

## Summit Ice Melt Systems

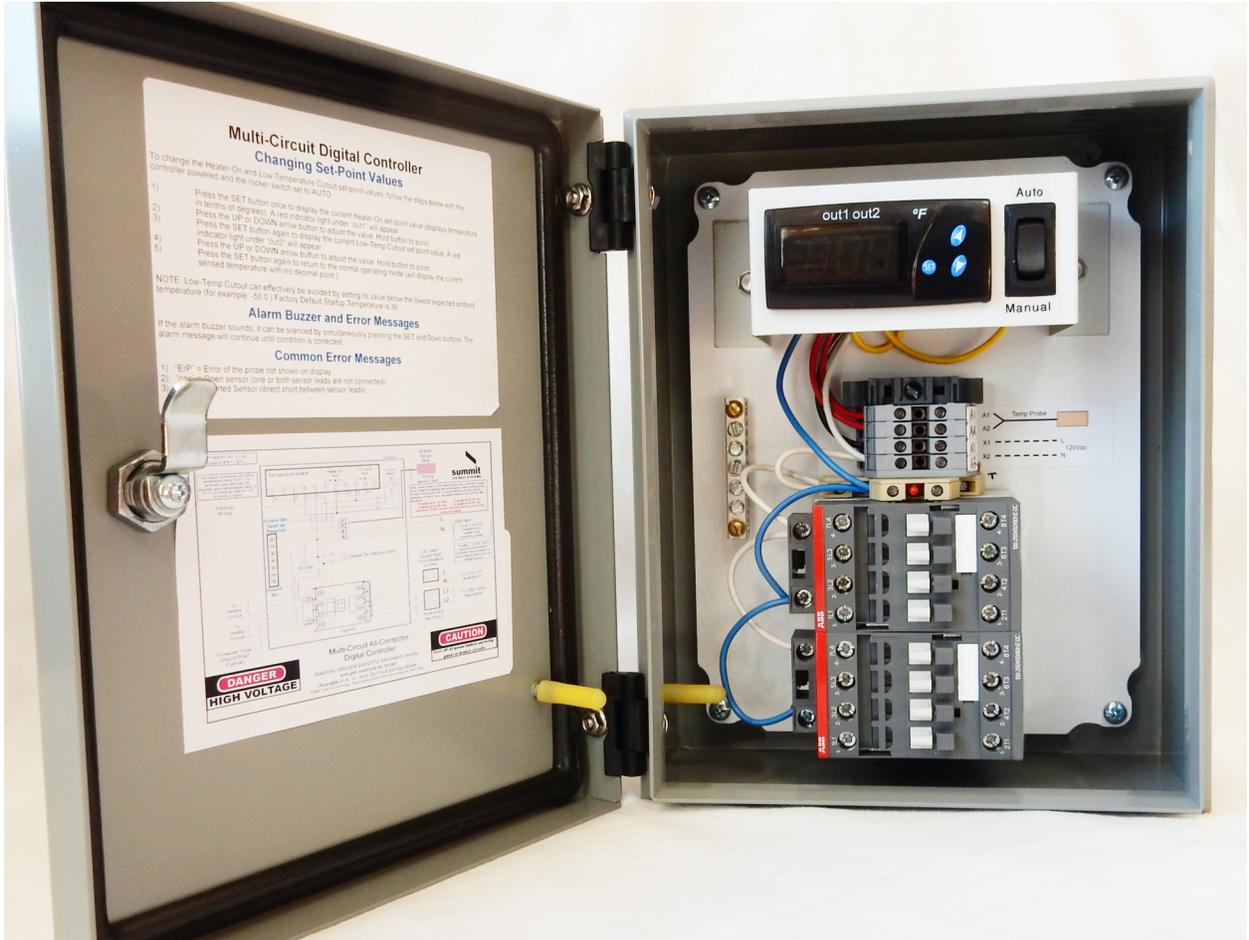
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# Multi-Circuit Standard Ambient Temp Sensing Digital Controllers



## 4CDC+ ALL-Contactor Controller

### Overview

Summit Ice Melt Systems, Inc. Multi-Circuit Digital Controller provides On/Off operation of its S1 and S2 (120Vac to 277Vac) and EverClear 812 and 822 (120Vac to 277Vac) self-regulating heater cables by energizing multiple (4, 8, or 12) individual branch circuits via adjustable control values as set on the temperature controller.

The Controller provides a set point for on/off operation as well as a low-temp cutout of the circuits. The low-temp cutout shuts the system off when temperatures are so cold that no snow and ice melting occurs. Both temperatures are easily field adjustable to suit local conditions.

## Multi-Circuit Ambient Temp Sensing Digital Controllers

### Operation

The Multi-Circuit Controller uses a thermistor to sense ambient temperatures. When the temperature drops below the Heater-On set-point, the system is energized. When the temperature rises above the Heater-On set-point, the system is de-energized.

If the temperature drops below the low-temp cutoff, the system is de-energized. When the temperature rises above the low-temp cutoff, the system is energized.

The 3-position rocker switch allows the operator to set the system in Automatic, Manual, or Off mode (center position). When the rocker switch is set to the MANUAL position, heaters are energized, regardless of ambient conditions.

### Installation

The Multi-Circuit Controller enclosures vary in size to accommodate the number of circuits controlled. The enclosures are NEMA 4/12 rating so they may be mounted indoors or outdoors, typically near the circuit breaker panel. Each branch circuit must be protected by a ground fault protection device per the NEC. A 120Vac protected circuit is required to energize the controller.

The ambient sensor is mounted outdoors in a shaded location representative of minimum ambient conditions (typically on the north side of a building), and away from any heat source, such as direct sunlight or a utility room exhaust vent, so that the temperature sensor gives an accurate reading of the air temperature reflective of actual ambient conditions. The ambient sensor comes with a standard 10 ft lead, but its range can be extended up to hundreds of feet using ordinary stranded copper wire. See schematic diagram for details.

### Pre-Season Testing

The heater circuits may be energized and tested for proper functionality prior to the cold weather season by simply setting the 3-position rocker switch to Manual. Amperage readings may then be taken on each branch circuit. Amperage will depend on ambient temperature and time. Follow heater manufacturer test procedures.

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### Changing Set-Point Values

To change the Heater-On and Low-temperature Cutout set-point values, follow the steps below with the controller powered and the rocker switch set to AUTO:

- 1) Press the SET button once to display the current Heater-On set-point value (displays temperature in tenths of degrees). A red indicator light under "out1" will appear.
- 2) Press the UP or DOWN arrow button to adjust the value. Hold button to scroll.
- 3) Press the SET button again to display the current Low-Temp Cutout set-point value. A red indicator light under "out2" will appear.
- 4) Press the UP or DOWN arrow button to adjust the value. Hold button to scroll.
- 5) Press the SET button again to return to the normal operating mode (will display the current sensed temperature with no decimal point.)

Low-Temp Cutout can effectively be avoided by setting its value below the lowest expected ambient temperature (for example: -50.0.)

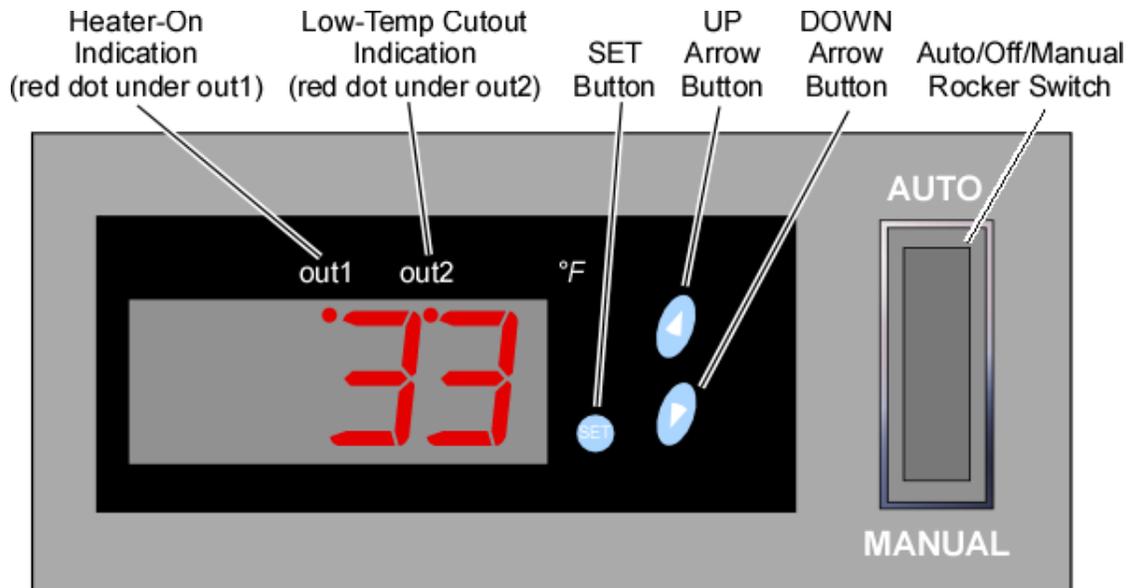
**NOTE: Multi-Circuit controllers default start-up temperature is set to 36° and should be adjusted to actual field needs.**

### Alarm Buzzer and Error Messages

If the alarm buzzer sounds, it can be silenced by simultaneously pressing the SET and Down buttons. The alarm message will continue until condition is corrected.

### Common Error Messages

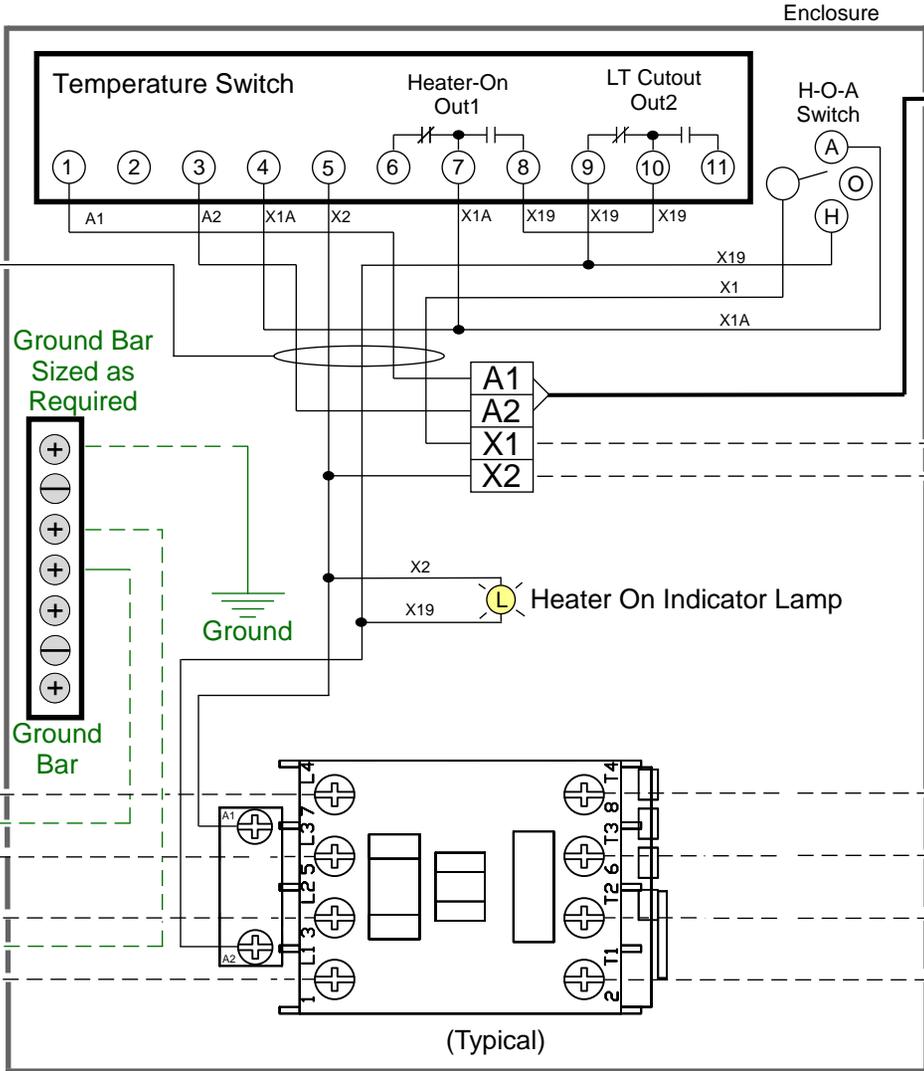
- 1) "ErP" = Error of the probe not shown on display
- 2) "ooo" = Open sensor (one or both sensor leads are not connected).
- 3) "- - -" = Shorted Sensor (direct short between sensor leads).



Terminals A1, A2, X1, X2:  
Torque at 4.4-7.1 lb In.

Use copper conductors only with a temperature rating of 60° F. for terminals rated less than 100 amperes, and a temperature rating of 75° F. for terminals rated for 100 amperes or higher

Factory Wiring



Ambient Sensor Bulb

10' long Sensor Lead



Note: Locate sensor on the coldest exterior side of structure (usually north) under the overhang and not exposed to heat sources such as sunlight, heating vents, etc. If using extension wiring for remote placement of sensor bulb, use copper extension wire, 300Vac rated insulation:

16 gauge up to 60' max. 14 gauge up to 120' max.  
12 gauge up to 240' max. 10 gauge up to 480' max.  
Important: DO NOT exceed maximum extension wire length versus wire gauge!

120V Input

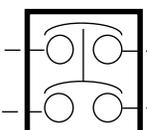
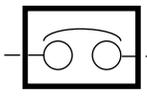
Circuit 1: 120V 10A protected circuit breaker to be provided by installer

Circuits 2 - 13: 30A, 30mA ground fault equipment protection circuit breakers to be provided for each circuit by installer (typical)

UL Listed Ground Fault Circuit Breakers (by others)

For 120V / 277 Applications

For 208V / 240V Applications



Field Wiring (by others)

To Heater Cable Ground Braid (Typical)

## Multi-Circuit All-Contactor Digital Controller

Switches 120V/208/240/277V 30A branch circuits, wire per example as shown

Available in 4-, 8-, and 12-circuit configurations

NEMA Type 4/12 enclosure. Short circuit current: 5kA rms symmetrical, 480V Max.

**DANGER**

**HIGH VOLTAGE**

**CAUTION**

Turn off all power before servicing panel or branch circuits