

TS-1 Temperature Sensor for MSC-1 Panel for Snow & Ice Melting Installations & Operation Instructions

GENERAL

The TS-1 sensor measures outside temperatures and is placed in an area that best represents the outdoor temperature conditions.

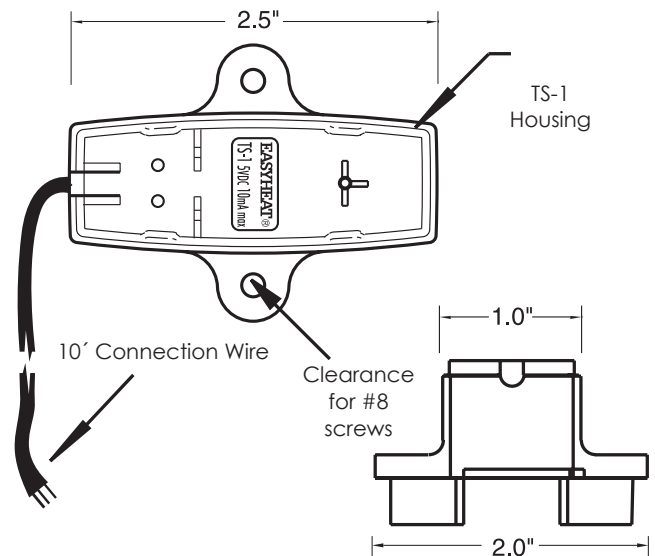
Each MSC-1 includes a TS-1 temperature sensor. The TS-1 operates on low voltage provided by the MSC-1 control unit and allows the MSC to determine when to activate snow-melting or de-icing equipment.

Easily affixed to a wall or fascia by 2 screws, the TS-1's small size and neutral colour allows the sensor to discreetly blend with almost any background.

The TS-1 is supplied with 10' of connection wire which may be extended up to 500' with an appropriately rated 18-20AWG 3 wire unshielded stranded cable.

The main components of the TS-1 are shown in Fig.1.

Figure 1



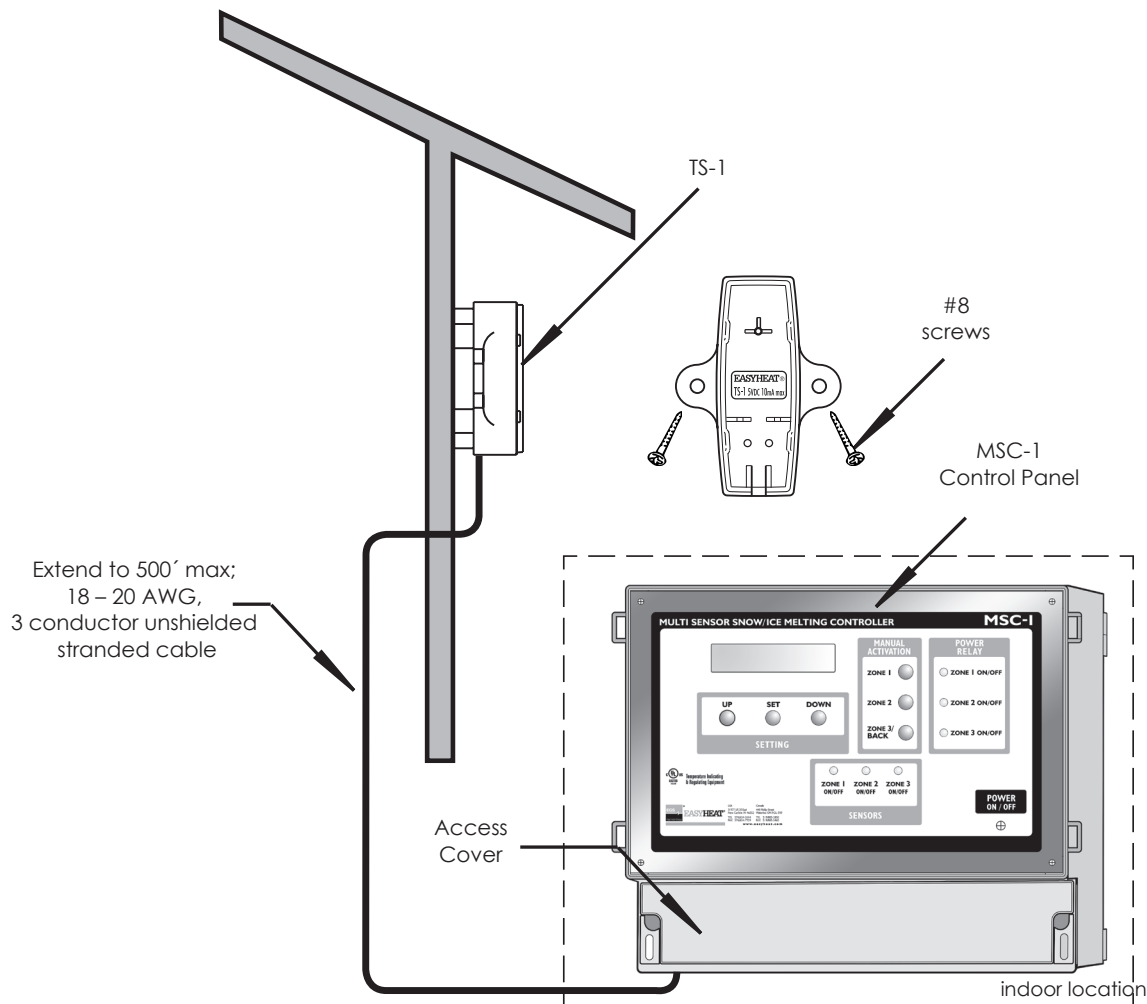
WARNINGS

1. This is not a "do-it-yourself" product. A qualified electrician must install the TS-1.
2. If after carefully reading these instructions you still have questions regarding installation, operation or maintenance of this product, call the numbers listed for assistance.
3. Prior to installation, check the TS-1 body enclosure or wires for possible shipping damages. Do not install a damaged TS-1 controller.
4. All heating equipment, controls and associated systems must be installed in compliance with the latest editions of all applicable electrical codes and ordinances.
5. These instructions must be saved and made available to owners or users of this product and/or transferred to future owners.
6. The TS-1 has been designed for the sole purpose of connection to an EasyHeat MSC-1 Control Panel. The risk of fire or electric shock exists if the TS-1 is connected to any device other than an MSC-1 Control Panel.
8. Mount the TS-1 in an area free of obstructions such as trees, shrubs, etc. to prevent any damage to the sensor.
9. Avoid excessive shock or vibration.
10. Do not install an TS-1 Sensor when the ambient temperature is colder than 32°F (0°C). Installing the sensor below this temperature will damage the connection wire and result in the risk of fire or electrical shock.

INSTALLATION INSTRUCTIONS

1. Mount the TS-1 securely to a wall or fascia by 2 No.8 screws. Mount in a location that has the same weather conditions as the snow and ice melting zones. Avoid direct sunlight or warm exhaust vent areas as this may cause erroneous temperature readings. The unit is water-resistant, but it is not designed to be submerged or immersed in water. Ensure that the mounting location is close (less than 10 feet) to the MSC-1 Control Panel or a suitable connection box. See Fig.2.
2. The TS-1 connection wire may be extended up to 500' with an appropriately rated 18-20AWG 3 wire unshielded cable. Ensure that all electrical connections within connection boxes are sealed to prevent any penetration of water.
3. The TS-1 is wired directly to the temperature sensor terminal block of the MSC-1 control panel.

Figure 2 - TS-1 connection to MSC-1



OPERATION INSTRUCTIONS

The TS-1 temperature sensor provides the MSC-1 control panel with the temperature information necessary to determine if snow or ice conditions exist.

The TS-1 may be tested for functionality by simply observing the temperature indicated on the MSC-1 display, display temperature should match sensor ambient temperature.

If there is further concern about the sensor readings submerge the TS-1 into a glass with ice water for 5 to 10 minutes, the MSC-1 display should read 32°F (0°C).

Every year, in the fall the TS-1 must be inspected for physical damage.

ELECTRICAL SPECIFICATIONS

Environmental

Working temperature	-40°C (-40°F) to 65°C (150°F)
Storage temperature	-45°C (-49°F) to 70°C (160°F)
Humidity environment	0 to 100 %

Supply requirements

Power supply voltage	5VDC
Maximum amperage	10mA

Mounting Hole Size	Clearance for #8 Screw Thread
Connection Lead length	10 feet

LIMITED WARRANTY

Easy Heat warrants that if there are any defects in material or workmanship in any heating cable or accessory during the first year after the date of purchase. We will provide new products to replace any defective items, or we will refund the purchase price paid for the accessory or cable, not including any labor or other installation costs. As an alternate, we may elect to repair the cable or accessory at our factory with all shipping and other removal costs borne by the purchaser.

We further warrant that for a period of twelve (12) months after the date of performance any services performed hereunder will be in a good and skillful manner, based on our understanding of pertinent technical data as of the date of performance of such services. Easy Heat's sole responsibility and liability in the event of any defect, error, omission, or failure in the services rendered hereunder shall be to provide corrected services of the type provided for herein, designed to correct such defect, error, omissions, or failure, and in no event shall Easy Heat's liability with respect to such warranty exceed the amount received by it from the Buyer on account of such services.

Our obligation to provide corrected services, new products, refund the purchase price, or perform the repair described above is conditioned upon (a) the installation of the accessory or cable conforming to the specifications set forth in our installation instructions and (b) the accessory or cable not having been damaged by mechanical or electrical activities unrelated to the operation of the accessory or cable.

A refund of your purchase price, provision of replacement products, repair of the accessory or cable or provision of corrected services as described above, shall be your sole and exclusive remedy for a breach of this warranty. THESE ARE THE SOLE AND EXCLUSIVE WARRANTIES GIVEN BY EASY HEAT WITH RESPECT TO THE GOODS AND SERVICES AND ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY OPERATION OF LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHETHER OR NOT THE PURPOSE OR USE HAS BEEN DISCLOSED TO EASY HEAT IN SPECIFICATIONS, DRAWINGS OR OTHERWISE, AND WHETHER OR NOT EASY HEAT'S PRODUCTS ARE SPECIFICALLY DESIGNED AND/OR MANUFACTURED BY EASY HEAT FOR YOUR USE OR PURPOSE.

This warranty does not extend to any losses or damages due to misuse, accident, abuse, neglect, normal wear and tear, negligence, unauthorized modification or alteration, use beyond rate capacity, or improper installation, maintenance or application. To the extent that you or your agents have supplied specifications, information, representation of operating conditions or other data to Easy Heat in the selection or design of the Goods and the preparation of Easy Heat's quotation, and in the event that actual operating conditions or other conditions differ from those represented by you, any warranties or other provisions contained herein which are affected by such conditions shall be null and void.

If within thirty (30) days after your discovery of any warranty defects within the warranty period, you notify Easy Heat thereof in writing, Easy Heat shall, at its option, repair, correct or replace F.O.B. point of manufacture, or refund the purchase price for, that portion of the Goods found by Easy Heat to be defective. Failure by you to give such written notice within the applicable time period shall be deemed an absolute and unconditional waiver of your claim for such defects. Goods repaired or replaced during the warranty period shall be covered by the foregoing warranty for the remainder of the original warranty period or ninety (90) days from the date of shipment of the repaired or replaced goods, whichever is longer.

This limited warranty does not cover any costs relating to the repair or replacement of any accessory or cable at the installation site. Our accessories and cables are not easily accessible. A failed accessory or cable usually cannot be easily repaired. Replacement of a failed accessory or cable will require that the materials under which it is installed be removed to permit replacement of the accessory or cable. We will not reimburse any costs relating to the repair or replacement of any accessory or cable at the installation site.

IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL EASY HEAT'S LIABILITY TO YOU AND/OR YOUR CUSTOMERS EXCEED THE PRICE PAID BY YOU FOR THE SPECIFIC GOODS PROVIDED BY EASY HEAT GIVING RISE TO THE CLAIM OR CAUSE OF ACTION. YOU AGREE THAT WE SHALL NOT BE LIABLE TO YOU OR YOUR CUSTOMERS FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL OR PUNITIVE DAMAGES. No agent, employee or representative of ours has authority to bind us to any affirmation, representation or warranty concerning the goods sold unless such affirmation, representation or warranty is specifically incorporated by written agreement.

To obtain new products, arrange repair of existing product, or a refund under this warranty, please contact Easy Heat with a description of the defect and proof of purchase at the address noted herein.

DISCLAIMER

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