098~44113
Alarm output	NO	1201H~1210H	44609~44625
Controller parameters *(Refer to 3. Parameters)*			
LOCK	NO	0000H	40001
Sn	NO	0001H	40002
AH	YES	0002H	40003
AL	YES	0003H	40004
... And so on			
D6	YES	001AH	40027

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	$ᴘ$	L	$\bar{n}$
N	O	P	Q	R	S	t	U	Y	T			
n	o	P	q	r	5	t	u	y	$Γ$			