

Reliable Control and Application Flexibility in a Compact Package



The SERIES SD family of PID temperature controllers utilizes today's advanced micro-electronics technology to provide the value, benefits and accuracy you've come to expect from Watlow. The SERIES SD31 offers improved accuracy of 0.1 percent of span as well as a faster sampling rate of 6.5Hz in a ½ DIN package.

An optional full featured countdown timer operates in a choice of delay-on, delay-off, signal-on or signal-off modes. This timer supports set point tracking during countdown for both heat and cool process variables.

The SERIES SD31 controller delivers many flexible, user-friendly options. Easily choose factory or user defaults and display either process or set point values. Process inputs are scalable and invertible from the front panel. Other features include Variable Burst Fire and flexible Outputs, that users can select as On-Off, Heat/Cool or as Process or Deviation Alarms. Users can also select between 11 different Thermocouples, a 100 Ohm RTD, a 0 to 20mA or 0 to 10V process input - all from the front panel - which eliminates the need for dip-switches.

With optional EIA-485 communications, you can configure, monitor and data log with such optional software products like WATVIEW.

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Your Authorized Watlow Distributor Is:

Features and Benefits

Accurate PID control with auto-tune

- Improves process yield

INFOSENSE™ sensor technology

- Thermal sensing technology improves accuracy by a minimum of 50 percent

Optional countdown timer

- Enhances process control capability

User defined menu system

- Simplifies control operation
- Reduces operator errors

Serial communications

- Connectivity with WATVIEW (Human Machine Interface) HMI software

Ramp to set point

- Controls temperature rise

Variable burst fire

- Provides tighter control
- Prolongs heater life

Agency approvals

- UL®, C-UL®, CE NEMA 4X/IP65, CSA and NSF



WATLOW

Better Thermal Solutions...Faster

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ISO 9001



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Specifications

Line Voltage/Power

- 100 to 240V~(ac), +10/-15 percent; (85-264V~[ac]) 50/60Hz, ±5 percent
- 24V~(ac/dc), +10/-15 percent; 50/60Hz, ±5 percent
- 10VA maximum power consumption
- Data retention upon power failure via nonvolatile memory

Environment

- -18 to 65°C (0 to 149°F) operating temperature
- -40 to 85°C (-40 to 185°F) storage temperature
- 0 to 90 percent RH, non-condensing

Accuracy

- Calibration accuracy and sensor conformity: ±0.1 percent of span, ±1°C @ the calibrated ambient temperature and rated line voltage
- Calibration ambient temperature = 25°C ±3°C (77°F ±5°F)
- Accuracy span: 540°C (1000°F) minimum
- Temperature stability: ±0.1°C/°C (±0.2°F/°F) rise in ambient maximum

Agency Approvals

- UL® 3121, C-UL®, CSA, CE, IP65/NEMA 4X
- NSF for Type J, K, T and E thermocouples

Controller

- Microprocessor based user-selectable control modes
- Single universal input, up to three outputs
- Control sampling rates: Input = 6.5Hz, Display = 10Hz, Outputs = 6.5Hz

Operator Interface

- Single 4 digit, 7 segment LED displays
- "Set" infinity and up down keys
- Isolated EIA-485 Modbus™ serial communications, 9600, 19.2K or 38.4K baud rates

Wiring Termination -Touch Safe Terminals

- Input power and control outputs 12 to 22 AWG
- Sensor inputs and process outputs 20 to 28 AWG

Universal Input

- Thermocouple, grounded or ungrounded sensors
- RTD 2- or 3-wire, platinum, 100Ω @ 0°C calibration to DIN-curve (0.00385 Ω/Ω°C)
- Process, 0-20mA @ 100Ω, or 0-10V=(dc) @ 20kΩ input impedance; Scalable
- Inverse scaling
- >20MΩ input impedance
- Maximum of 20Ω source resistance

Allowable Operating Range

Type J:	0 to 815°C	or	32 to 1500°F
Type K:	-200 to 1370°C	or	-328 to 2500°F
Type T:	-200 to 400°C	or	-328 to 750°F
Type N:	0 to 1300°C	or	32 to 2372°F
Type E:	-200 to 800°C	or	-328 to 1470°F
Type C:	0 to 2315°C	or	32 to 4200°F
Type D:	0 to 2315°C	or	32 to 4200°F
Type PTII:	0 to 1395°C	or	32 to 2543°F
Type R:	0 to 1760°C	or	32 to 3200°F
Type S:	0 to 1760°C	or	32 to 3200°F
Type B:	0 to 1816°C	or	32 to 3300°F
RTD (DIN):	-200 to 800°C	or	-328 to 1472°F
Process:	-1999 to 9999 units		

Control Outputs

Outputs 1 or 2

- User selectable for heat/cool as on-off, P, PI, PD, PID or Alarm action
- Electromechanical relay. Form A, rated 2A @ 120V~(ac), 2A @ 240V~(ac) or 2A @ 30V=(dc)
- Switched dc non-isolated minimum turn on voltage of 6V=(dc) into a minimum 500Ω load with a maximum on voltage of not greater than 12V=(dc) into an infinite load. Maximum switched dc power supply current available for up to two outputs is 60mA
- Solid-state relay, Form A, 0.5A @ 24V~(ac) minimum, 264V~(ac) maximum, opto-isolated, without contact suppression
- Process output (Non Isolated) User-selectable 0-10V=(dc), 0-5V=(dc), 1-5V=(dc) @ 1KΩ minimum, 0-20mA, 4-20mA @ 800Ω maximum
- EIA-485 serial communications with Modbus™ protocol (output 2 only)
- 9600, 19.2K or 38.4 baud rates

Communications

- Modbus™ EIA-485
- WATVIEW

Dimensions

- ½ DIN size
- 97.8 mm (3.85 in.) behind panel maximum
- Width 52.6 mm (2.07 in.)
- Height 29.7 mm (1.17 in.)

Ordering Information

To order, complete the model number on the right with the information below.

S D 3 1 - A - A

Single channel control with universal input and single display operator interface

Power Supply

H = 100 to 240V~(ac/dc)
L = 24 to 28V~(ac/dc)

Output 1

C = Switched dc
K = SSR, Form A, 0.5A
F = Universal process
J = Mechanical relay, Form A, 2A

Output 2

A = None
C = Switched dc
K = SSR, Form A, 0.5A
J = Mechanical relay, Form A, 2A
U = EIA-484 Modbus™ communications

Control Options

A = Standard controller
T = Standard controller with timer

Display Colors and Custom Options

OR = Red display
OG = Green display