Ramping Controls

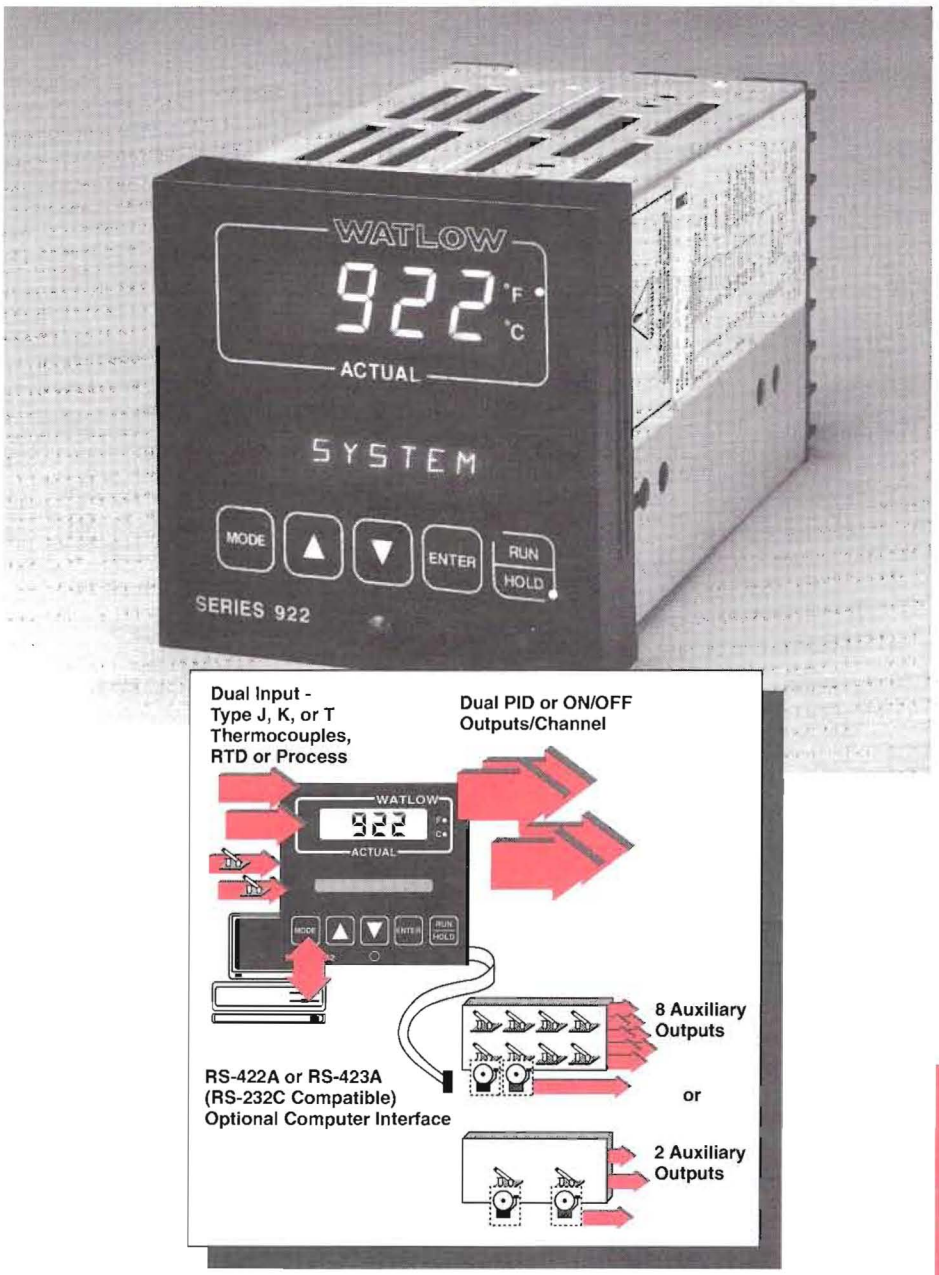
Series 922

Watlow's Series 922 is a ¼ DIN microprocessor-based ramping control. Plain English prompts simplify operator training and operations. This controller reduces difficult process control requirements to very simple tasks with no cryptic numeric characters or complex translations table to check when programming.

The Series 922 is a two channel programmable ramping controller. Its full PID outputs on each channel provide excellent control for environmental chambers or complex process furnaces and ovens.

It offers 99 steps of programming with 10 resident profiles in a non-volatile memory. It has an optional eight event output with two event inputs; two of the event outputs may be configured as alarms. The process actual display keeps operators continually informed on the current status of the process variable. The Series 922 accepts both thermocouple and RTD inputs as well as standard process variable inputs.

Onboard serial communications provides full computer access for automation.



Performance Capabilities

- Accuracy to 0.15 percent
- Operating environment 30 to 130°F (0 to 55°C)

Features

- **English language prompts** make programming quick and easy.
- **Two channel programmable ramping controller** provides accurate control of complex processes.
- **99 steps of programming and 10 resident profiles** allow controlling different batches readily.
- **8 event outputs and 2 event inputs** standard for flexible connections to peripherals.
- **Independent PID for each output** gives precise tuning of the process.
- **Serial data communications** for computer networking of machines and systems.
- **Vaisala™ HMM30C humidity sensor compatibility** for optimum sensing accuracy.
- **Three year warranty*** provides Control Confidence®.

Applications

- Environmental chambers
- Complex process furnaces
- Any process that changes variables over time

*Electromechanical relay output warranted to 100,000 cycles.

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Specifications

Control Mode

- Microprocessor-based, user selectable modes
- Dual inputs, dual control outputs per channel
- 8 event outputs/2 event inputs
- 99 step programmer with up to 10 profiles
- Control outputs: User selectable as: Heat/Cool, Cool/Heat or Humidify/Dehumidify
  - Outputs independent, or related via deadband
  - ON/OFF: 3°F (1.7°C) switching hysteresis
  - PID parameters per channel:

  Proportional band: 0 to 900°F (0 to 500°C) or 0 to 500 units, 0.0 to 90.0°F (0.0 to 50.0°C) for 0.1° RTD units

  Reset: 0.00 to 5.00 repeats per minute

  Rate: 0.00 to 5.00 minutes

  Rate band: 0 to 7 times proportional band

  Cycle time: 1 to 60 seconds
  - Deadband: ±36°F (±20° C) or ±20
- Event outputs: User selectable as:
  - Events 1 & 2 selectable as alarms for Channels 1 & 2
  - Process or deviation value, per output
  - Alarms, latching or non-latching
  - Separate high and low values, per output

Operator Interface

- Membrane front panel
- Four digit ½ in (13 mm) LEDs displaying actual process input value
- LED indication of °C, °F, or process variable
- MODE, ENTER, UP, DOWN, and RUN/HOLD keys
- Eight character alphanumeric display of operating data

Input

- Thermocouple, RTD and electrical process input
- Automatic cold junction compensation for thermocouple
- RTD input 2 or 3 wire, platinum, 100 Ω @ 0°C, calibrated to JIS curve #3916 (0.003916 Ω/Ω/°C) or DIN curve #3850 (0.003850 Ω/Ω/°C).
- Sensor break protection de-energizes control outputs to protect system
- Isolated sensors only
- Operating ranges user selectable
- Calibration offset of input signal; ±90°F (±50°C) ±50 units, front panel adjustable ±9.0°F (±5.0°C) for 0.1° RTD input
- °F, °C, or process variable units are user selectable

Range Information

Thermocouple		
J t/c	32 to 1382°F	(0 to 750°C)
K t/c	- 328 to 2282°F	(-200 to 1250°C)
T t/c	-328 to 662°F	(-200 to 350°C)

RTD		
1° RTD	-328 to 1112°F	(-200 to 600°C)
0.1° RTD	-99.9 to 392.0°F	(-99.9 to 200.0°C)

Process	
0-5VDC	-99 to 1800 units
4-20mA	-99 to 1800 units

Output—Control Per Channel (Single or Dual)

- Solid state relay, Form A, 0.5A @ 24VAC min. 264VAC maximum, 10mA minimum load, opto-isolated, zero cross switching
- Open collector, switched DC signal provides a minimum turn ON voltage of 3VDC into a minimum 500Ω load; maximum ON voltage not greater than 32VDC into an infinite load.
- Process, 4-20mA, non-isolated, load impedance 600Ω maximum

Output/Input—Auxiliary

- 2 dry-contact inputs (event and remote hold)
- External, plug-in module

  Solid state relays, 8 ea. or 2 ea., 0.5A

Output—Analog Retransmit

- Device driven must have ≥10 kΩ input impedance
- Reference: 0 units = 0 Volts
- Scalable: 1mV, 2mV, 5mV, or 10mV per LSD

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Accuracy

- Calibration Accuracy: ±0.15% of span, ±1 digit at 77°F ± 5°F (25°C ± 3°C) ambient and rated line voltage ±10%
- Accuracy Span: 1000°F (540°C) minimum
- Temperature Stability: 0.18°F/°F (0.1°C/°C) change in ambient
- Voltage Stability: ±0.01% of span /% of rated line voltage

Agency Approvals

- UL recognized, UL 873, File # E43684

Terminals

- #6 compression type, universal head screw terminals

Communications

- Serial data communications
- RS-422A or RS-423A (RS-232C compatible)
- All operator indication and controls
- Full protocol, or XON/XOFF protocol
- Isolated
- DB-9 Female connector

Power

- 120/240VAC ±10%, 50/60Hz ±5%
- 18VA maximum power consumption
- Data retention upon power failure via non-volatile memory

Operating Environment

- 30 to 130°F (0 to 55°C)
- 0 to 90% RH, non-condensing

Weight

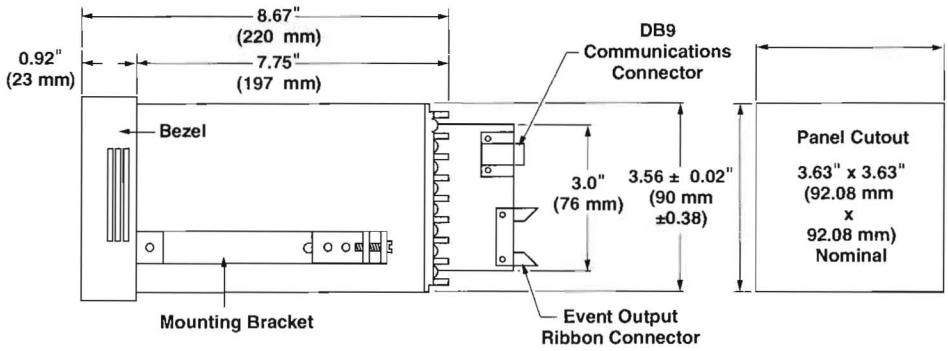
- 2.8 lb (1.27 kg)

Accessories

External event output board

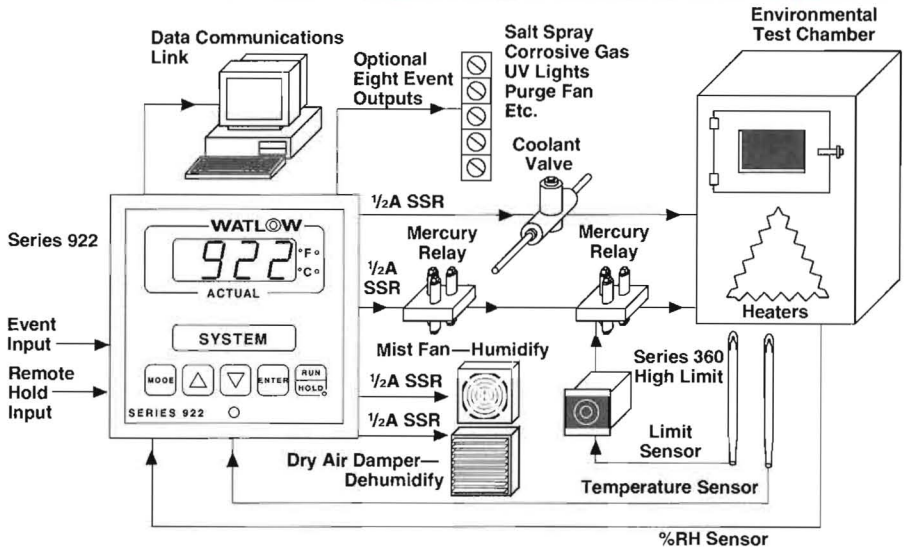
- 8 remote event outputs, or
- 2 remote event/alarm outputs
  - 4.0 in X 8.0 in X 1.3 in high (101.6 mm X 203.2 mm X 33.0 mm)
  - 18 in (45.7 cm) 14-conductor cable attached

Dimensions



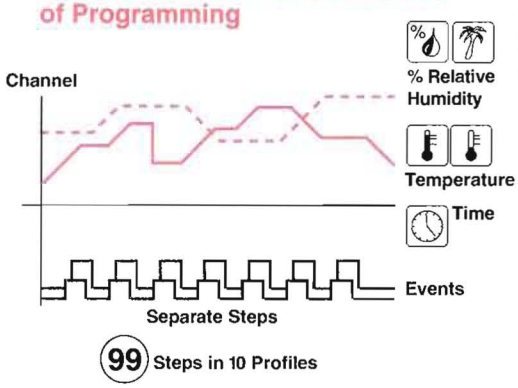
Wiring Examples

Heat/Cool, Humidity/Dehumidity Environmental Test Chamber Application



Feature Highlights

Two Channel Ramping, 99 Steps of Programming



Fully programmable dual channel, heat/cool, humidify/dehumidify time-based ramping control. Loop commands and events allow repeating steps and multiple functions.

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F.O.B.: Winona, Minnesota

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Ordering Information

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Process	
0-5VDC	-99 to 1800 units
4-20mA	-99 to 1800 units

To order, complete the model number to the right with the information below: 9 2 2 A - ___ ___ ___ 0 - ___ 0 ___ ___

Category and Details

Control

Series 922 = Dual channel microprocessor-based, dual input, quad output, ramping controller, 99 steps, ¼ DIN.

Input

1 = Dual RTD 1°
2 = RTD1° and process
3 = Type T thermocouple and process
4 = Dual process
5 = Dual Type T thermocouple
6 = Dual RTD 0.1°
7 = RTD 0.1° and process
8 = Dual Type K thermocouple
9 = Dual Type J thermocouple
A = Type K thermocouple and process
B = Type J thermocouple and process

Output Per Channel

BB = Dual solid state relay, Form A, 0.5A, RC suppression
CC = Dual switched DC, open collector, non-isolated
FB = Process, 4-20mA, non-isolated/solid state relay, Form A, 0.5A, RC suppression

Communications

A = None
B = Isolated RS-423 (RS-232C compatible)
C = Isolated RS-422

Front Panel

00 = Standard
XX = Special label; artwork private label charge. Consult Watlow representative.

Product Accessories

- 8 Remote event output board Part# A007-1732-0008
- 2 Remote event/alarm output board Part# A007-1732-0002

Availability

Stock: Same day shipment

All other combinations: 10 working days or less