Digi-Sense® Benchtop RTD/Thermocouple/Thermistor Temperature Controllers

Outlet receptacle allows direct plug-in of heating devices

- Two control modes—On/Off or PID for more accurate control

These temperature controllers can be used for a wide variety of applications. Choose from standard or advanced models. Both controller models provide excellent control accuracy and power capabilities, making them ideal for pilot process plants, R & D labs, or for OEM requirements.

Both models accept eight thermocouple types with miniconnectors; advanced models also accept thermistor probes with 1/4" phono plugs and RTD probes with 3-pin connectors.

Features—Rear panel output receptacle for direct plug-in of heaters and other resistive devices. Field calibrations help to improve system accuracy by entering the offset value to correct for individual probe error. Simultaneously view both the measured and set point on the two-line alphanumeric display. Temperature scale selectable to read in °F, °C, K (Kelvin), or °R (Rankine). Front panel LEDs indicate output and alarm conditions. Multiple control modes from simple On/Off control to sophisticated autotuning PID control. Nonvolatile EEPROM memory stores setup and operating parameters, even if power is lost. The 115 VAC models include a 6-ft power cord and U.S. standard plug and receptacle; the 230 VAC models feature an IEC cord set and receptacle (specify country of destination when ordering).

Multiple safety features—Output power to load device is automatically shut down in the event of a broken sensor or control loop break. Over-temperature protection shuts down the system if the user-settable over-temperature or timer is exceeded. Outlet power receptacle is fused separately from the controller for added safety. Audible and visual out-of-range alarms are also included.

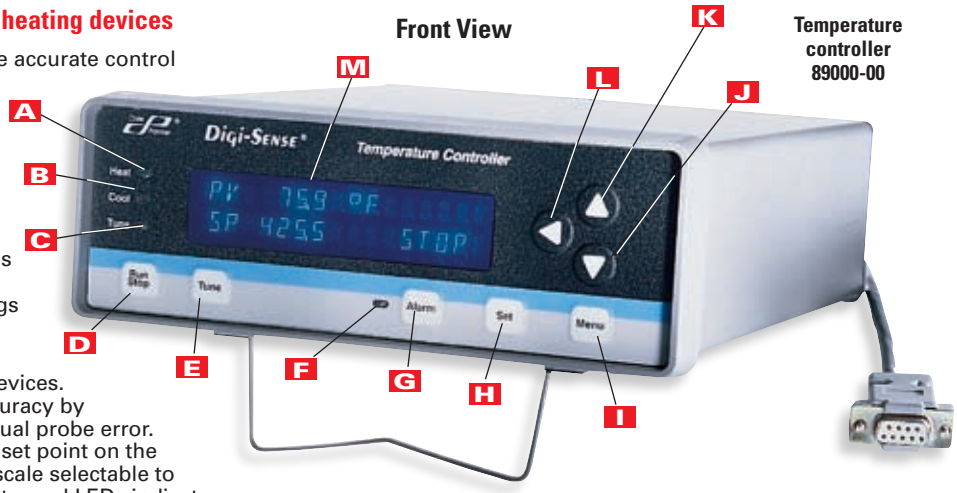
Advanced models have all the features of the standard controllers, plus higher heater output capacity of 1750/3450 watts max., 9-segment ramp and soak profiling for more complicated processes, RS-232 computer interface, free software that features real-time graphing and simple setup of ramp and soak progamming, alarm relay with adjusted hysteresis, and 4 to 20 mA and 1 to 5 V outputs* for connection to a recorder or datalogger. In addition to thermocouple inputs, advanced models also accept RTD and thermistor inputs (probes sold separately on pages 2014–2023, 2030–2031, 2040–2041, and 2078–2085.

230 volt models use IEC connectors:

89000-05 (10 amp) 89000-15 (15 amp)

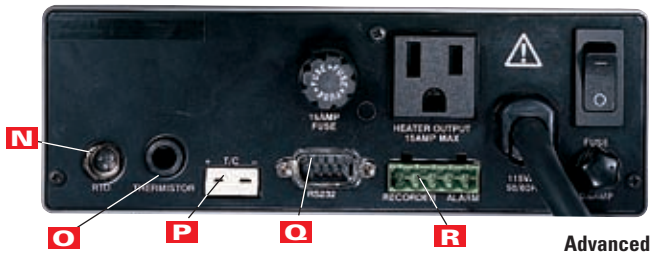
Front View

Temperature controller 89000-00



- A Heat ON indicator
- B Cool ON indicator
- C Autotune indicator
- D Start/stop button
- E Autotune button
- F Alarm indicator
- G Alarm silence button
- H Set point change button
- I Setup menu button
- J Decrement
- K Increment
- L Cursor control
- M 2 line x 16 character vacuum fluorescent display

Back View



Advanced model 89000-10 (shown)

- N Cole-Parmer 3-pin RTD connection
- O Thermistor connection
- P Thermocouple mini-connection
- Q Bidirectional RS-232 connection
- R Removable plug for output and alarm relay

ISO9001:2000 CERTIFIED SUPPLIER

Specifications & Ordering Information

Input type	Range
J	–310 to 1832°F (–190 to 1000°C)
K	–328 to 2502°F (–200 to 1372°C)
T	–328 to 752°F (–200 to 400°C)
E	–328 to 1832°F (–200 to 1000°C)
N	–328 to 2372°F (–200 to 1300°C)
B	392 to 3272°F (200 to 1800°C)
R	32 to 3214°F (0 to 1768°C)
S	32 to 3214°F (0 to 1768°C)
Thermistor†	32 to 212°F (0 to 100°C)
100 Ω Pt RTD†	–328 to 1562°F (–200 to 850°C)

*Use a 250 Ω resistor to convert to a 1 to 5 V signal
†Advanced models only

Control type: on/off, programmable PID, autotune PID

Resolution: 0.1°; 1° above 999.9° and below –99.9°

Accuracy
Types J, K, T, E, and N: ±0.1% of reading, ±0.7°F (0.4°C) above –248°F (–100°C); ±0.1% of reading, ±2°F (1°C) below –248°F (–100°C)
Types B, R, and S: ±0.1% of reading, ±1.8°F (1.0°C)
Thermistors and RTDs†: ±0.1% of reading, ±0.7°F (0.4°C)

Display: vacuum fluorescent, two lines, 16-character alphanumeric, 3/16"H each

Operating ambient: 32 to 104°F (0 to 40°C); 0 to 90% RH, noncondensing

Digital output†: isolated RS-232; 300 to 9600 baud

Control output
Standard models: powered receptacle rated for 115/230 VAC, 10 A max
Advanced models: powered receptacle rated for 115/230 VAC, 15 A max

Alarm output†: one SPDT relay rated for 230 VAC, 2 A max; resistive

Dimensions: 7 1/4"W x 3 3/4"H x 10"D (185 W x 94 H x 254 mm D)

Catalog number	Description	Communication	Control output	Alarm output	Ramp/soak	Recorder output	Power (49 to 61 Hz)	Price
K-89000-00 K-89000-05	Standard	None	1150 watts 2300 watts	No	No	No	115 VAC, 10 A max 230 VAC, 10 A max	
K-89000-10 K-89000-15	Advanced	RS-232	1725 watts 3450 watts	Yes	Yes; 9 programs, 16-segment each	4 to 20/20 to 4 mA, selectable, 1 to 5 VDC	115 VAC, 15 A max 230 VAC, 15 A max	

K-89000-50 **Panel mount kit**

K-89000-98 **Heater sizing software,** for models 89000-00 and -05 (included with models 89000-10 and -15). Aids in selecting the appropriate heater components