



We Manage Heat®

® Electronic Thermostats with Ground Fault Equipment Protection

MANUAL

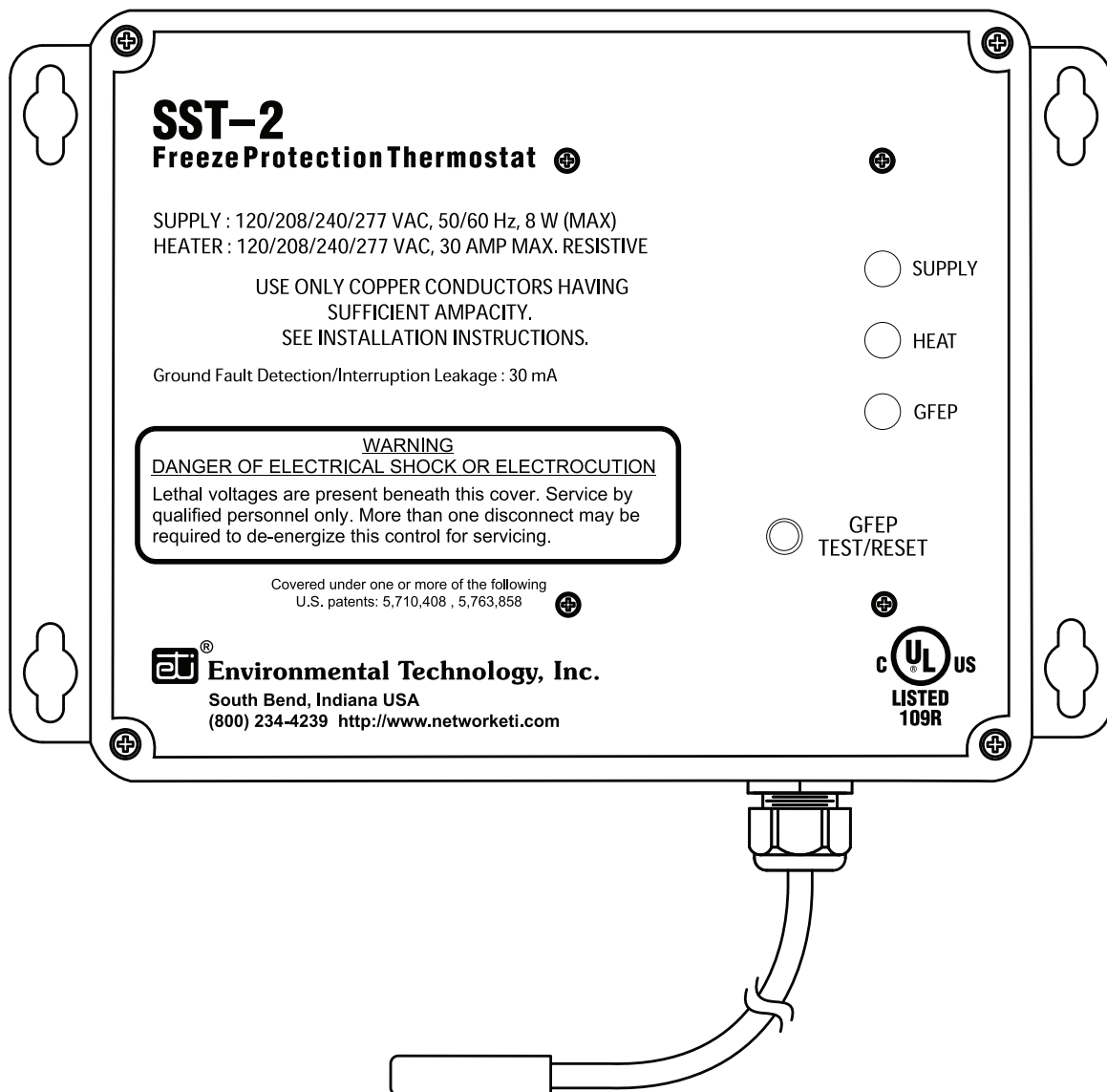
## MODEL SST-2 40 FREEZE PROTECTION THERMOSTAT

P/N 22744

## MODEL SST-2 175 FIXED SET POINT THERMOSTAT

P/N 23708

### Installation and Operation Manual



### Environmental Technology, Inc.

1850 N Sheridan Street  
South Bend, Indiana 46628

<http://www.networketi.com/>

## Safety

Make all electrical connections in compliance with the National Electric Code (NFPA 70) and local electrical code. If you have questions concerning the installation or application, contact Customer Service.

## Additional Information

More information is regularly made available through our website, [www.networketi.com](http://www.networketi.com). Please visit us online for datasheets, manuals, white papers, technical articles and more. The most current and up to date version of this and every other manual for our products can be found in Acrobat (pdf) format to view online or to print. This is to assist you in installing and using our products to the best effect possible. If you have any comments about this or any other material from Environmental Technology please contact us.

## Contacting Environmental Technology

For assistance, contact Customer Service. Office hours are 8:00 AM until 5:00 PM ET.

E-mail: [helpdesk@networketi.com](mailto:helpdesk@networketi.com)  
Mail: Environmental Technology, Inc.  
1850 North Sheridan Street  
South Bend, IN 46628

# General

## Description

The C-UL-US listed SST-2 Fixed Set Point Thermostats replace electromechanical thermostats in cost-sensitive applications requiring ground fault equipment protection (GFEP). The SST 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.

## Installation

### Unpacking

Immediately inspect the packing material for damage. Unpack the SST-2, 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

#### SST-2 40

22744	SST-2 40 Freeze Protection Thermostat
25076	Temperature Sensor
22804	SST-2 Installation and Operation Manual

#### SST-2 175

23708	SST-2 175 Fixed Set Point Thermostat
23846	Temperature Sensor, High Temp
22804	SST-2 Installation and Operation Manual

### Initial Inspection

Inspect the SST 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. ET

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 without waiting for the claims settlement.

## Location

Housed in a NEMA 4X rated enclosure, the SST fixed set point thermostat can be mounted in either indoor or outdoor environments. The SST controller was designed to operate in an ambient temperature range of  $-40^{\circ}$  to  $130^{\circ}\text{F}$  ( $-40^{\circ}$  to  $55^{\circ}\text{C}$ ).

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

The SST fixed set point thermostat nonmetallic enclosure is furnished with two  $\frac{3}{4}$ " (21mm) conduit entries. The conduit entry at the top left side of the enclosure is for line voltage supply branch circuit conductors. The lower conduit entry provides for heater load branch circuit conductors. The installed weather-tight fitting is for the low voltage, NEC Class 2, temperature sensor. The temperature sensor may be located up to 2,000' (610m) from the SST-2.

## Supply Voltage

The SST fixed set point thermostat operates from 120, 208, 240 or 277 VAC at 50/60 Hz. For line supply and load connections, use 10 AWG or larger wires rated for at least  $75^{\circ}\text{C}$  ( $167^{\circ}\text{F}$ ) at 300 VAC.

## Contactors Rating

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.

## 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  $75^{\circ}\text{C}$  ( $194^{\circ}\text{F}$ ) 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. The temperature sensor connects via wire nuts to the two blue wires in the SST enclosure. Connect the sensor's RED wire to either SST-2 BLUE wire and connect the sensor's BLACK wire to the remaining blue wire. (*NOTE: 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. Its placement is dependent upon application:

- Consider/confirm ambient air temperatures for chiller lines, etc.
- Water supply lines (in-line heating) – on pipe under insulation
- Sprinkler system freeze protection – on pipe under insulation  
(consider pipe temperatures in unheated facilities)

# Operating Instructions

## Power On Startup Test

When power is applied to the SST-2 fixed set point thermostat, the LED indicator lights in the SST enclosure will cycle for two seconds and then turn off, except for the green SUPPLY indicator, which will remain lit whenever the SST senses supply power.

Next, the SST-2 fixed set point thermostat 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; call Customer Service.

## Operation

The SST-2 fixed set point thermostat does not require user attention during normal operation.

Status indicator	SUPPLY (green) power applied
	SUPPLY (green, flashing) bad thermistor
	HEAT (yellow) call for heat
	GFEP (red) ground fault condition
	GFEP (red, flashing) failed GFEP test
	GFEP (red, flashing, rapid) GFEP test in progress

## GFEP Test

To manually verify the operation of the ground fault circuitry, momentarily press the GFEP TEST/RESET switch on the SST. This should not normally be necessary as the SST 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 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 and a ground fault condition remains. The ground fault condition will be persistent and will be remembered by the SST even if the unit loses power.

To clear the ground fault condition momentarily press the GFEP TEST/RESET switch on the SST.

## Maintenance

The SST-2 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 ET at:

E-mail: [helpdesk@networketi.com](mailto:helpdesk@networketi.com)

## Specifications

### General

Area of use	Nonhazardous locations
Approvals	



### Enclosure

Protection	NEMA 4x
Cover attachment	Polycarbonate cover, machine screws
Entries	1 × 3/4" entry (bottom right) for NEC Class 2 sensor connections 3 × 1-1/16" entries (bottom left and left) for supply, load power and (right) NEC Class 2 alarm relay connections
Material	Polycarbonate
Mounting	Wall mounted

### Front Panel Interface

Status indicator	SUPPLY (green) power applied SUPPLY (green, flashing) bad thermistor HEAT (yellow) call for heat GFEP (red) ground fault condition GFEP (red, flashing) failed GFEP test GFEP (red, flashing, rapid) GFEP test in progress
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### Remote Interface

Alarm relay	Isolated SPDT 1 AMP Class 2 contact
Summary alarms	No Power Ground Fault Condition GFEP function test failure Bad or missing Thermistor

### Control

Supply voltage	120, 208, 240 or 277 volts, single phase (automatically selected)
Contact type	Two Form A DPST
Maximum Ratings	Voltage: 277 VAC Current: 30 amps

### Temperature Sensor

Set point	P/N 22744: 40°F (4.4°C) P/N 23708: 175°F (80°C)
Dead band	2°F (1°C)
Sensor type	Thermistor network
Circuit type	NEC Class 2
Lead Length	Up to 2,000' (610m) using 12 AWG 2-wire jacketed cable Up to 500' (152m) using 18 AWG 2-wire jacketed cable

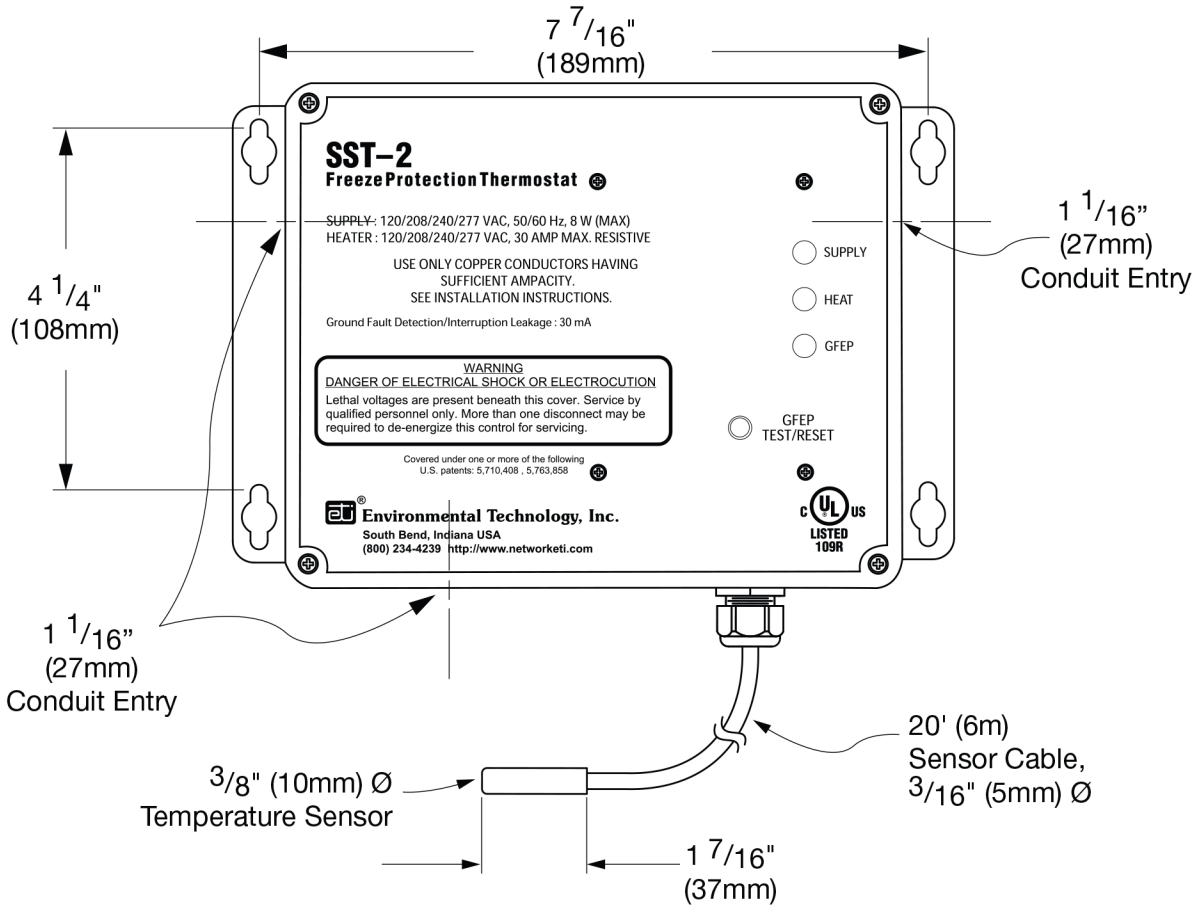
### Ground Fault Equipment Protection (GFEP)

Set point	30 mA
Automatic self test	Mode A: Verifies GFEP function before contactors operate Mode B: Verifies GFEP function every 24 hours
Manual test/reset	TEST/RESET switch on front panel

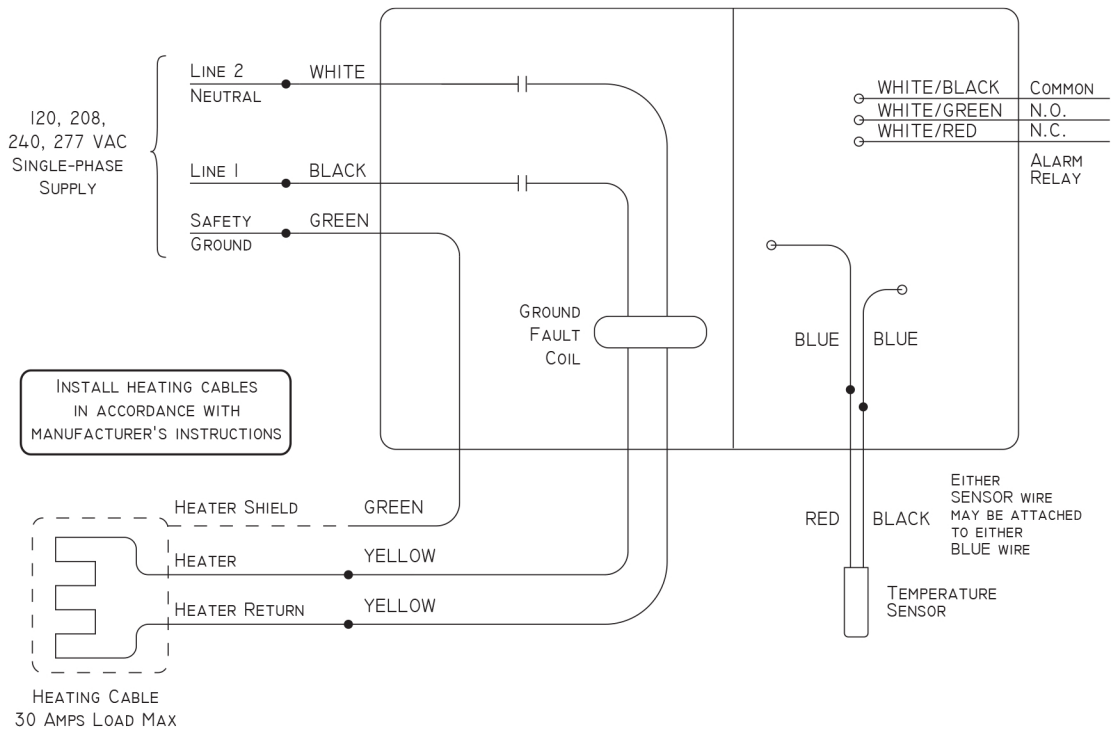
### Environmental

Operating temperature	Enclosure: -40°F to 130°F (-40°C to 55°C) Std Temp (SST-2 40) Sensor: -40°F to 220°F (-40°C to 104°C) High Temp (SST-2 175) Sensor: -40°F to 300°F (-40°C to 149°C)
Storage temperature	-67°F to 167°F (-55°C to 75°C)

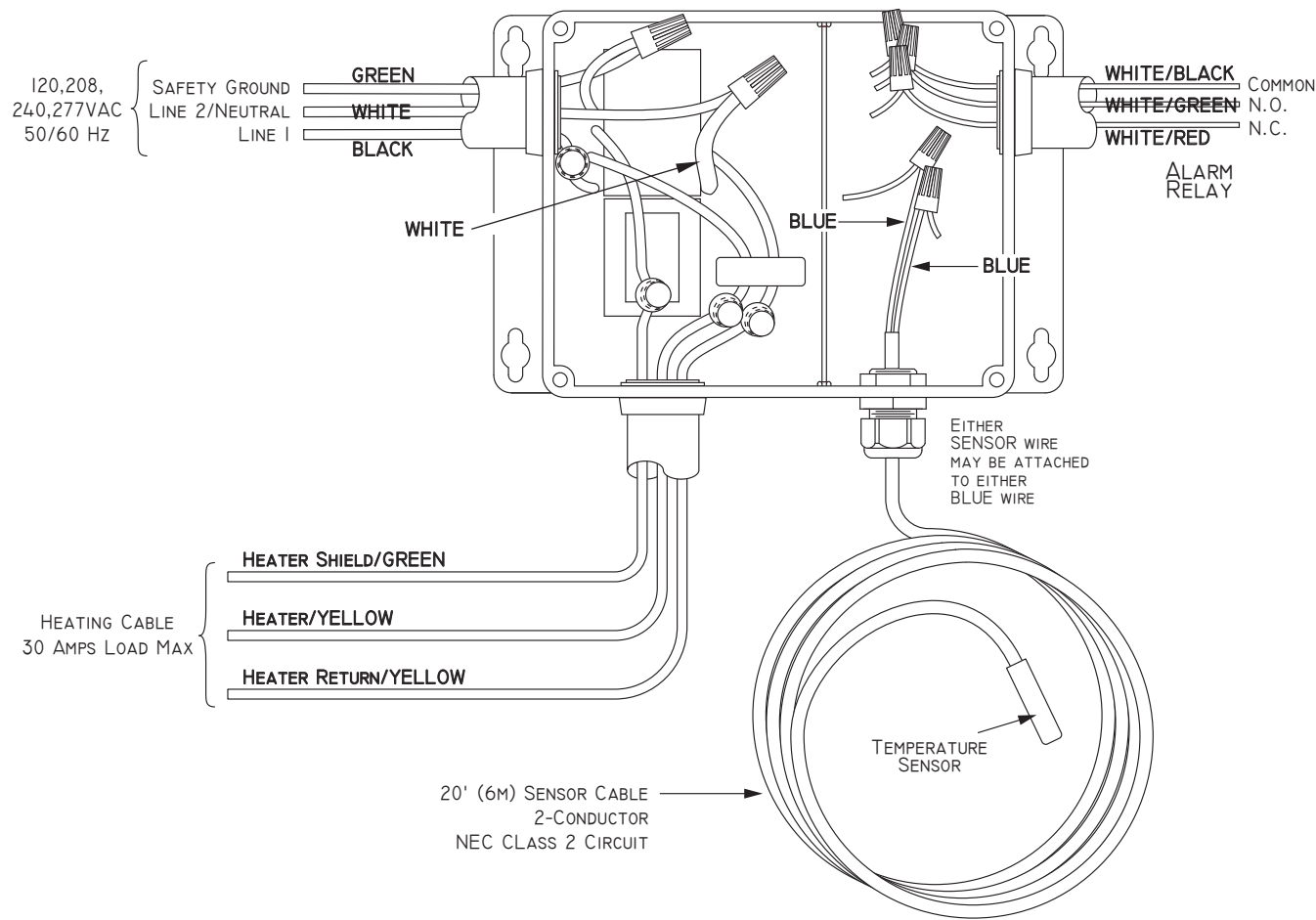
Appendix A. SST-2 Dimensions.



Appendix B. SST-2 Wiring.



Appendix C. SST-2 Wiring Diagram.



ORDERING INFORMATION

Order Number	Description
22744	Model SST-2 40 Freeze Protection Thermostat
25076	Temperature Sensor (included with 22744)
23708	Model SST-2 175 Fixed Set Point Thermostat
23846	Temperature Sensor, High Temp (included with 23708)

LIMITED WARRANTY

ETI’s two year limited warranty covering defects in workmanship and materials applies. Contact Customer Service for complete warranty information.

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