



We manage heat®

Model SST-1

Freeze Protection Thermostat

Part Number 22092

Installation and Operation Manual

WARNING

Hazard of electrical shock.

Follow all safety procedures.

Any installation involving electric heater wiring must be installed in accordance with manufacturer's installation instructions.

Electric wiring to heating elements must be installed in accordance with applicable sections of the National Electric Code (NFPA 70), local electrical codes, and heater manufacturer's installation instructions.

Only qualified personnel trained in electrical equipment service should perform maintenance on heating and control equipment.

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Safety

Any installation involving electric heater wiring must be installed in accordance with manufacturer's installation instructions.

Electric wiring to heating elements must be installed in accordance with the National Electric Code (NFPA 70), local electrical codes, and heater manufacturer's installation instructions. Follow the installation instructions contained herein and those provided by the heater manufacturer. If you have questions concerning the installation contact Customer Service for assistance.

Clearly label each circuit breaker with its function. Record the panel designation and circuit number and mark these on or near the SST-1 controller enclosure. This will be of importance should the SST-1 require future service or maintenance.

Description

The C-UL-US listed SST-1 Freeze Protection Thermostat replaces electromechanical thermostats in cost-sensitive applications requiring ground fault equipment protection (GFEP). The SST-1 is classified to UL and CSA safety standards by UL for use in temperature-regulation applications. It is the ideal low-cost thermostat for areas not subject to mechanical abuse.

Specifications

Temperature control

Fixed set points: ON: below 40°F (4.4°C)
OFF: over 42°F (5.5°C)

Electrical

Supply voltage: 208/240 volts AC
Heater load: Up to 30 amps

GFEP (ground fault equipment protecton)

Setting: 30 mA
Reset: Manual
Self-test: Automatic every 24 hours

LED Indicators

SUPPLY (green): Power applied
HEATER (yellow): Heaters operating
GFEP (red): Ground fault exists or existed
One, or more, of the following problems has occurred

Note: LED indicators are with in the enclosure and are not intended for use during normal operation. LED indicators are supplied for testing and trouble shooting by qualified personnel only.

Ambient temperature ranges

Operating: -40° to 136°F (-40° to 58°C)
Storage: -67° to 167°F (-55° to 75°C)

Installation

Unpacking

Immediately inspect the packing material for damage. Unpack the SST-1, taking care not to damage the packaging material. Save the packaging material until normal operation has been established. If the unit must be returned, take care to ensure that it is repackaged as it was received.

Packing List

Order Number	Quantity	Description
21559	1	SST-1 Freeze Protection Thermostat
19272	1	Temperature Sensor
21697	1	SST-1 Installation and Operation Manual

Initial Inspection

Inspect the SST-1 for shipping damage. If any of the following problems are found contact the Customer Service Department.

- Contents incomplete or incorrect
- Internal or external mechanical damage

Customer service is available between 8:00 a.m. and 5:00 p.m. EST (UTC minus 5 hours) at (574) 233-1202 or (800) 234-4239. In the event of shipping damage, keep the packing materials for inspection by the carrier. Normally, Environmental Technology, Inc. will repair or replace the SST-1 without waiting for the claims settlement.

Location

The SST-1 nonmetallic enclosure is suitable for installation in indoor and outdoor environments suitable for NEMA 4X applications. The SST-1 was designed to operate over an ambient temperature range of -40° to 136°F (-40° to 58°C).

Using the integral mounting flanges, the SST-1 is intended to be installed on a fixed, flat, vertical surface. The mounting flanges accommodate $1/4$ " (6mm) fasteners.

The SST-1 nonmetallic enclosure is furnished with two $3/4$ " (21mm) conduit entries. The lower conduit entries provide for line voltage supply branch circuit conductors. The conduit entry at the top-left of the enclosure is for heater load branch circuit conductors. The installed weather-tight fitting is for the low voltage, NEC Class 2, temperature sensor. The Temperature Sensor and may be located up to 2,000' (610m) from the SST-1.

Supply Voltage

The SST-1 operates from 208/240 at 50/60 Hz. For line supply and load connections, use 10 AWG or larger wires rated for at least 75°C (167°F) at 300 VAC.

Contactors Ratings

The heater contactor provides two (2) Form A (DPST) definite purpose contacts rated for up to 30 amp AC heater loads at voltages at or below 277 VAC.

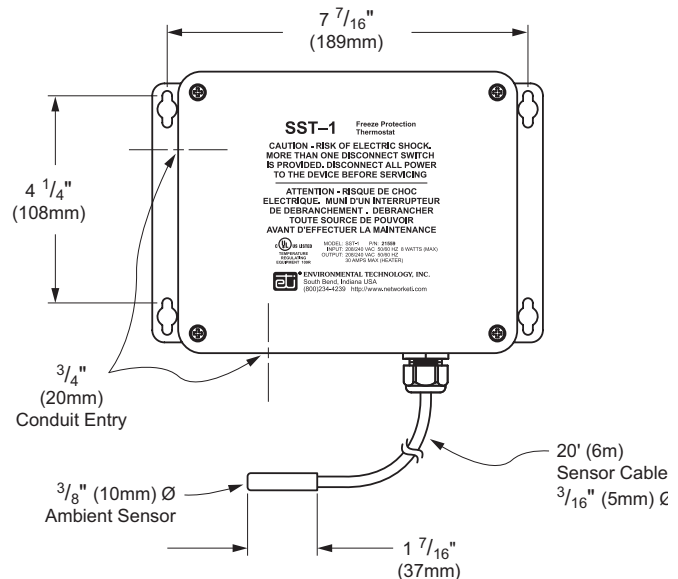


Figure 1. SST-1 dimensions. See Appendix A.



WARNING

Lethal voltages are present within the controller enclosure. Make certain that the heating system is de-energized and tag all circuit breakers off during installation or service.

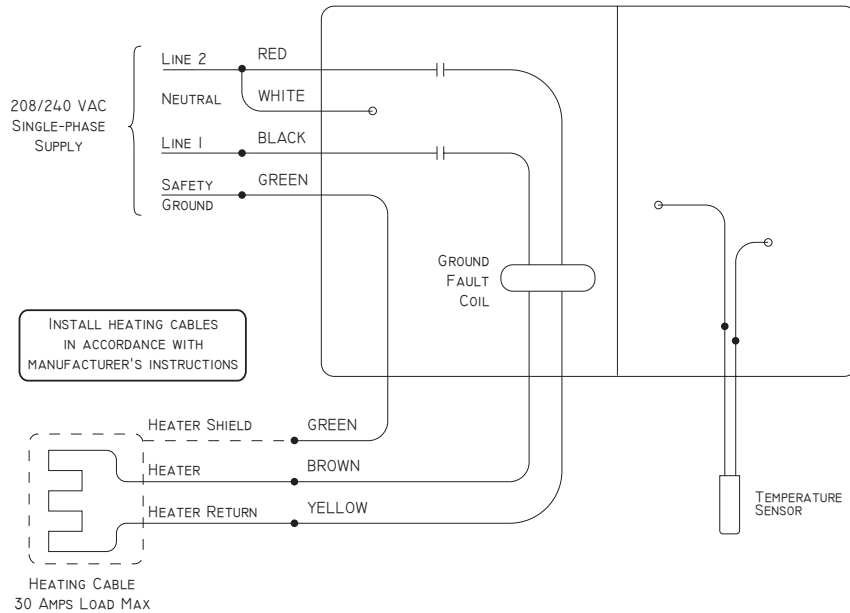


Figure 2. SST-1 wiring. See Appendix B.

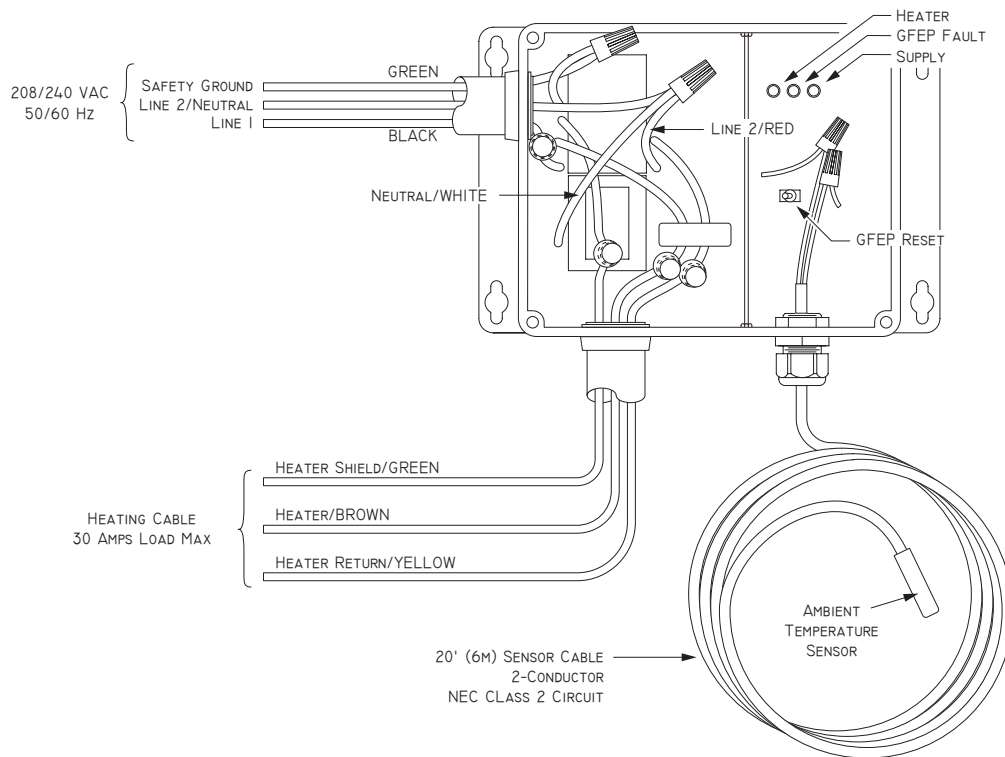


Figure 3. SST-3 dimensions. See Appendix C.

NEC Class 2 Low Voltage Connections

All low voltage wiring shall use 18 AWG or greater stranded conductors with thermoplastic insulation rated for at least 75°C (194°F) at 300 VAC. The temperature sensor is supplied with a 20' (6m) 2-wire jacketed cable lead. The temperature sensor lead may be up to 500' (152.4m) using 18 AWG 2-wire jacketed cable, or up to 2,000' (609.6m) using 12 AWG 2-wire jacketed cable.


Temperature Sensor

The Temperature Sensor is required for the operation of the SST-1. A Temperature Sensor will not allow the SST-1 to operate the heaters.

The Temperature Sensor connects via wire nuts to the two blue wire nuts in the SST-1 enclosure. It does not matter which sensor wire is connected to which blue wire in the enclosure. The sensor should be located near the heater being controlled and is used to monitor its temperature.

Operating Instructions

WARNING



The LED indicators located within the controller enclosure are not intended to be used during normal operation. The LED indicators located within the SST-1 are intended to be used during testing and trouble shooting procedures by factory and factory authorized personnel. There is no reason to ever remove the enclosure cover while power is connected to the SST-1.

Power On Startup Test

When power is applied to the SST-1, the LED indicator lights in the SST-1 enclosure will all come on for two seconds and then turn off, except for the green SUPPLY indicator, which will remain lit whenever the SST-1 senses supply power.

Next, the SST-1 performs a self-test of the ground fault circuitry. This is the same test automatically performed approximately every 24 hours. Failure of the ground fault circuitry self-test will disable the SST-1; call Customer Service.

Operation

The SST-1 does not require user attention during normal operation. Refer to figure 4 (or Appendix D) for the LED Indicator Codes chart to determine unit status in the event of abnormal operating conditions.

GFEP Test

To manually verify the operation of the ground fault circuitry, momentarily disconnect power from the SST-1. This should not normally be necessary as the SST-1 will test the ground fault circuitry when power is applied to the unit and once approximately every 24 hours as long as power is supplied to the unit.

GFEP Reset

In the event that a ground fault condition is detected by the SST-1 heaters will be turned off, if on, and heaters will be prevented from further operation until the ground fault condition has been reset. The red GFEP Fault indicator will be continuously on as long as there is power to the SST-1 and a ground fault condition remains. The ground fault condition will be persistent and will be remembered by the SST-1 even if the unit loses power.

To clear the ground fault condition disconnect all power sources from the SST-1 and place it out of service. Remove the enclosure cover and place the GFEP Reset toggle switch in the position opposite of the position it was in at the time of the ground fault event. When the unit is reenergized it will remember the last position of the GFEP Reset toggle switch. Finding the GFEP Reset toggle switch in the opposite position the SST-1 will clear the ground fault condition and initiate a GFEP circuitry self test and place the SST-1 back into normal operation. If the ground fault condition fails to clear, or immediately returns, the system requires service by a qualified electrician.

Maintenance

The SST-1 does not require routine maintenance.

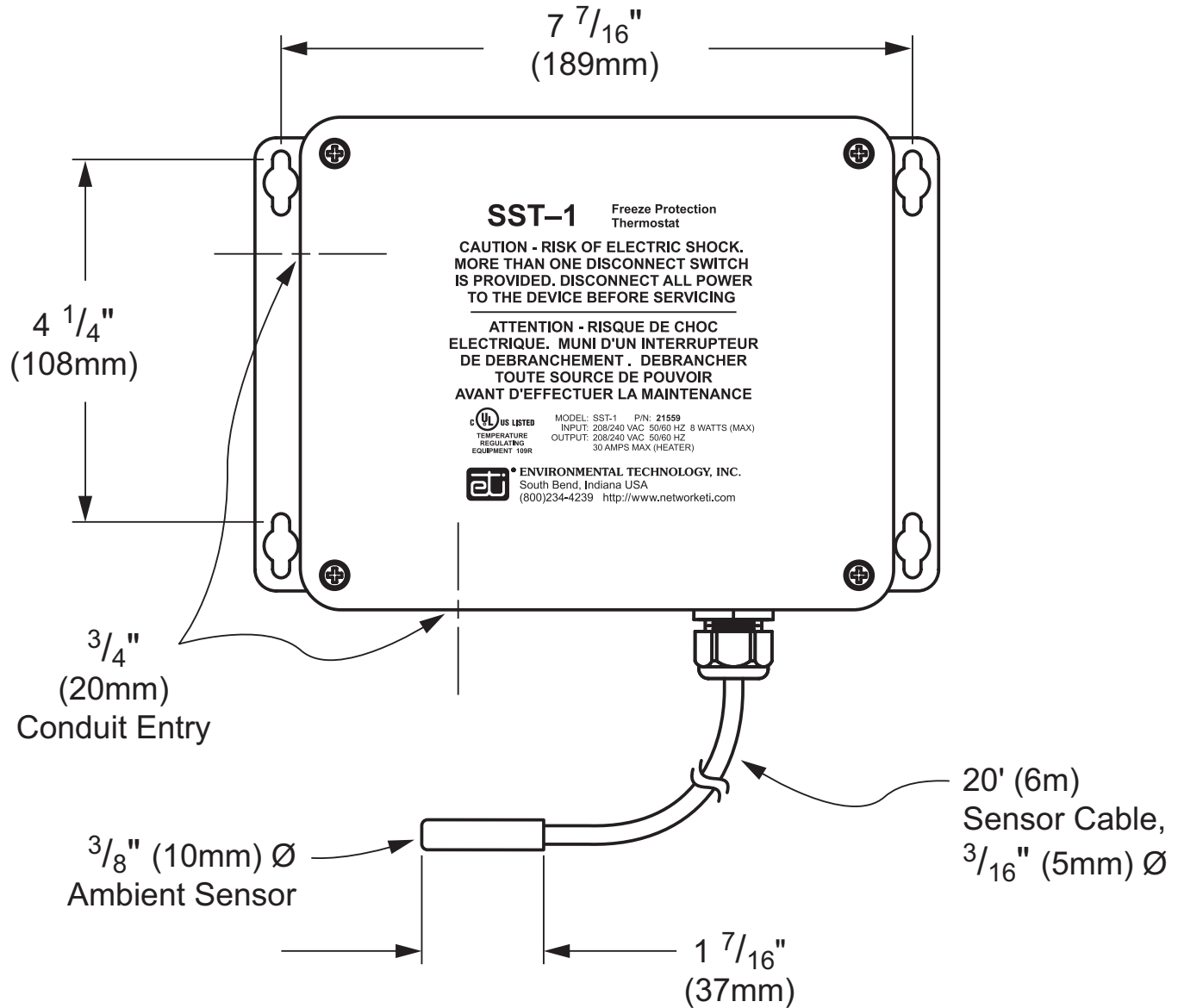
For technical help, questions or comments concerning this product or any Environmental Technology, Inc. products contact the Customer Service Department between 8:00am and 5:00pm EST (UTC minus five hours) at:

Voice: 800.234.4239 (USA and Canada) or 574.233.1202 (elsewhere)

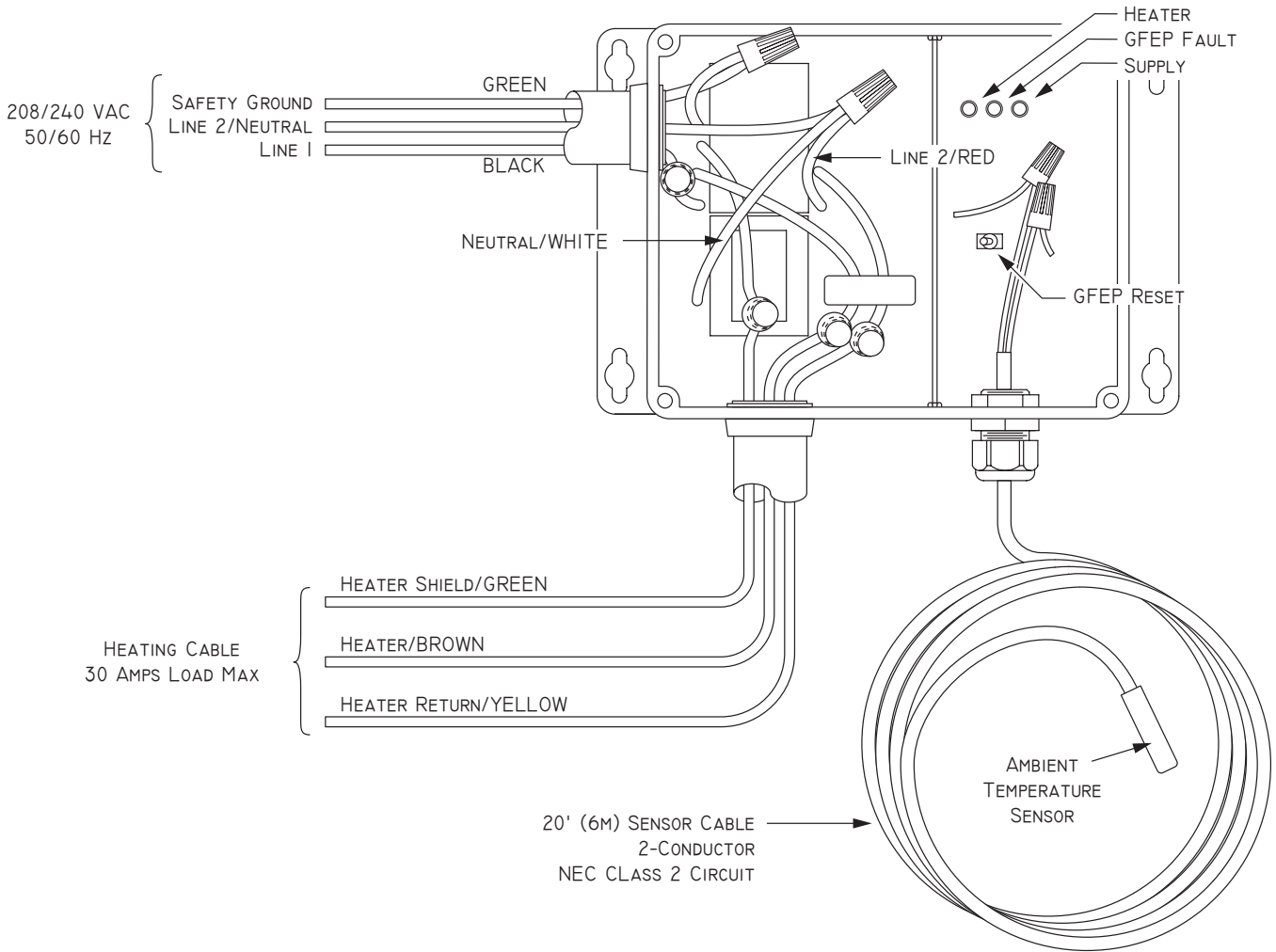
Fax: 888.234.4238 (USA and Canada) or 574.233.2152 (elsewhere)

E-mail: helpdesk@networketi.com

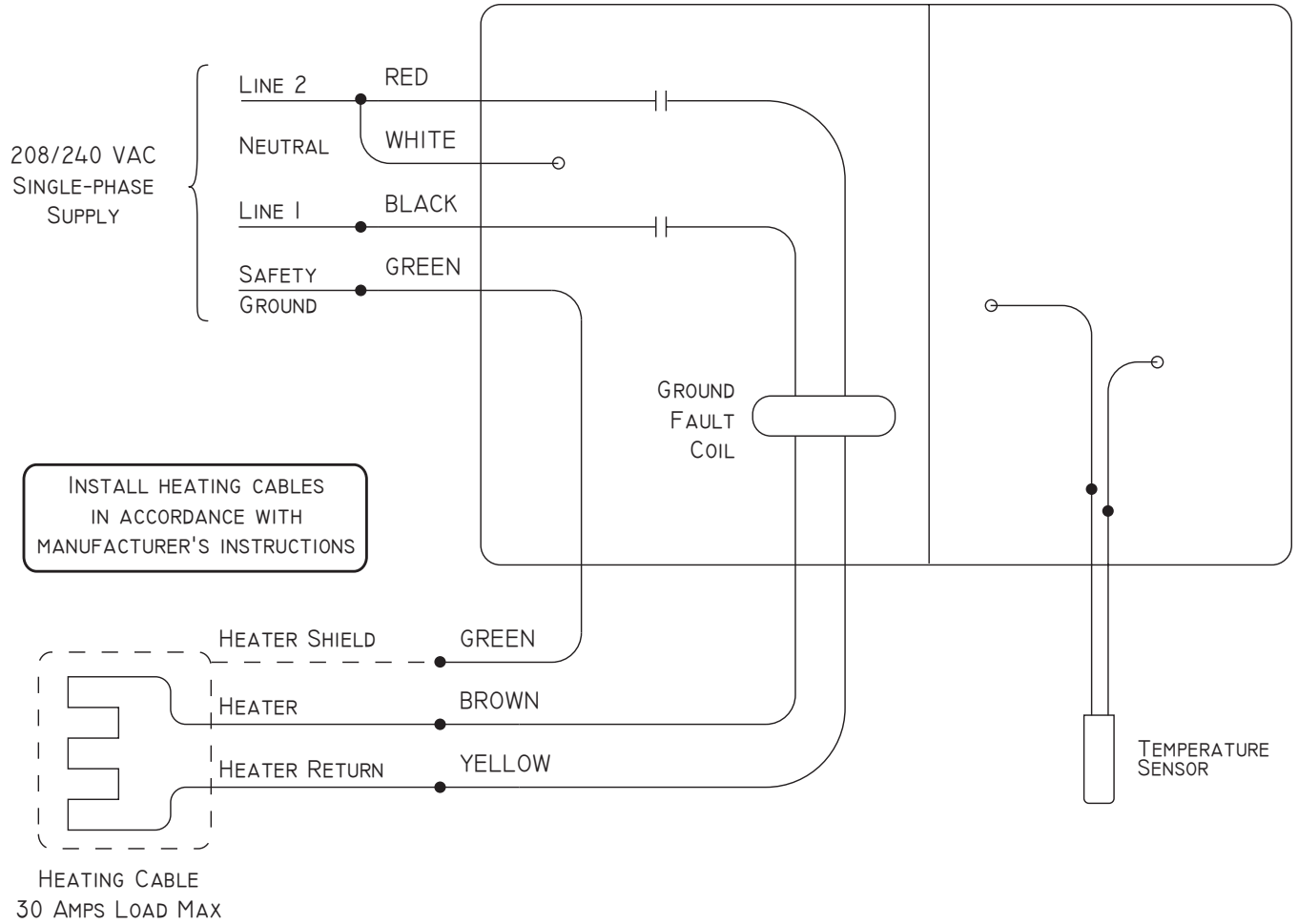
Appendix A. SST-1 Dimensions.



Appendix B. SST-1 Wiring Diagram.



Appendix C. SST-1 Wiring.



SST-1 FREEZE PROTECTION THERMOSTAT