

Digi-SENSE[®] Temperature Controllers

Plain English menus with two-line display simultaneously show measured value and set point

Outlet receptacle allows direct plug-in of heating devices

Advanced models feature ramp & soak and RS-232 communications for computer 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. Multiple control modes from simple on/off to sophisticated autotuning PID for more accurate control. Use as a benchtop controller or panel mount with the optional panel mount kit, sold separately under "Accessories" on page 23.

Standard Models accept eight thermocouple types with mini-connector.

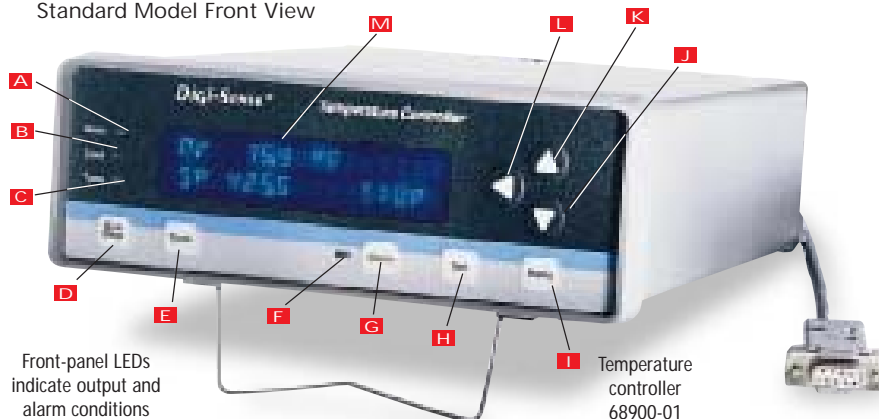
Advanced Models accept eight thermocouple types with mini-connector plus 400- and 700-series thermistor probes with ¼" phono plug, and 100 Ω Pt RTD probes with three-pin connector. These controllers also feature a higher heater output capacity, nine-segment ramp & soak profiling for more complicated processes, RS-232 computer interface, free software, alarm relay with adjusted hysteresis, and 4-20 mA and 1-5 V output for connection to a recorder or datalogger.

Instrument Features for Both Models—Rear panel output receptacle for direct plug-in of heaters and other resistive devices. Field calibration helps 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.

Standard Model Front View



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

Advanced Model Back View

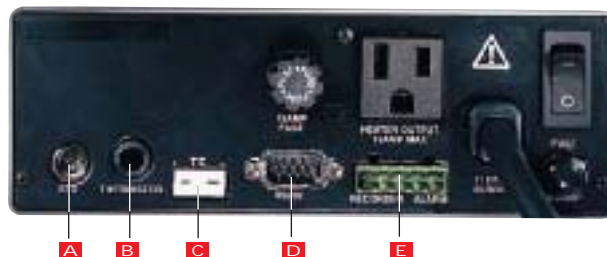
230 volt models use IEC connectors for power output:



model 68900-03 (10 amp) or



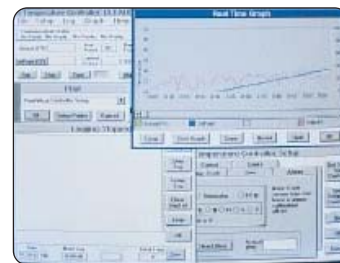
model 68900-13 (15 amp)



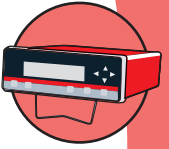
- | |
|--|
| A 3-pin RTD connection (Advanced models only) |
| B YSI 400 or 700 series thermistor (Advanced models only) |
| C Thermocouple mini-connection |
| D Bidirectional RS-232 connection |
| E Removable plug for output and alarm relay |

FREE Software (included with Advanced models)

Control all parameters of your controller through a computer. Program setup files for later use—software allows you to load, save, and print multiple setup files. Other software features include logging of measured temperature, set point temperature, and alarm status in real time; help menu; and the ability to interface with other Windows[®]-based programs.



Software features real-time graphing and simple setup of ramp & soak programs



Specifications

Thermocouple

Input type and 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)

Accuracy

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

Resolution: 0.1°; 1° above 999.9°; 1° below -99.9°

Thermistor (Advanced models only)

Input type and range

- 400 series: 32 to 212°F (0 to 100°C)
- 700 series: 32 to 212°F (0 to 100°C)

Accuracy: ±0.1% of reading, and ±0.7°F (0.4°C)
Resolution: 0.1°; 1° above 999.9°; 1° below -99.9°

100 Ω Pt RTD (Advanced models only)

Range: -328 to 1562°F (-200 to 850°C)
Accuracy: ±0.1% of reading, and ±0.7°F (0.4°C)
Resolution: 0.1°; 1° above 999.9°; 1° below -99.9°



General

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
Recorder output¹: 4-20 mA or 20-4 mA, selectable
Control output
(Use a 250 Ω resistor to convert to a 1 to 5 V signal)
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 output¹: one SPDT relay rated for 230 VAC, 2 A max; resistive
Digital output¹: isolated RS-232: 300 to 9600 baud
Dimensions: 7 1/4" W x 3 3/4" H x 10" D (18.5 x 9.4 x 25.4 cm)

¹Advanced models only

Ordering Information

Catalog number	Description	Control output	Control type	Ramp & soak	Recorder output	Power (49 to 61 Hz)
WD-68900-01	Standard controller	1150 watts	On/off, programmable PID, autotune PID	No	None	115 VAC, 10 A max 230 VAC, 10 A max
WD-68900-03		2300 watts				
WD-68900-11	Advanced controller	1725 watts		Yes; 9 programs, 16-segment each	4 to 20/20 to 4 mA, selectable	115 VAC, 15 A max 230 VAC, 15 A max
WD-68900-13		3450 watts				

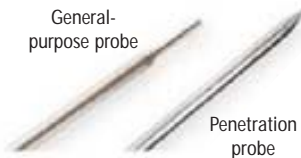
Accessories

WD-89000-50 Panel-mount kit

WD-68900-98 Heater sizing software for models 68900-01 and -03 (included with Advanced models). Aids in selecting the appropriate heater components

Some of Our Most Popular Thermocouple Probes

All probes include a 5-ft coiled cord with strain relief spring that protects from repeated flexing and tugging. Ergonomic, easy-to-grip glass-filled nylon handle provides maximum insulation and impact resistance; fingerstops prevent fingers from sliding and prevent probe from rolling. Rugged thermoset plastic miniconnector also included. For additional probes, see pages 7-10.



Probe type	Temp range	General-purpose (5"L)	Penetration (4"L)
		Catalog number	Catalog number
J	-310 to 1400°F (-190 to 760°C)	WD-08517-55	WD-08517-65
K	-418 to 1652°F (-250 to 900°C)	WD-08516-55	WD-08516-65
T	-418°F to 752°F (-250 to 400°C)	WD-08500-55	WD-08500-65
E	-418°F to 1600°F (-250 to 871°C)	WD-08512-55	WD-08512-65



Penetration-tip thermistor probe

Thermistor Probes (for Advanced models only)

Probes feature 316 SS sheath with sturdy 5.25"L glass-filled nylon handle and 5-ft coiled cable with 1/4" phone plug. Accurate to ±0.1°C from 0 to 70°C. For a complete selection of the thermistor probes, see pages 15-16.

Catalog no.	Description	Temp range
WD-93824-00	General-purpose thermistor immersion probe	-22 to 212°F (-30 to 100°C)
WD-93824-12	General-purpose Teflon®-coated thermistor probe	
WD-93824-30	Thermistor probe with penetration tip	



To order a NIST-traceable calibration certificate with your controller, see page 1.

Flexible Thermocouple Probes

MgO-filled Inconel® 600 sheath bends repeatedly without breaking. Choose 12" or 25" probe length; probes are 0.040" in diameter. Straight, 3-ft tinned-copper cable with miniconnector and grounded junction.



Catalog number	Type	Length	Temp range
WD-08517-96	J	12"	-200 to 1600°F (-128 to 871°C)
WD-08516-96	K		0 to 2012°F (-17 to 1100°C)
WD-08500-96	T		-400 to 600°F (-240 to 315°C)
WD-08512-96	E	25"	-200 to 1800°F (-128 to 982°C)
WD-08517-97	J		-200 to 1600°F (-128 to 871°C)
WD-08516-97	K		0 to 2012°F (-17 to 1100°C)



Penetration-tip RTD probe

RTD Probes (for Advanced models only)

Probes feature 316 SS sheath and 5"L glass-filled nylon handle with 5-ft coiled cable and three-pin connector. For complete selection of RTD probes, see page 13.

Catalog number	Description	Temp range
WD-08117-70	General-purpose RTD probe	-58 to 932°F (-50 to 500°C)
WD-08117-87	Teflon® PFA-insulated RTD probe	-58 to 500°F (-50 to 260°C)
WD-08117-85	RTD probe with penetration-tip	-58 to 932°F (-50 to 500°C)