KCM-LCD2P Dual-Channel Ramp/Soak Temperature Controller - User Manual

⚠ SAFETY INFORMATION

WARNING — ELECTRIC SHOCK HAZARD: Disconnect all power sources and follow applicable lockout/tagout procedures before wiring or servicing the controller. Do not touch terminals or internal components while power is applied. Failure to follow these instructions can result in serious injury or death.

CAUTION — EQUIPMENT DAMAGE: Before applying power, verify that the supply voltage matches the controller's rating label. Before operating the process, set SN to match the connected sensor or input signal.

WARNING — OVERHEATING HAZARD: Do not use this controller as the sole means of overtemperature protection. Provide an independent high-limit shutdown and other protective devices as required by the process design and applicable codes.

I. Overview

The KCM-LCD2P is a dual-channel ramp/soak temperature controller with two independently selectable sensor inputs. Each channel has its own PID parameters and auto-tuning function for independent closed-loop temperature control.

Control output options include 4–20 mA or 0–10 V analog output, relay output, and solid-state relay (SSR) output. Available outputs depend on the installed hardware.

Each channel supports an independent temperature profile with up to 20 program segments for heating ramps, cooling ramps, and timed soaks. This allows two workstations or temperature zones to run separate process profiles.

II. Technical Specifications

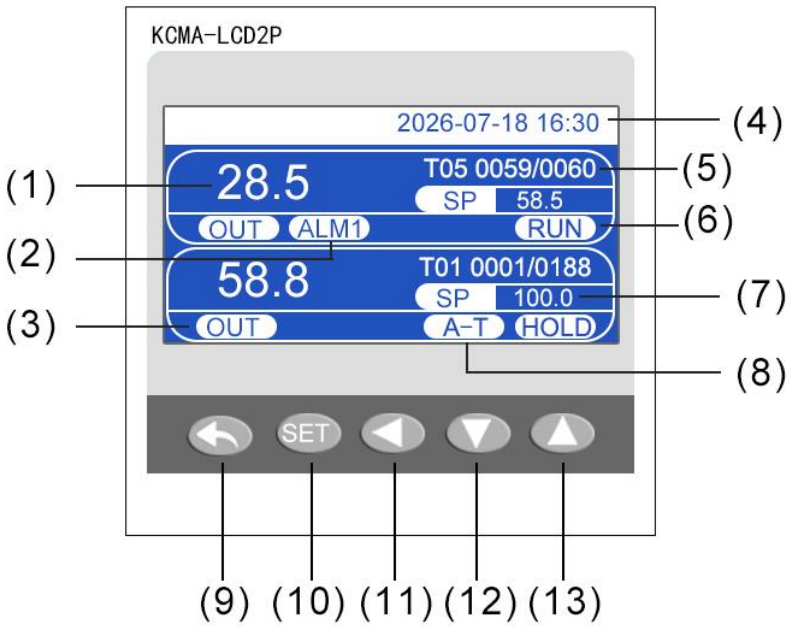
1. **Measurement Accuracy:** ±0.5% of Full Scale (F.S.) ±1 digit
2. **Supported Inputs:**
   Temperature-input models: Selectable Cu50 or Pt100 RTD input, or Type K, E, J, T, or S thermocouple input.
   Analog-input models: 0–5 V or 4–20 mA, fixed by the installed hardware. Display range: -1999 to 9999.
3. **Control Output (Hardware Dependent):**
   - Relay (SPST, 3 A @ 220 VAC max., resistive load)
   - Solid-state relay (SSR) output
   - Analog output: 4–20 mA or 0–10 V, depending on the installed hardware.

   Verify the output type and electrical ratings on the controller's label before wiring.
4. **Power Supply:** 85-242 V AC/DC (universal switching), 50/60Hz or Low-Voltage Option: 24 VDC
5. **Communication (Optional):** RS232/485 serial port with standard Modbus-RTU protocol
6. **Operating Environment:** 0 to 50.0°C (32 to 122°F), relative humidity ≤ 85%, in an area free from corrosive gases and strong electromagnetic interference.

III. Front Panel and Wiring

1. **PV Display:** Show the measured value for Channel 1 (CH1) and Channel 2 (CH2). The measured variable depends on the connected sensor, such as temperature, pressure, level, or humidity.
2. **ALM indicator:** Illuminates when the channel alarm relay is energized.
3. **OUT indicator:** Displays real-time control output level/activity.
4. **System clock:** Displays real-time clock (RTC) on data-logging equipped models.
5. **Program segment:** Displays active segment number and elapsed segment run time.
6. **Program status annunciators:** RUN (executing), STOP (control output stopped), HOLD (segment timer paused), or END (program complete).

7. **SV display:** Displays target setpoint (SV). Each channel features a dedicated PV/SV display pair.
8. **AT indicator:** Illuminates while PID auto-tuning is in progress on the channel.
9. **Return key (↩):** Exits menu and returns to the main display.
10. **SET key:** Press and hold for 3 seconds to enter parameter menus.
11. **Shift / Page key (◄):** Moves editing cursor between digits; cycles through menu pages.
12. **Down key (▼):** Decrements values during parameter editing, setpoint adjustment, or manual output control.
13. **Up key (▲):** Increments values during parameter editing, setpoint adjustment, or manual output control.



IV. Parameter Reference

Program Segment Parameters (Table 4-1)

With the controller powered on, press and hold SET for 3 seconds to open the main menu. Use the Shift key ◄ to locate the program segment menu, then press SET to open it.

No.	Code	Parameter	Range	Description	Default
1	SP1	Temperature	Input range	Segment 1 target setpoint	0
2	ST1	Time	-21 to 9999	Segment 1 duration (time base selected by SEC)	0
…					
37	SP19	Temperature	Input range	Segment 19 target setpoint	0
38	ST19	Time	-21 to 9999	Segment 19 duration (time base selected by SEC)	0
39	SP20	Temperature	Input range	Segment 20 target setpoint	0
40	ST20	Jump / End	-21 to -1	Segment 20 only supports a jump or program end command.	-21

Special commands for ST ≤ 0:

0: Skip immediately to the next segment.	-X: Jump to segment X (1–20). If X is the current segment, maintain setpoint indefinitely (infinite soak without timer countdown).	-21: End program.

Configuration Parameters (Table 4-2)

No.	Symbol	Name	Range	Description	Default
Level 1 Menu: Common Parameters					
0	LOCK	Parameter Lock	0–50	Enter 18 to unlock parameter editing. Any other value locks all parameters against unauthorized modification.	18
1	ADDR	Communication Address	0–255	Sets the controller Modbus slave address (station number).	1

	GAP	Data Logging Interval	0–3600 s	Sets the data logging sample interval in seconds (models with data logger only).	1
2	BAUD	Baud Rate	0–3	0: 4800 bps; 1: 9600 bps; 2: 19200 bps; 3: 38400 bps. The menu displays the baud rate rather than its numeric code.	9600 code 1
3	PARI	Parity	0–2	0: None; 1: Odd; 2: Even. The menu displays the parity option rather than its numeric code.	
Level 2 Menu: Channel Parameters (Configured Separately for Each Channel)					
4	HZ	Holdback Band	0–999.9	Holdback band (guaranteed soak band). If |PV − SP| exceeds HZ, segment timer pauses. Timer resumes once PV returns within the holdback band.	-
5	SEC	Program Time Unit	0–1	0: Minutes; 1: Seconds. Selects the profile segment time base.	
6	PDE	Power-Up Program Action	0–3	0: Manual restart required; performs PV hot-start and resumes from the segment matching current PV. 1: Manual restart required; restarts from Segment 1. 2: Automatic hot-start; matches current PV and resumes profile execution. 3: Automatic restart; restarts from Segment 1.	0
7	SN	Input Type	-	RTD: Cu50 or Pt100 Thermocouple: Type K, E, J, T, or S Analog: 4–20 mA or 0–5 V, depending on the installed hardware	-
8	AT	Auto-Tuning	0–1	OFF: Auto-tuning disabled. ON: Start auto-tuning.	0
9	C/F	Temperature Units	C F	C: Celsius; F: Fahrenheit	
10	SC	Input Offset	-50.0 to 50.0	Sensor calibration offset (zero shift). Compensates for sensor error or lead wire resistance.	0.0
11	PS-H	Input Range High	PS-L to 9999	Sets the upper display range and setpoint limit for the input.	9999
12	PS-L	Input Range Low	0 to PS-H	Sets the lower display range and setpoint limit for the input.	0
13	FILT	Input Filter	0–80	First-order digital input filter constant. Higher values provide stronger electrical noise filtering but increase measurement response lag.	20
14	DP	Decimal Places	0–3	Sets decimal point position (resolution).	1
15	OP	Output Mode	0–5	Selects the control action. See Section 4.2.1.	0
16	ALG	PID Control Algorithm	0–2	0: Standard temperature PID; 1: Fuzzy PID; 2: Pressure PID. Run auto-tuning again when switching between standard temperature PID (0) and	0

				either of the other algorithms (1 or 2).	
17	ARW	Anti-Reset Windup	0–100	Anti-reset windup limits integral accumulation during output saturation to prevent overshoot	50
18	T	Proportional Cycle Time	1–120 s	Time-proportioning cycle (PWM period) for PID control. Shorter cycles improve control smoothness but increase switching frequency. Applies only to relay and SSR outputs; do not use overly short cycles on mechanical relays.	10
19	HY	Control Hysteresis	0.1–50.0	On/off control switching differential (hysteresis / deadband). Smaller values provide tighter control. For electromechanical relays, avoid overly small values to prevent rapid contact cycling and contact wear.	1.0
20	P	Proportional Band	0–999.9	Sets the proportional band. Smaller values produce a faster response; larger values produce a slower response. Set P = 0 for on/off control.	50
21	I	Integral Time	0–9999	Integral action reduces steady-state error. Smaller nonzero values increase integral action; larger values reduce it.	100
22	D	Derivative Time	0–9999	Derivative action responds to the rate of change of the process value to improve stability. Larger values increase derivative action; smaller values reduce it.	30
23	PIDL	PID Output Low Limit	0 to PIDH	Sets the minimum PID control output, as a percentage.	0
24	PIDH	PID Output High Limit	PIDL to 100.0	Sets the maximum PID control output, as a percentage.	100.0
25	OUTH	Output High Limit	OUTL to 220	Set the high and low limits of the control or retransmission output. For current outputs, these limits can be used to configure ranges such as 0–20 mA, 4–20 mA, or 0–10 mA, subject to the installed hardware.	200
26	OUTL	Output Low Limit	0 to OUTH		40
27	ALP	Alarm Mode	0–28	0: Alarm disabled. 1–8: Process alarm modes; see Table 4-3. Values above 8 are displayed as P1–P20 and select an end-of-segment alarm for the corresponding segment.	0
28	ALM	Alarm Setpoint / Duration	Input range	For ALP = 1–8, sets the alarm threshold. For P1–P20, sets the alarm duration in seconds; ALM ≤ 0 keeps the alarm active until manually canceled.	-
29	ALM-L	Second Alarm Setpoint		Used only for band alarms (ALP = 5 or 6). Setting range: input range.	
30	AL-HY	Alarm Hysteresis	0.1–50.0	Alarm hysteresis (deadband). Prevents relay contact chattering near the trip threshold.	

4.1 On/Off Control — Relay and SSR Outputs

Set P = 0 to use on/off control instead of PID control. The output switches at the thresholds below, based on the setpoint (SP), hysteresis (HY), and output mode (OP).

Table 4-1A: Main Control (OUT Terminal) On/Off Switching Logic			
Control Action	Settings	Output Turns OFF	Output Turns ON
Heating (reverse-acting)	P = 0; OP = 0	Measured Value ≥ SP	Measured Value ≤ SP − HY
Cooling (direct-acting)	P = 0; OP = 1	Measured Value ≤ SP	Measured Value ≥ SP + HY

Sensor and input fault indications

-HH-: The input is above range. An open thermocouple can also cause this indication.

-LL-: The input is below range. For example, a 4–20 mA input below 4 mA produces this indication.

Application Examples:

Heating: To turn the heater on at or below 90°C and off at or above 100°C, set SP = 100, HY = 10.0, OP = 0, P = 0.

Cooling: To turn the cooling output on at or above 100°C and off at or below 90°C, set SP = 90, HY = 10.0, OP = 1, P = 0.

4.2.1 PID Control Modes

Table 4-2A: Output Modes

Control Mode	OP	Description
0: Heating PID (reverse-acting)	OP=0	Controls the selected channel using reverse-acting PID. As the process value rises, the output decreases.
1: Cooling PID (direct-acting)	OP=1	Controls the selected channel using direct-acting PID. As the process value rises, the output increases.
2: Differential PID (reverse-acting)	OP=2	Controls the difference PV1 - PV2 to the setpoint SP. Reverse-acting: As the difference increases, the output decreases.
3: Differential PID (direct-acting)	OP=3	Controls the difference PV1 - PV2 to the setpoint SP. Direct-acting: As the difference increases, the output increases.
4: Two-channel average PID (reverse-acting)	OP=4	Controls the average (PV1 + PV2) / 2 to the setpoint SP. Reverse-acting: As the average increases, the output decreases.
5: Two-channel average PID (direct-acting)	OP=5	Controls the average (PV1 + PV2) / 2 to the setpoint SP. Direct-acting: As the average increases, the output increases.
PV1 and PV2 are the process values for Channels 1 and 2. SP is the active program setpoint. For OP and PID output limits, see Table 4-2: OP, PIDL, and PIDH.		

Note: The differential modes above are shown for Channel 1. For Channel 2, the difference is PV2 - PV1. Direct or reverse action is defined relative to the process value used for control.

4.3.1 Alarm Modes:

Alarm relay contact rating: 3 A @ 220 VAC max. (resistive load)

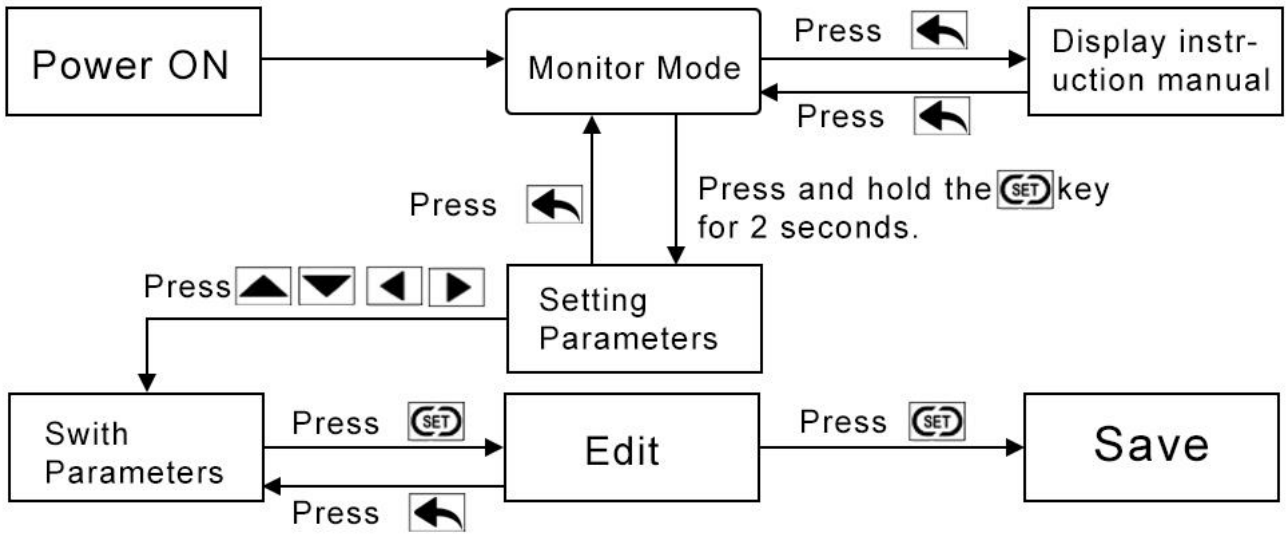
Table 4-3: Alarm trip and reset thresholds (Channel 1)

Mode	Alarm Type	Alarm Energizes	Alarm De-energizes
ALP = 1	Process High Alarm	PV ≥ ALM	PV < ALM − AL-HY
ALP = 2	Process Low Alarm	PV ≤ ALM	PV > ALM + AL-HY
ALP = 3	Deviation High Alarm	PV ≥ SP + ALM	PV < SP + ALM − AL-HY
ALP = 4	Deviation Low Alarm	PV ≤ SP − ALM	PV > SP − ALM + AL-HY
ALP = 5	Out-of-Band (Window) Alarm	PV ≤ ALM-L OR PV ≥ ALM	ALM-L + AL-HY < PV < ALM − AL-HY

ALP = 6	In-Band (Window) Alarm	ALM-L ≤ PV ≤ ALM	PV < ALM-L − AL-HY OR PV > ALM + AL-HY
ALP = 7	Temperature Difference High Alarm	(PV1 − PV2) ≥ ALM	(PV1 − PV2) < ALM − AL-HY
ALP = 8	Temperature Difference Low Alarm	(PV1 − PV2) ≤ ALM	(PV1 − PV2) > ALM + AL-HY
End-of-segment alarms: Set ALP to P1–P20 to trip an alarm when the corresponding segment finishes (e.g., P1 trips at the end of Segment 1). ALM sets the alarm duration in seconds; ALM ≤ 0 latches the alarm until manually acknowledged. Press HOME (Return key ↩) to acknowledge and silence the alarm.			
PV1 and PV2 are the process values for Channels 1 and 2. SP is the active program setpoint. For alarm settings, see ALP, ALM, ALM-L, and AL-HY in Table 4-2.			

Note: Differential alarm thresholds above are shown for Channel 1. For Channel 2, use PV2 - PV1.

V. Parameter Configuration



1. Main display: During normal operation, the LCD shows the process value, setpoint, and alarm status for both channels.

2. Open parameter menu: Press and hold SET for 3 seconds. Each page displays up to five parameters. Use ▼ or ▲ to scroll through parameters and the Shift key ◄ to switch menu pages. Press the Return key ↩ to exit. See Tables 4-1 and 4-2 for complete parameter descriptions.

3. Modify parameter values:

Press SET to enter editing mode for the selected parameter. Use ▼ or ▲ to adjust the value and ◄ to shift between digits. Press SET to confirm and save changes, or press the Return key ↩ to discard changes and exit.

VI. Program Operation and Status

6.1 Program Control Keys

Start/Stop Channel 1 Output:

During profile execution, press ▲ from the main display to start or stop Channel 1 control output.

Start/Stop Channel 2 Output:

During profile execution, press ▼ from the main display to start or stop Channel 2 control output.

Acknowledge / Silence Segment Alarm: If an end-of-segment alarm is active, press the Return key ↩ (HOME) to silence and de-energize the alarm relay.

Jump to a Program Segment:

Press the Shift key ◄ briefly to open the segment selection screen for Channel 1. Press ◄ again to switch between channels.

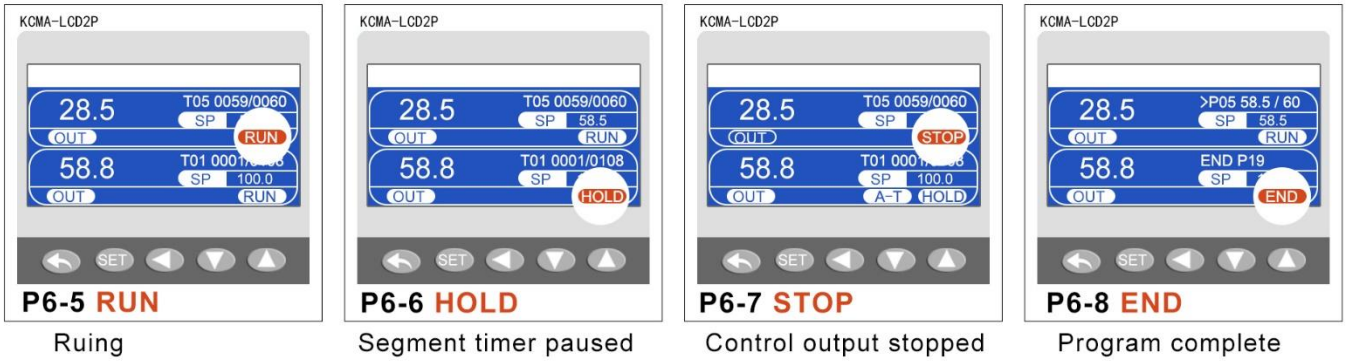
Use ▼ or ▲ to select the segment to run. For example, the display >P05 58.5 / 60 indicates:

- P05: Segment 5
- 58.5: Segment 5 starting setpoint
- 60: Segment 5 duration, in the time unit selected by SEC

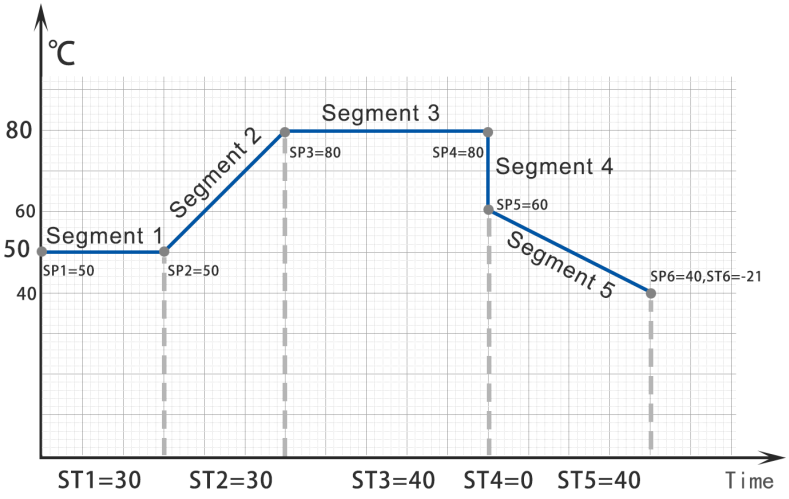
Press SET to jump to the selected segment and close the selection screen.

Press ↩ to close the screen without changing the active segment.

6.2 Program Status: RUN = running; STOP = control output stopped; HOLD = segment timer paused; END = program complete.



6.3 Example Temperature Profile (SEC = 0: Minutes)



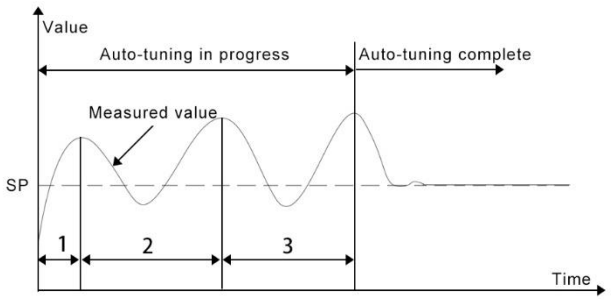
Segment 1	SP1=50 ST1=30
SP1 = SP2: Soak (dwell) segment; maintain 50 °C for 30 minutes.	
Segment 2	SP2=50 ST2=30
SP2 < SP3: Heating ramp segment; ramp setpoint from 50 to 80 °C over 30 minutes (1.0 °C/min).	
Segment 3	SP3=80 ST3=40
SP3 = SP4: Soak (dwell) segment; maintain 80 °C for 40 minutes.	
Segment 4	SP4=80 ST4=0

ST4 = 0: Zero duration; transitions immediately to Segment 5.	
Segment 5	SP5=60 ST5=40
SP5 > SP6: Cooling ramp segment; ramp setpoint down from 60 to 40 °C over 40 minutes (unassisted natural cooling).	
Segment 6	SP6=40 ST6=-21
ST6 = -21: End-of-program command; terminates profile execution immediately. Values of ST ≤ 0 represent jump or program end commands rather than timed segments. Setting ST = -X (where X is the current segment) holds setpoint indefinitely.	

VII. Auto-tuning (AT)

Run auto-tuning during initial setup, after significant changes to operating conditions, or if control performance deteriorates. Auto-tuning calculates and saves the proportional band (P), integral time (I), and derivative time (D) for the connected process, reducing the need for manual adjustment.

To auto-tune Channel 1:



1. **Check the system.** Verify the sensor and output wiring. Confirm that the controller displays the process temperature correctly and can control the heater.
2. **Start auto-tuning.**
   - Press and hold **SET** for 3 seconds. Open the Level 2 parameters for CH1.
   - Set HY to a value from **0.5 to 1.0** in the channel's selected temperature unit (°C or °F).
   - Set AT to **ON** and press **SET** to save. Auto-tuning starts.
   - Press ↩ to return to the main display.
3. **Monitor the process until tuning is complete.**
   - The active profile segment pauses, and the controller establishes the current setpoint as the tuning setpoint. Auto-tuning typically requires 20–60 minutes, depending on system heating and cooling dynamics
   - The **AT** indicator appears for CH1. The controller uses on/off control to cycle the process above and below the setpoint; see Figure 7-1.
   - After three oscillation cycles, the controller calculates and saves the PID parameters.
   - When tuning is complete, the **AT** indicator disappears, AT returns to **OFF**, and the controller begins PID control.

⚠ AUTO-TUNING PRECAUTIONS

Power interruption: If power is lost during tuning, auto-tuning restarts automatically when power is restored.

Canceling auto-tuning: Set AT to OFF. Results from the interrupted cycle are not used.

Supervision: Do not leave the process unattended during auto-tuning. Monitor for overheating and be prepared to shut down the equipment if necessary.

Changing algorithms: Run auto-tuning again when switching from standard temperature PID to another algorithm, or back to standard temperature PID.

VIII. Troubleshooting

Table 7-1: Troubleshooting

Symptom	Possible Cause	Corrective Action
Incorrect reading	• Incorrect input type selected.	1. Check that SN matches the connected sensor

The displayed value does not match the process value or a reference measurement.	• Incorrect sensor wiring or polarity.	or signal. 2. Check wiring against the controller's wiring label. 3. Correct wiring or sensor faults before using SC to adjust a measurement offset.
-HH- on the display Input above range or sensor fault.	• Open thermocouple or disconnected sensor. • Input above the configured range. • Incorrect input type selected.	1. Check sensor connections and cable condition. 2. Check the sensor according to its manufacturer's instructions. 3. Verify SN and the input range settings.
-LL- on the display Input below range.	• Current below 4 mA on a 4–20 mA input. • Disconnected signal cable or loss of transmitter power. • Incorrect input type or range settings.	1. Check the signal wiring and transmitter power supply. 2. Verify the input signal using the transmitter manufacturer's test procedure. 3. Verify SN and the input range settings.

Appendix 1: Sensor Input & Control Output Terminal Wiring Guide

Wiring guidelines:

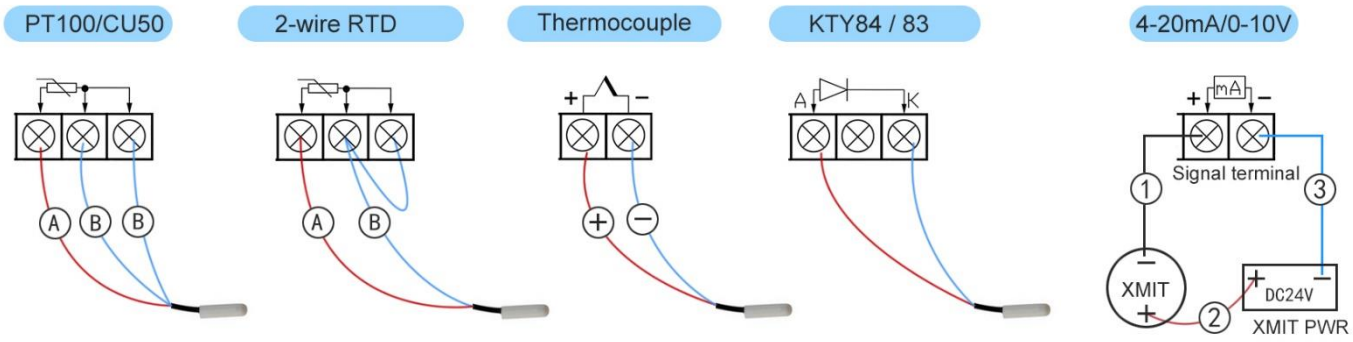
Input type: Set SN to match the sensor or signal before connecting it; see Table 4-2, item 7. Disconnect power before wiring.

Thermocouples: Observe polarity and use extension or compensating cable suitable for the thermocouple type.

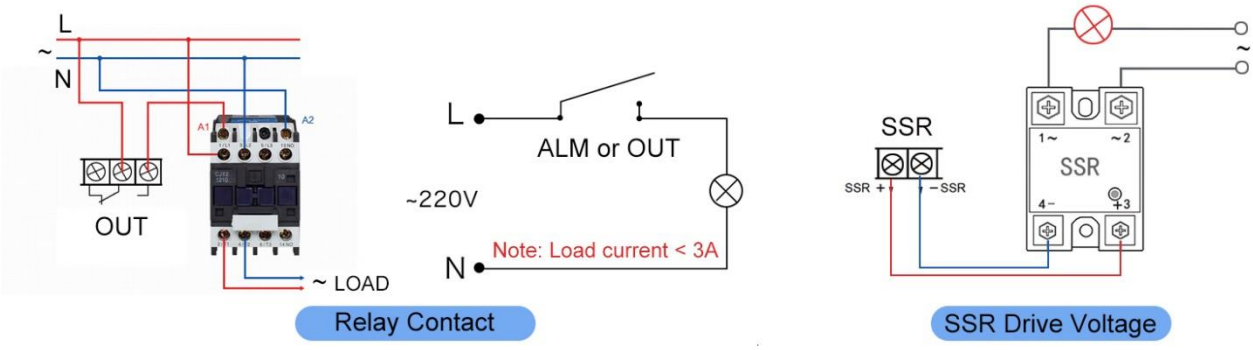
RTDs: Follow the terminal arrangement shown on the controller's wiring label. For a three-wire connection, use leads of equal gauge and length.

Analog inputs: Observe signal polarity and verify that the installed input hardware supports the transmitter's signal type.

Control outputs: Verify the output type and load rating before connecting the load. Use load protection as specified by the load manufacturer.



Controller Output Wiring Methods



To scale a transmitter input:

For a 4–20 mA or 0–5 V transmitter, set the controller's input scale to match the range on the transmitter's label. Scaling assigns engineering values to the input endpoints; it does not calibrate the sensor or transmitter.

1. Verify that the installed input hardware supports the signal, then select the applicable SN setting.
2. Set PS-H to the process value at 20 mA or 10 V.
3. Set PS-L to the process value at 4 mA or 0 V.
4. Set DP for the required number of decimal places.

Example: For a 4–20 mA transmitter rated 0–500 psi, the display should read 0 psi at 4 mA and 500 psi at 20 mA.

Appendix 3: Modbus-RTU Communication (Optional)

1. Hardware Interface Specifications:

The optional RS-485 or RS-232 interface connects the controller to a PC or PLC for monitoring and control using Modbus RTU. Match the controller's communication settings to those of the host.

Before designing a multi-device network, verify the permitted device addresses, RS-485 bus loading, and repeater requirements. Do not use the ADDR setting range as the device capacity of a single physical bus segment.

2. Modbus Protocol Specifications:

- Baud rate: 4800, 9600, 19200, or 38400 bps, selected with BAUD.
- Serial format: 1 start bit, 8 data bits, and 1 stop bit. Select parity with PARI: none, odd, or even.
- Supported Modbus Function Codes:
  - 03H (0x03): Read Holding Registers
  - 06H (0x06): Write Single Holding Register
  - 10H (0x10): Write Multiple Holding Registers
- Data format: All register values are 16-bit signed integers. Values displayed with decimal places are scaled by 10^{DP}, using the channel's DP setting: divide by this factor when reading and multiply by it when writing. Values without decimal places are not scaled.

Example: With DP = 1, read 253 as 25.3 and write 253 to set 25.3. With DP = 2, 2530 represents 25.30. Negative values use the same scaling.

Table A3-1: Modbus Holding Register Address Map

Register Description	Decimal Scaling	Register Address (Hex)	Holding Register Reference (Siemens PLC)
Process value (PV)	YES	1001H~1002H (CH1~CH2)	44098~44099 (CH1~CH2)
Current setpoint (SV)	YES	1003H~1004H	44100~44101
Active segment number	NO	1005H~1006H	44102~44103
Elapsed time in active segment	NO	1007H~1008H	44104~44105
Total duration of active segment	NO	1009H~100AH	44106~44107
Program status	NO	100BH~100CH	44108~44109
Program status codes	0 = END (program complete) 1 = RUN (running) 2 = HOLD (segment timer paused) 3 = STOP (control output stopped)		
Main control output	NO	1101H~1102H	44354~44355
Alarm output	NO	1201H~1202H	44610~44611
The registers above are read-only. The registers below support both reading and writing.			

Force control output off	NO	0101H~0102H	40258~40259 Write 1 to force output off.
Force alarm output off	NO	0201H~0202H	40514~40515 Write 1 to force output off.
Level 1 parameters (Table 4-2): The item number is the decimal protocol address.			
LOCK	NO	0000H	40001
ADDR	NO	0001H	40002
BAUD	NO	0002H	40003
PARI	NO	0003H	40004
Channel 1 parameters (Table 4-2, Level 2): The item number is the decimal protocol address.			
HZ1~ AL-HY1	-	0004H~001EH	40005~40031
Channel 2 parameters (Table 4-2, Level 2): Add 001BH (27 decimal) to the corresponding Channel 1 address.			
HZ2~ AL-HY2	-	001FH~0039H	40032~40058

Program Segment Registers

Program Parameter Register Addresses *(See Table 4-1)*			
Channel 1 program parameters: For segment n (1–20), SP address = 0500H + 2 × (n - 1); ST address = SP address + 1.			
SP01	YES	0500H	41281
ST01	NO	0501H	41282
… …			
SP20	YES	0526H	41319
ST20	NO	0527H	41320
Channel 2 program parameters: For segment n (1–20), SP address = 0528H + 2 × (n - 1); ST address = SP address + 1. Equivalently, add 0028H (40 decimal) to the corresponding Channel 1 program parameter address.			
SP01	YES	0528H	41321
ST01	NO	0529H	41322
… …			
SP20	YES	054EH	41359
ST20	NO	054FH	41360

Appendix 3: Measurement Data Logging (Paperless Recording, Optional)

The companion logger stores data on a TF card (micro SD). It supports real-time recording of multiple process signals such as temperature, humidity, level, and pressure, with a minimum logging interval of 1 second.

The logger is commonly used for environmental data monitoring and traceability in food, pharmaceutical, and chemical storage applications, including warehouses, cold rooms, medicine storage rooms, cool storage rooms, and laboratories.

Data files are generated in CSV format and can be opened directly in Excel. Dedicated software can also generate professional reports and trend curves (available from the official website).

Technical Specifications

Storage Method: TF card (micro SD)

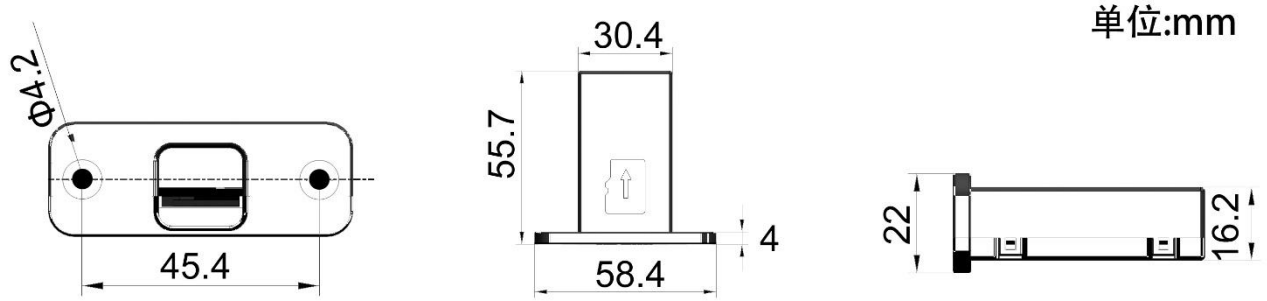
Logging Interval: minimum 1 second per sample, maximum 1 hour per sample

Storage Capacity: 1 GB TF card stores approximately 15.768 million records; common card sizes are 16 GB to 128 GB

Operating Environment: ambient temperature 0 to 60.0 C, relative humidity <=85%, non-corrosive atmosphere, no strong EMI

Power Supply: powered directly by controller, DC 5 V

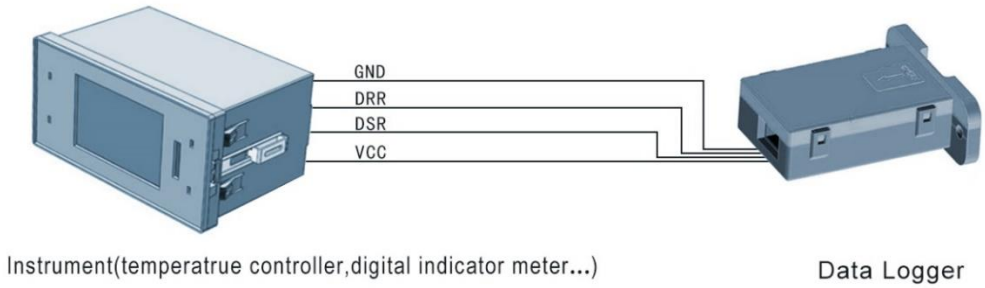
Logger Dimensions:



Logger Operation

1. Wiring

The logger uses a 4-wire connection: 5V, DSR, DRR, GND. Connect each wire to the controller terminals labeled 5V, DSR, DRR, and GND respectively.



2. Power-Up

After controller power-up, the logger enters operation automatically.

3. Start Logging

When powered and a TF card is inserted, the logger enters data-recording mode automatically.

4. Set Logging Interval

In Table 5-1 (Parameter Codes and Symbols), find parameter Interval (addr) and set recording interval:

- Set value to 1 for 1-second interval.
- Maximum value is 3600, corresponding to 1-hour interval.

5. Set System Time

When logger and controller are operating normally, press and hold ▼ and ▲ simultaneously to enter time-setting mode.

The display cycles through year, month, day, hour, and minute tags (see Table 6-1). For value editing, follow the standard controller key operation method.

Table 6-1

No.	Code	English	Name	Description	Range
1	YEAr	YEAR	Year	Sets year parameter	2000～2099
2	nth	MTH	Month	Sets month parameter	00～12
3	dAY	DAY	Day	Sets day parameter	00～31
4	Hour	HOUR	Hour	Sets hour parameter	00～23
5	nIn	MIN	Minute	Sets minute parameter	00～59

Logger Status LED Indications

1. Normal operation: green LED is steady ON; red LED flashes once quickly during data write.
2. Logger-controller link failure: green LED blinks (ON/OFF).
3. Communication interference: red and green LEDs flash simultaneously or alternately.

4. No TF card or TF card fault: red LED blinks (ON/OFF).

Appendix 4: Model Selection Guide

Specification	KCM multi-channel temperature controller							
Model	KC	☐	☐	☐	☐	☐	☐	☐
Dimensions	96×96mm Panel cutout: 92×92mm 88×107×59mm DIN 35 rail mount	MA MR						
Channels	2 Channels		LCD2P					
Alarm Relay	NONE One alarm relay per channel			☐ 1				
Input Type	Thermocouple: K, E, J, R, S, T, WR25, N; RTD: Pt100, Cu50 Linear Voltage: 0–5 V, 1–5 V or Linear Current: 0–10 mA, 4–20 mA DC. (specify sensor type or calibration index when ordering)				W A M			
Main Output	Relay output 0/12 VDC drive output for SSR control 4-20 mA or 0-10 V (switchable PID / retransmission)					☐ G A		
Power Supply	100 - 240V AC						☐	
Optional Functions	RS-485(MODBUS-RTU) RS-232(MODBUS-RTU) Paperless logging WI-FI (MODBUS-TCP)							RS RX LG WIFI