

Single-point heat-tracing control system

Product overview

The DigiTrace® C910 is a compact, full-featured, microprocessor-based, single-point commercial heating cable control system with integrated equipment ground-fault protection. The C910 provides control and monitoring of electric heating cable circuits for commercial heating applications. The C910 can be set to monitor and alarm for high and low temperature, low current, and ground-fault level. The C910-485 includes a communication module to remotely configure, control and monitor the heating cable circuits through a building management system (BMS).

Control

The C910 measures temperature with one or two 3-wire 100-ohm platinum RTD(s) connected directly to the unit. The controller may be used in line-sensing, ambient-sensing and proportional ambient-sensing control (PASC) 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.

Both an isolated solid-state triac relay and a dry contact relay are provided for alarm annunciation back to a distributed control system (DCS) or a building management system (BMS).

Ground-fault protection

National electrical codes require ground-fault equipment protection on all heat-tracing circuits. The C910 controllers incorporate ground-fault sensing, alarm, and trip functionality internally. Heating cable circuits equipped with C910 controllers do not require additional ground-fault protection equipment, simplifying installation and reducing costs. The C910 automatically tests the integrity of the integrated ground-fault circuitry, ensuring protection in the event of a ground fault.

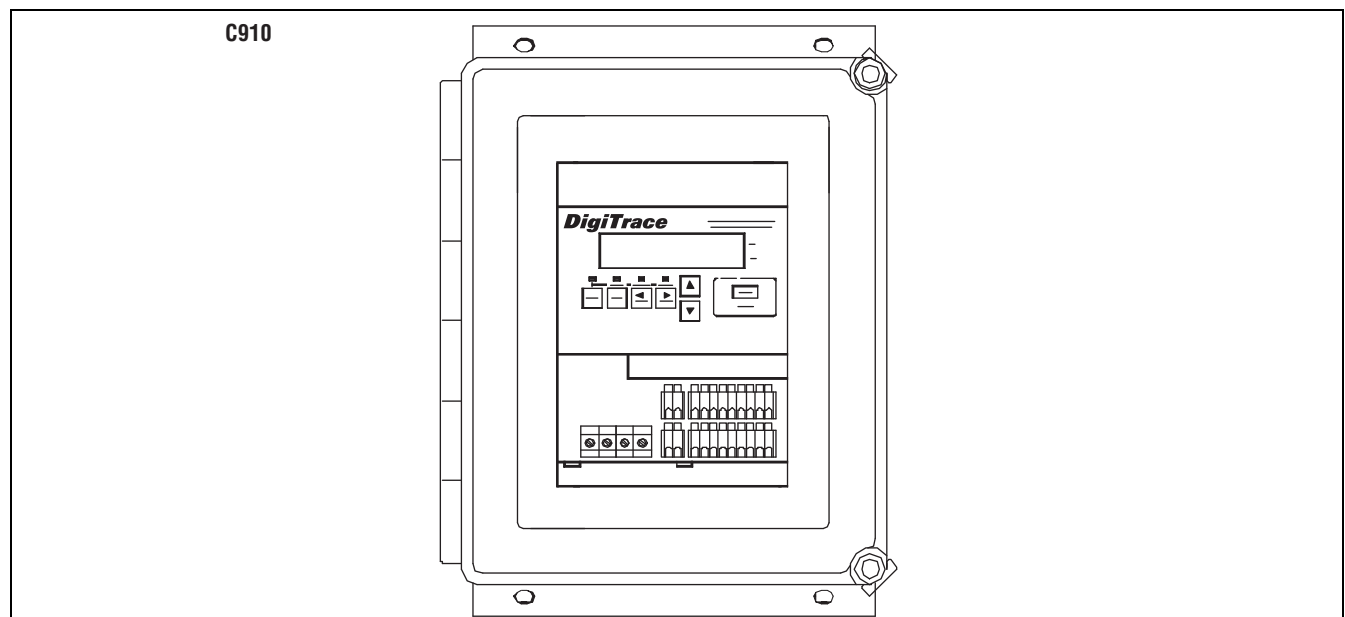
Installation

The C910 unit comes ready to install right from the box, eliminating the need for custom panel design or field assembly. The NEMA 4X-rated FRP enclosure is approved for use in indoor and outdoor locations. Wiring is as simple as connecting the incoming and outgoing power wiring (up to 277 Vac) and an RTD.


The C910 operator interface 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

The C910-485 supports ModBus® protocol and includes an RS-485 communications interface.



General

Area of use	Nonhazardous locations
Approvals	<p>Nonhazardous locations</p> 
Supply voltage	100 Vac to 277 Vac, +5/-10%, 50/60 Hz Common supply for controller and heat-tracing circuit

Enclosure

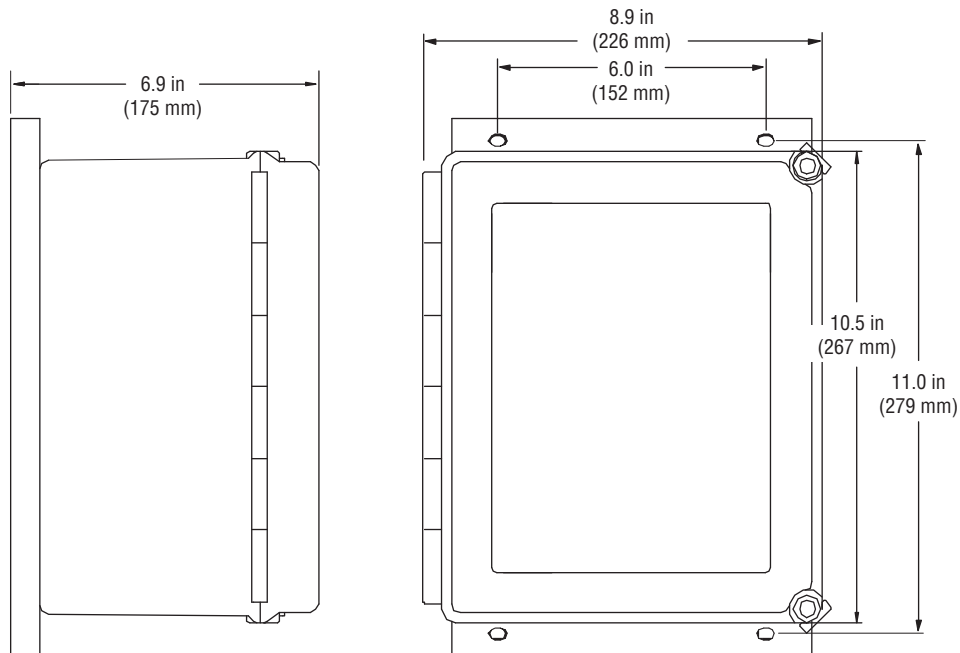
Protection	NEMA 4X
Materials	FRP
Ambient operating temperature range	-40°F to 140°F (-40°C to 60°C)
Ambient storage temperature range	-40°F to 185°F (-40°C to 85°C)
Relative humidity	0% to 90%, noncondensing

Control

Relay type	Double-pole, mechanical
Voltage, maximum	277 Vac nominal, 50/60 Hz
Current, maximum	30 A @ 104°F (40°C) derated to 20 A @ 140°F (60°C)
Control algorithms	EMR: On/off, proportional ambient sensing control (PASC)
Control range	0°F to 200°F (-18°C to 93°C)

Typical Enclosure Dimensions

C910



Monitoring

Temperature	Low alarm range	0°F to 180°F (–18°C to 82°C) or OFF
	High alarm range	0°F to 200°F (–18°C to 93°C) or OFF
Ground fault	Alarm range	20 mA to 100 mA
	Trip range	20 mA to 100 mA
Current	Low alarm range	0.3 A to 30 A or OFF
Autocycle	Diagnostic test interval adjustable from 1 to 240 minutes or 1 to 240 hours	

Temperature Sensor Inputs

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	

Alarm Outputs

AC relay	Isolated solid-state triac, SPST, 0.75 A maximum, 100 Vac to 277 Vac nominal	
Dry contact relay	Pilot duty only, 48 Vac/dc, 500 mA maximum, 10 VA maximum resistive switching	

Note: Outputs are configurable as “open on alarm” or “close on alarm”

Programming and Setting

Method	Programmable keypad	
Units	Imperial (°F, in.) or Metric (°C, mm)	
Digital display	Actual temperature, control temperature, heater current, ground fault, programming parameter values, alarm values	
LEDs	Current mode, heater on, alarm condition, receive/transmit data	
Memory	Nonvolatile, restored after power loss, checksum data checking	
Stored parameters (measured)	Minimum and maximum temperature, maximum ground-fault current, maximum heater current, contactor cycle count, time in use	
Alarm conditions	Low/high temperature, low current Ground-fault alarm, trip RTD failure, loss of programmed values, or EMR failure	
Other	Password protection	

Connection Terminals

Power supply input	Screw terminals, 22–8 AWG	
Heating cable output	Screw terminals, 22–8 AWG	
Ground	Two box lugs, 14–6 AWG	
RTD/alarm/communications	28–12 AWG spring clamp terminals	

Mounting

FRP enclosure	Surface mounting with four fixing holes on 6.0 in x 11.0 in (152 mm x 279 mm) centers Hole diameter: 0.31 in (8 mm)	
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Communications with C910-485

Protocol	ModBus RTU / ASCII	
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**DigiTrace C910 Single-point Heat-Tracing Control System**

Description	Catalog number	Part number	Weight/lbs
DigiTrace C910 controller in an 8" x 10" FRP enclosure with window. 2-pole 30 A EMR. Controls a single circuit with a 2-pole electromechanical relay. (Approved for nonhazardous locations only)	C910	10170-025	15
DigiTrace C910 controller in an 8" x 10" FRP enclosure with window. 2-pole 30 A EMR. Controls a single circuit with a 2-pole electromechanical relay. Includes an isolated 2-wire RS-485 communication option. (Approved for nonhazardous locations only)	C910-485	10170-026	15

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
RTD, -100°F to 900°F, pipe mounted	RTD4AL	RTD4AL	1.2

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