



1017 Series Controllers

Ordering Details

Description	Part #	Weight (LB)
1017 Controller in a FRP enclosure with window. 2-pole 30 A 277 V Solid-State Relay. Controls a single circuit with a 2-pole Solid-State Relay. (Approved for Class I, Div. 2 areas)	10170-002	20
1017 Controller with RS-485 communications in a FRP enclosure with window. 2-pole 30 A 277 V Solid-State Relay. Controls a single circuit with a 2-pole Solid-State Relay. RS-485 communications interface. (Approved for Class I, Div. 2 areas)	10170-016	20
1017 Controller in an 8" x 10" stainless steel enclosure with window. 2-pole 30 A 277 V Solid-State Relay. Controls a single circuit with a 2-pole Solid-State Relay. (Approved for Class I, Div. 2 areas)	10170-004	25
1017 Controller with RS-485 communications in an 8" x 10" stainless steel enclosure with window. 2-pole 30 A 277 V Solid-State Relay. Controls a single circuit with a 2-pole Solid-State Relay. RS-485 communications interface. (Approved for Class I, Div. 2 areas)	10170-018	25
1017 Dual Controller in a FRP enclosure with window. Dual 2-pole 30A 277 V Solid-State Relays. Controls two independent circuits. (Approved for Class I, Div. 2 areas)	10171-005	45
1017 Dual Controller with RS-485 communications in a FRP enclosure with window. Dual 2-pole 30A 277 V Solid-State Relays. Controls two independent circuits. RS-485 communications interface. (Approved for Class I, Div. 2 areas)	10171-020	45
1017 Dual Controller in a stainless steel enclosure with window. Dual 2-pole 30A 277 V Solid-State Relays. Controls two independent circuits. (Approved for Class I, Div. 2 areas)	10171-006	55
1017 Dual Controller with RS-485 communications in a stainless steel enclosure with window. Dual 2-pole 30A 277 V Solid-State Relays. Controls two independent circuits. RS-485 communications interface. (Approved for Class I, Div. 2 areas)	10171-019	55



1017 Series Controllers

The O'Brien 1017 series controllers are compact, full featured, microprocessor based single and dual point heat trace controllers. They provide control and monitoring of Tracepak and Stackpak tubing bundles designed for freeze protection and temperature maintenance. The controllers can be set to monitor and alarm high and low temperature, high and low current, ground fault trip and voltage.

The 1017 series controllers are supplied with a solid-state relay (SSR) for use in nonhazardous and Class I Div. 2 / Zone 2 hazardous areas. An optional RS-485 communications interface is available on all units.

Control

The 1017 series controllers will accept one or two 3-wire 100-ohm RTDs for each control point. Each control point can provide soft start, line sensing, ambient sensing, proportional ambient sensing, and power limiting functions.

Monitoring

The system can be set to periodically perform auto cycled maintenance checks even when heat is not required.


Integrated Ground-Fault Protection National electric codes require ground-fault protection on all heat tracing circuits. The 1017 series controllers satisfy this requirement without the need to purchase and install additional equipment.

Installation

The 1017 series controllers are factory installed in standard NEMA 4X FRP enclosures with a full view front panel. As an option, stainless steel enclosures may be ordered. Wiring is made using common field installed connectors.



General

Area of use	Nonhazardous and Division 2 hazardous locations
Approvals	<p>Hazardous locations Class I, Div. 2, Groups A, B, C, D</p>  Ex nA IIA, IIB, IIC T-code: T4
Supply voltage	100 Vac to 277 Vac, +5/-10 %, 50/60 Hz Common supply for controller and heat-tracing circuit

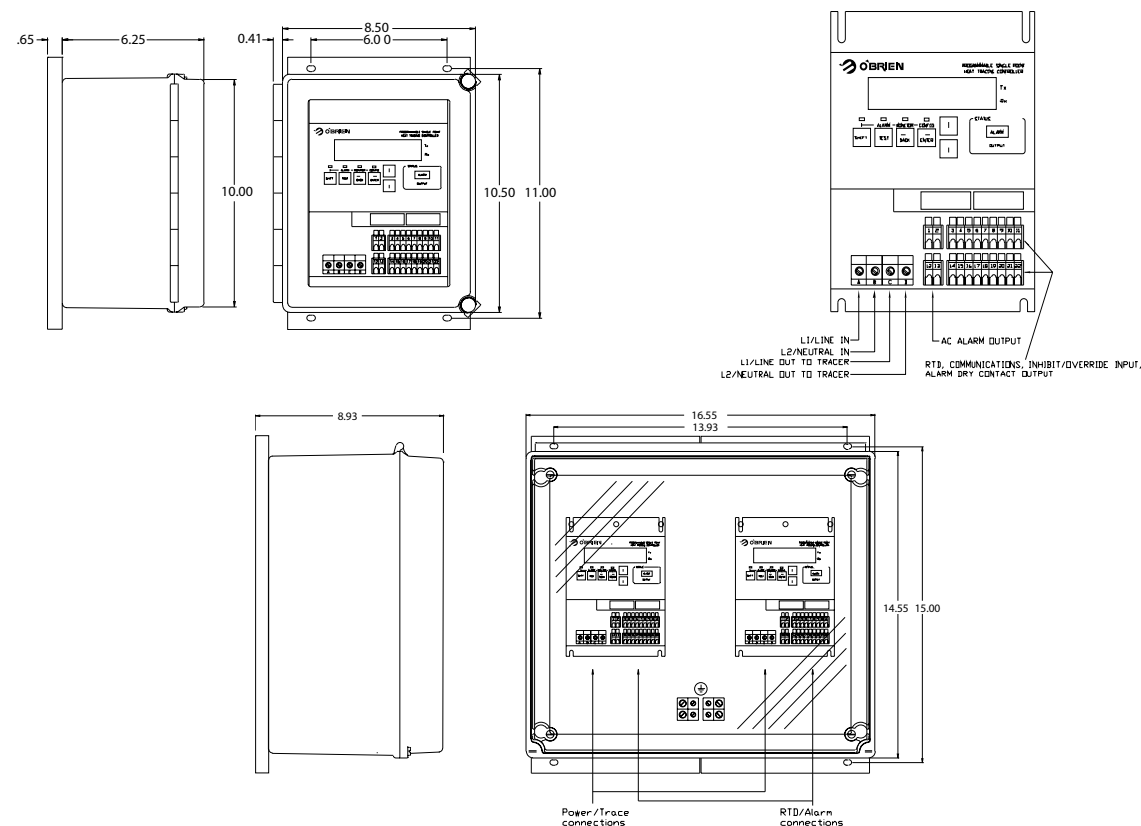
Enclosure

Protection	NEMA 4X
Materials	FRP or 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 type	Double-pole, solid-state, normally open
Voltage, maximum	277 Vac nominal, 50/60 Hz
Current, maximum	30 A @ 104°F (40°C) derated to 15 A @ 140°F (60°C)
Control algorithms	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 & Connections



Monitoring

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

Quantity	Two inputs per control point
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

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	°F or °C
Digital display	Actual temperature, control temperature, heater current, voltage, resistance, 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 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 SSR failure
Other	Multi-language support 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

Communications (Optional)

Protocol	Modbus RTU or ASCII / HTCBUS
Interface	RS-485