

Instruction Manual

# SKX-1600 SIXTEEN-CHANNEL TEMPERATURE METER INSTRUCTION MANUAL

Version 1.0 (Aug, 2024)



**Caution**

- This controller is intended to be used with proper safety equipment under normal operating conditions. Failure or malfunction of the controller may result in personal injury or damage to the equipment or other property, devices (limit or safety controls) or systems (alarm or supervisory) intended to warn of or protect against failure or malfunction of the controller. To prevent harm to you and to the equipment, this item must be incorporated into and maintained as a part of the control system under the appropriate environment.
- This warranty is limited to the controller only. See auberins.com for warranty information.

**1. Features & Specifications:**

- 1) Sixteen channel temperature readout in 160x80mm size meter. This meter can display the current channel number and its current readout. The display can be manually selected, or auto scrolling from all the channels.
- 2) Available sensor input types:  
Thermocouple (temperature input): K, E, J, T, S  
Resistance thermometer (temperature input): Pt100, Cu50
- 3) Outputs: two 3A resistive dry relay outputs, 24-250V AC/DC, shared by all 16 channels.
- 6) Accuracy:  $\pm 0.5\%$  Full scale.
- 7) Sampling rate: 2 sec
- 8) Ambient temperature: 32 ~ 122°F or 0 ~ 50°C
- 9) Ambient humidity:  $\leq 85\%$  RH.
- 10) Meter size: 160x80x105 mm. Panel cutout: 152x76 mm
- 11) Power Supply: 85-240V AC/DC, 50/60Hz.
- 12) Wattage: less than 5W

**2. Front Panel**

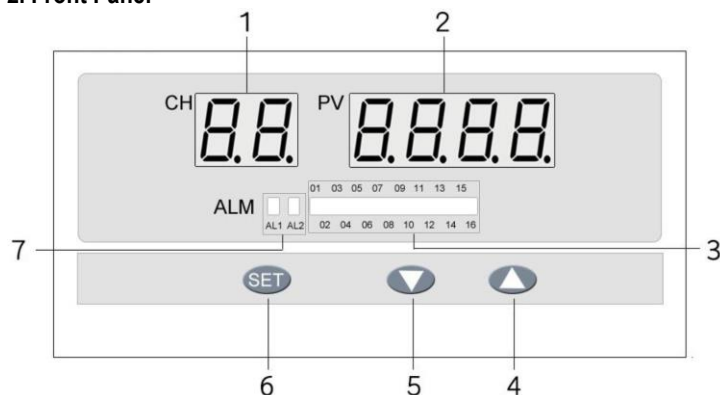


Figure 1. Front keypad and indicator

1. Channel number (CH) display: it will display the current selected channel. Under the parameter setting mode, it will display the parameter name.
2. PV display: Display the measured value for the current selected channel. Under the parameter setting mode, it will display the parameter value.
3. Alarm channel indicator array (01 ~ 16): This indicator array includes 16 separate indicators. One for each channel. OFF means no alarm is triggered for that channel. **Blinking** means, absolute high alarm is triggered for that channel. **Solid ON** means, absolute low alarm is triggered for that channel.

If both absolute high and low alarms are triggered for the same channel (less likely), this indicator will be solid ON.

4. Up key: Increases numeric value of the setting value.
5. Down key: Decrease numeric value of the setting value.
6. SET key: Hold this key for 3s to enter system parameter menu. Under the parameter setting mode, use SET key to confirm the parameter changes.
7. ALM alarm relay indicator: When AL1 indicator is ON, the absolute high alarm in at least one channel is triggered. When AL2 indicator is ON, the absolute low alarm in at least one channel is triggered.

**Note:** There are two sections of alarm indicators used in this meter. One is alarm channel indicator array (#3) and another is alarm relay indicator (#7). Alarm channel indicator is used to show you which channel has a triggered alarm (high or low alarms), while alarm relay indicator shows if any high or low alarm is triggered among all the channels.

**3. Terminal Wiring**

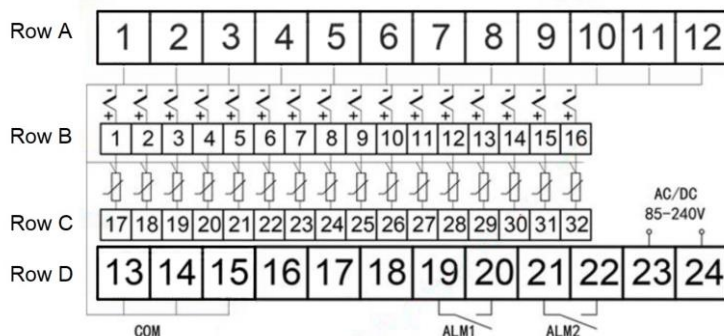
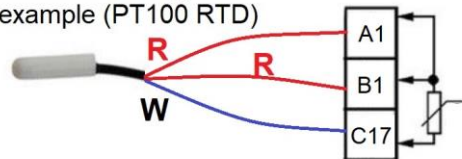


Figure 2. Terminals

Channel 1 wiring example (PT100 RTD)



Channel 1 wiring example (type K TC)

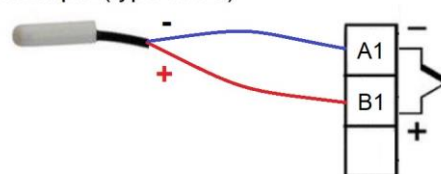


Figure 3. Thermocouple/RTD wiring examples

**Note 1:** The pin number used in this manual comes with a format as “row number” + “pin number”. For example, Pin A1 is Pin 1 in row A. Pin D14 is Pin 14 in row D.

**Note 2:** Pin A1-A12 and pin D13-D15 are shorted internally.

**Channel 1 sensor wiring:**

For three wires PT100 RTD, it has two same color wires and one different color wire. Connect one different color wire on pin C17. Connect two same color wire on pin A1 and pin B1.

For two wires PT100 RTD, connect one wire on pin C17. Connect another wire on pin B1. Connect one jumper from pin A1 to pin B1.

For thermocouple, connect positive wire on pin B1. Connect negative wire on pin A1. For US color code (type K), yellow is positive and red is negative. For import color code (type K), red is positive and blue is negative.

**Channel 5 sensor wiring:**

For three wires PT100 RTD, it has two same color wires and one different color wire. Connect one different color wire on pin C21. Connect two same color wire on pin A5 and pin B5.

For two wires PT100 RTD, connect one wire on pin C21. Connect another wire on pin B5. Connect one jumper from pin A5 to pin B5.

For thermocouple, connect positive wire on pin B5. Connect negative wire on pin A5. For US color code (type K), yellow is positive and red is negative. For import color code (type K), red is positive and blue is negative.

**4. Parameter Setting**

Table 1. Parameter list

Code	Name	Description	Setting Range	Initial Setting
LC	Parameter lock	LOCK = 18, parameter unlocked LOCK ≠ 18, parameter locked.	0 ~ 50	18
Sn	Input type	Thermocouple: K, E, J, T, S; RTD: Pt100, Cu50		K
AH	Absolute High Alarm	Full range, based on sensor type	-	300.0
AL	Absolute Low Alarm	Full range, based on sensor type	-	100.0
DP	Decimal point position	Set the position of the decimal point for the measured value.	0, 1	1
Lu	Qty of enabled Channels	The qty of channels you want to use with this meter.	1 ~ 16	16
S1	CH scan intervals	The time delay to show the readout from the next channel.	4 ~ 120s	4
S2				1
BT	Reserved parameter			9600
OP	Reserved parameter			OFF
C1	Input offset	A total of 16 offset parameters. One for each channel: C1 ~ C9 for channel #1 ~ #9, D0 ~ D6 for channel #10 ~ #16.	±20.0	0.0
C2				
-----				
D6				
CF	Display unit	C: Celsius F: Fahrenheit	C, F	C
UH	Reserved parameter			20.0
UL	Reserved parameter			4.0
PA	Reserved parameter			0
BH	Reserved parameter			999.9
BL	Reserved parameter			0.0

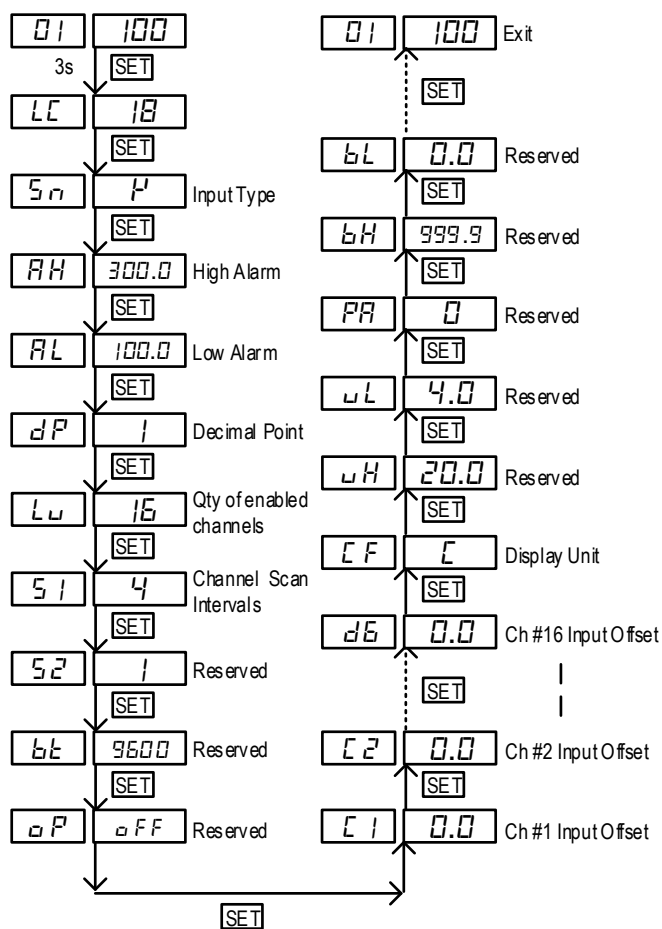


Figure 4. Operation flow chart

Hold SET key for about 3 seconds and you will enter the parameter setting mode. CH display will show the parameter name and PV display will show the parameter value. Press ▲ and ▼ keys to change the parameter value. Press SET key to save the change and change to the next parameter.

To exit the parameter setting mode, press SET + ▼ keys together.

**5. Display mode**

This meter has two display modes: auto mode and manual mode.

**5.1 Auto mode**

This is the default mode of this meter. It will show the readout from the current channel for 4s (parameter S1), then it will show the readout from the next channel. It will show the readouts from all the channels one by one.

**5.2 Manual mode**

Under this mode, this meter will only show the readout from the current channel. User can manually change the display to the previous or the next channel.

To switch to manual mode, press and hold ▼ key for 3s. Use ▲ and ▼ keys to change the display to the previous or the next channel. Press SET key once to switch to the auto mode.

**6. Alarm**

This meter comes with two dry relay alarm outputs, shared by all 16 channels.

Output ALM1 (pin D19 & D20) is for absolute high alarm and output ALM2 (pin D21 & D22) is for absolute low alarm.

This meter comes with two alarm parameters (AH, AL), which are also used for all 16 channels. In other words, you cannot set high/low alarm separately for each channel. You can only set one absolute high alarm and one absolute low alarm in this meter, which are used for all 16 channels.

Example #1, assuming you set AH to be 100. At a moment, if channel 2 readout is 150 degree, ALM1 relay will be triggered (absolute high alarm). AL1 alarm relay indicator (#7 in figure 1) will be **solid ON** and channel 2 indicator in alarm channel indicator array (#3 in figure 1) will be **blinking**.

Example #2, assuming you set AL to be 80. At a moment, if channel 4 and 5 readouts are both 40 degree, ALM2 relay will be triggered (absolute low alarm). AL2 alarm relay indicator (#7 in figure 1) will be **solid ON** and channel 4 indicator in alarm channel indicator array (#3 in figure 1) will be **solid ON**.

**Auber Instruments Inc.**  
5755 North Point Parkway, Suite 99,  
Alpharetta, GA 30022  
[www.auberins.com](http://www.auberins.com)  
Email: [info@auberins.com](mailto:info@auberins.com)

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