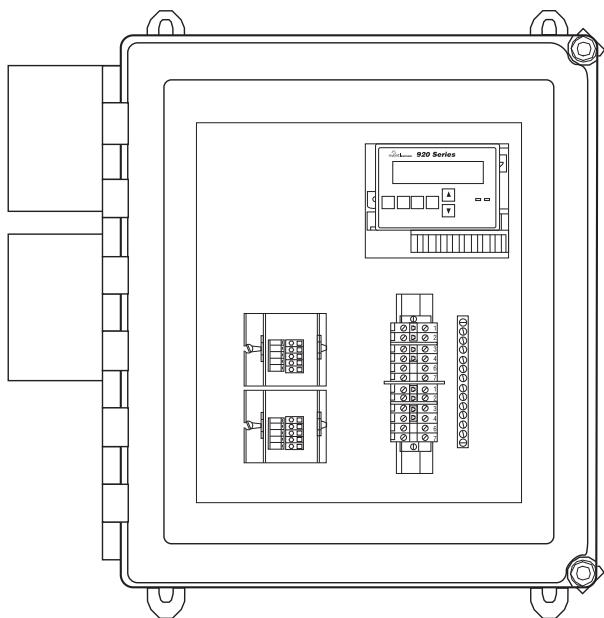


Dual-Point Heat-Tracing Control System

PRODUCT DESCRIPTION



920*E4FWL*SIS302*SS3102 shown

Control

The Raychem 920 measures temperatures with 3-wire 100-ohm platinum RTDs connected directly to the unit. Up to two RTDs are supported for each of the two control points. The controller may be used in line-sensing, ambient-sensing, proportional ambient-sensing, and power-limiting modes.

Monitoring

A variety of parameters are measured, including ground fault, temperature, and current to ensure system integrity. The system can be set to periodically check the heating cable for faults, alerting maintenance personnel of a heat-tracing problem.

A dry contact relay is provided for alarm annunciation back to a distributed control system (DCS).

Ground-fault protection

National electrical codes require ground-fault equipment protection on all heat-tracing circuits. The Raychem 920 controllers incorporate the ground-fault sensing, alarm, and trip functionality internally. Heat-tracing circuits equipped with Raychem 920 controllers do not require additional ground-fault detection equipment, simplifying installation and reducing costs.

Installation

The standard Raychem 920 unit comes ready to install right from the box, eliminating the need for custom panel design or field assembly. Custom configurations are also available from the factory to allow the user to tailor the solution to the application.

The TYPE 4X-rated FRP or optional stainless steel enclosures are approved for use in indoor and outdoor locations. Wiring is as simple as connecting the incoming and outgoing power wiring (up to 600 Vac) and an RTD.

The Raychem 920 operator console includes LED displays and function keys that make it easy to use and program. No additional handheld programming devices are needed. Alarm conditions and programming settings are easy to interpret on the full-text front panel. Settings are stored in nonvolatile memory in the event of power failure.

Communications

Raychem 920 units may be networked to a host PC running Windows®-based Raychem Supervisor software for central programming, status review, and alarm annunciation. Raychem 920 units support the Modbus® protocol and may be ordered with an RS-485 communications interface.

GENERAL

| | | |
|----------------|---|---|
| Area of use | Nonhazardous locations (EMR versions) Nonhazardous and Division 2 hazardous locations (SSR versions) | |
| Approvals | Nonhazardous locations (SSR and EMR versions) | Hazardous locations (SSR versions only) |
| |  |  |
| | Class I, Div. 2, Groups A, B, C, D Ex nA IIC T-code: T4 (T3A with optional alarm light) | |
| Supply voltage | 100 Vac to 277 Vac, +5% / -10%, 50/60 Hz Common supply for controller and heat-tracing circuit Up to 600 Vac for heat-tracing circuit when controller is powered from a separate circuit or when transformer option is included | |

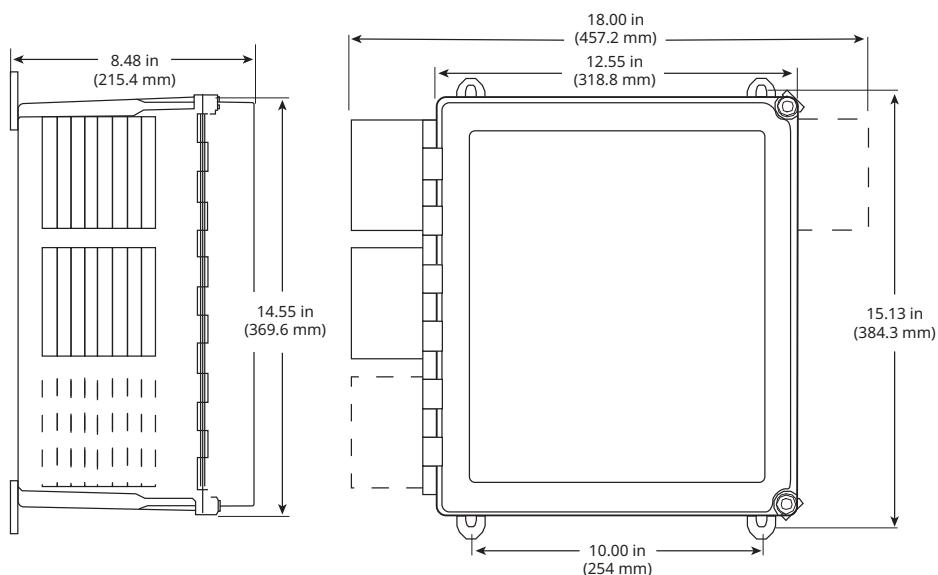
ENCLOSURE

| | |
|-------------------------------------|---------------------------------|
| Protection | TYPE 4X |
| Materials | FRP or optional stainless steel |
| Ambient operating temperature range | -40°F to 140°F (-40°C to 60°C) |
| Ambient storage temperature range | -40°F to 185°F (-40°C to 85°C) |
| Relative humidity | 0% to 90%, noncondensing |

CONTROL

| | |
|--------------------|--|
| Relay types | 3-pole, mechanical (EMR versions) 1-, 2-, or 3-pole solid-state, normally open (SSR versions) |
| Voltage, maximum | 277 Vac nominal, 50/60 Hz (standard), 600 Vac nominal (optional) |
| Current, maximum | 30 A @ 104°F (40°C) (standard) For ratings at higher ambient temperatures, contact the factory. 60 A @ 104°F (40°C) (optional) |
| Control algorithms | EMR: Line sensing on/off, proportional ambient SSR: Line sensing on/off, proportional, proportional ambient, power limiting, soft start |
| Control range | -76°F to 1058°F (-60°C to 570°C) |

TYPICAL ENCLOSURE DIMENSIONS



920*E4FWL*SIS302*SS3102 (1 pole model) shown
920*E4FWL*SIS302*SS3202 (2 pole model)

MONITORING (EACH CONTROL POINT)

| | | |
|--------------|---|--|
| Temperature | Low alarm range High alarm range | -76°F to 1058°F (-60°C to 570°C) or OFF -76°F to 1058°F (-60°C to 570°C) or OFF |
| Ground fault | Alarm range Trip range | 20 mA to 250 mA or OFF 20 mA to 250 mA or OFF |
| Current | Low alarm range High alarm range Power limit | 0.3 A to 100 A or OFF 0.3 A to 100 A or OFF 3 W to 33 kW |
| Voltage | Low alarm range High alarm range | 10 V to 330 V or OFF 10 V to 330 V or OFF |
| Resistance | Low resistance range High resistance range | 1% to 100% of deviation from nominal 1% to 250% of deviation from nominal |
| Autocycle | Diagnostic test interval adjustable from 1 to 240 minutes or 1 to 240 hours | |

TEMPERATURE SENSOR INPUTS (EACH CONTROL POINT)

| | |
|----------|---|
| Quantity | Two inputs standard |
| Types | 100 Ω platinum RTD, 3-wire, $\alpha = 0.00385$ ohms/ohm/°C Can be extended with a 3-conductor shielded cable of 20 Ω maximum per conductor 100 Ω Ni-Fe RTD, 2-wire |

ALARM OUTPUTS

| | |
|-------------------|---|
| Dry contact relay | Pilot duty only, 48 Vac/dc, 500 mA maximum, 10 VA maximum resistive switching |
|-------------------|---|

Note: Output is configurable as "open on alarm" or "close on alarm"

PROGRAMMING AND SETTING

| | |
|--|--|
| Method | Programmable keypad or communications |
| Units | °F or °C |
| Digital display (using optional operator console) | Actual temperature, control temperature, heater current, voltage, resistance, ground fault, programming parameter values, alarm values |
| LEDs | Power on, heater(s) on, alarm conditions, receive/transmit data (standard) Current mode, heater(s) on, alarm conditions, receive/transmit data (using optional operator console) |
| Memory | Nonvolatile, restored after power loss, checksum data checking |
| Stored parameters (measured) | Minimum and maximum process temperature, maximum ground-fault current, maximum heater current, power accumulator, contactor cycle count, time in use |
| Alarm conditions | Low/high temperature, low/high current, low/high voltage, low/high resistance Ground-fault alarm, trip RTD failure, loss of programmed values, or EMR or SSR failure |
| Other | Multi-language support Password protection |

CONNECTION TERMINALS

| | |
|--------------------------|---|
| Power supply input | Screw terminals, 22–8 AWG (30 A versions), 14–6 AWG (60 A versions) |
| Heating cable output | Screw terminals, 22–8 AWG (30 A versions), 14–6 AWG (60 A versions) |
| Ground | 14–4 AWG ground bar |
| RTD/alarm/communications | 28–12 AWG spring clamp terminals |

MOUNTING

| | |
|------------------------|---|
| 2 point FRP enclosure | Surface mounting with four fixing holes on 15.1 in x 10 in (384 mm x 254 mm) centers; Hole diameter: 0.31 in (8 mm) |
| 4 point FRP enclosure | Surface mounting with four fixing holes on 17.1 in x 12 in (435 mm x 305 mm) centers; Hole diameter: 0.31 in (8 mm) |
| 8 point FRP enclosure | Surface mounting with four fixing holes on 31.3 in x 21.9 in (795 mm x 556 mm) centers; Hole diameter: 0.40 in (10 mm) |
| 20 point FRP enclosure | Surface mounting with four fixing holes on 41.2 in x 30.2 in (1047 mm x 767 mm) centers; Hole diameter: 0.40 in (10 mm) |

COMMUNICATIONS (OPTIONAL)

| | |
|----------|--|
| Protocol | Modbus RTU or ASCII I / HTCBus |
| Topology | Multidrop, daisy chain |
| Cable | Single shielded twisted pair, 26 AWG or larger |
| Length | 1.7 miles (2.7 km) maximum @ 9600 baud |
| Quantity | Up to 32 devices without repeater |
| Address | Programmable |

ORDERING DETAILS

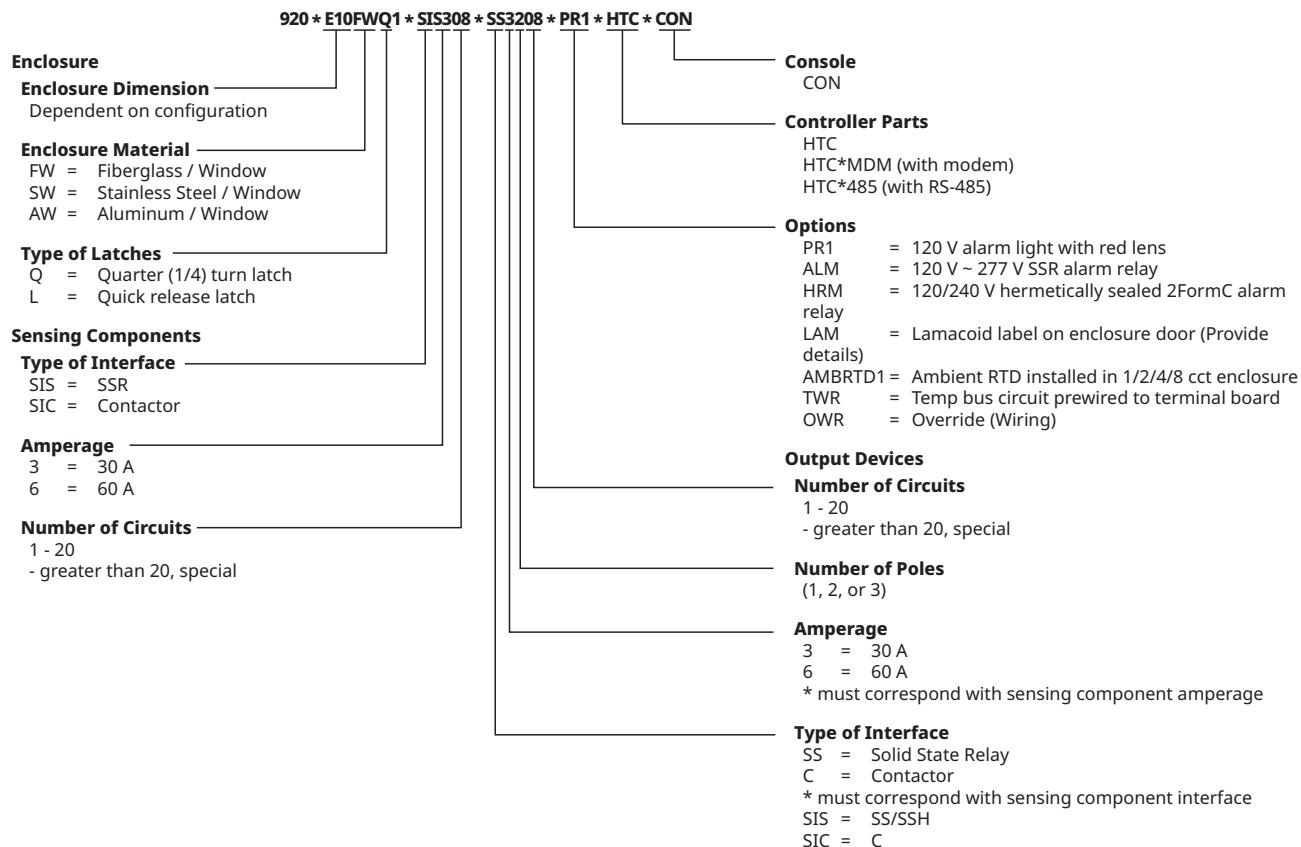
Raychem 920 Series Dual-point Heat-Tracing Control System

| Description | Catalog number | Part number | Weight/lbs |
|--|--|-------------|------------|
| Raychem 920 controller-2 Pt in a 14" x 12" x 8" FRP enclosure with window and quick-release latches, control module, and operator console. 1P 30 A 277 V SSR/pt. Controls two circuits, each with a 1-pole solid-state relay. (Approved for Class I, Div. 2 locations) | 920*E4FWL*SIS302*SS3102*HTC*CON | 10160-010 | 27 |
| Raychem 920 controller-2 Pt in a 14" x 12" x 8" FRP enclosure with window and quick-release latches, control module, and operator console. Includes an isolated 2-wire RS-485 communication option. 1P 30 A 277 V SSR/pt. Controls two circuits, each with a 1-pole solid-state relay. (Approved for Class I, Div. 2 locations) | 920*E4FWL*SIS302*SS3102*HTC485*CON | 10160-011 | 27 |
| Raychem 920 controller-2 Pt in a 14" x 12" x 8" FRP enclosure with window and quick-release latches, control module, and operator console. 2P 30 A 277 V SSR/pt. Controls two circuits, each with a 2-pole solid-state relay. (Approved for Class I, Div. 2 locations) | 920*E4FWL*SIS302*SS3202*HTC*CON | 10160-012 | 32 |
| Raychem 920 controller-2 Pt in a 14" x 12" x 8" FRP enclosure with window and quick-release latches, control module, and operator console. Includes an isolated 2-wire RS-485 communication option. 2P 30 A 277 V SSR/pt. Controls two circuits, each with a 2-pole solid-state relay. (Approved for Class I, Div. 2, locations) | 920*E4FWL*SIS302*SS3202*HTC485*CON | 10160-013 | 32 |
| Raychem-Supervisor Software | Available for download at chemelex.com | | |
| CONTROL MODULES—Requires one for every two control points | | | |
| Raychem 920 controller —Control module only (No communications options installed) | 920HTC | 10260-001 | 1 |
| Raychem 920 controller —Control module with an isolated 2-wire RS-485 communication option installed | 920HTC*485 | 10260-004 | 1 |
| OPERATOR CONSOLE—Requires at least one per panel | | | |
| Raychem 920 controller —Operator console | 920CON | 10260-005 | 1 |
| RTD Sensors | | | |
| 100-ohm platinum RTD with 10 foot stainless-steel corrugated sheath | RTD10CS | RTD10CS | 1.0 |
| RTD, ambient, cable style | RTD-200 | 254741 | 0.1 |
| C1D1 RTD, -100°F to 900°F, pipe mounted | RTD7AL | RTD7AL | 2.0 |
| RTD, -100°F to 900°F, pipe mounted | RTD4AL | RTD4AL | 1.2 |

ORDERING DETAILS

Raychem 920 Series Dual-point Heat-Tracing Control System

920 * Enclosure * Sensing Components * Output Devices * Options * Controller Parts * Console



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