

GC-1

Roof and Gutter De-Icing Control Installation and Operating Instructions



FOR EXTERIOR INSTALLATION ONLY

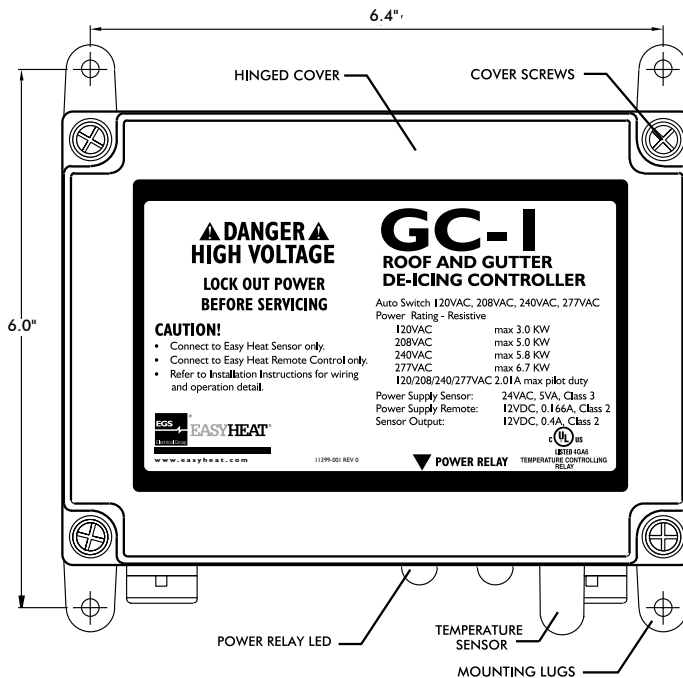
GENERAL INFORMATION

The GC-1 heating cable controller has been designed and manufactured for the sole intended use of controlling heating cables in residential and commercial roof and gutter de-icing applications. The GC-1 uses micro-controller technology to reduce energy consumption by energizing the heating cable only when the appropriate temperature and moisture conditions occur.

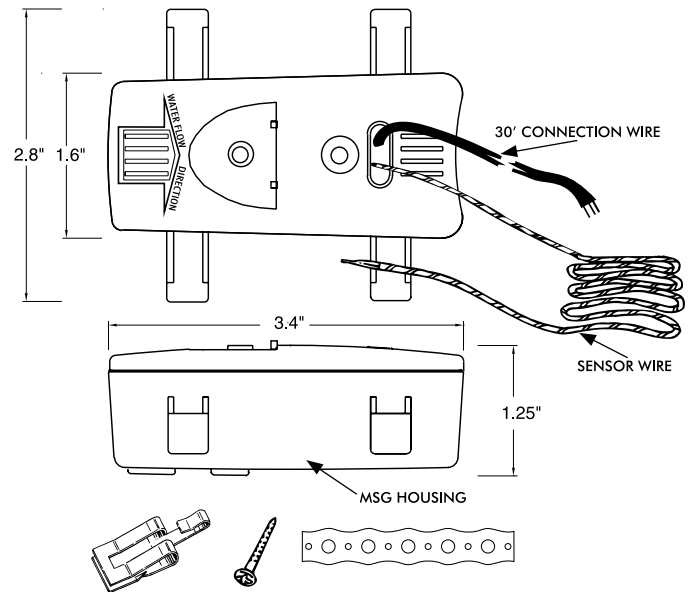
The GC-1 controller includes the MSG-1 sensor, used to detect moisture on roofs and in gutters. Roof moisture detection is made with the unique sensor wire design; the sensing grid on the bottom of the MSG 1 detects gutter moisture. The MSG-1 housing sits directly in the gutter and the sensor wire is secured to the roof. The combination roof and gutter detection system provides quick detection of potentially damaging roof and gutter icing conditions. When moisture is detected, the GC-1 activates the de-icing cables.

The MSG-1 sensor operates on low voltage provided by the GC-1 control unit and includes mounting hardware and 30' of wire for connection back to the GC-1. The GC-1 automatically detects and sets-up for supply voltages between 120VAC and 277VAC; no dipswitches or jumpers are required. The GC-1 has a LED indicator to display when cables are energized.

⚠ WARNING! Improper installation, use and/or maintenance of the GC-1 can cause fire, electrical shock and/or result in roof and gutter ice build-up
The GC-1 controller is shown in Fig.1, with the MSG-1 and accessories (6 coated clips, mounting screw and coated strapping) shown in Fig. 2.



GC-1 CONTROLLER
Figure 1



MSG-1 AND ACCESSORIES
Figure 2

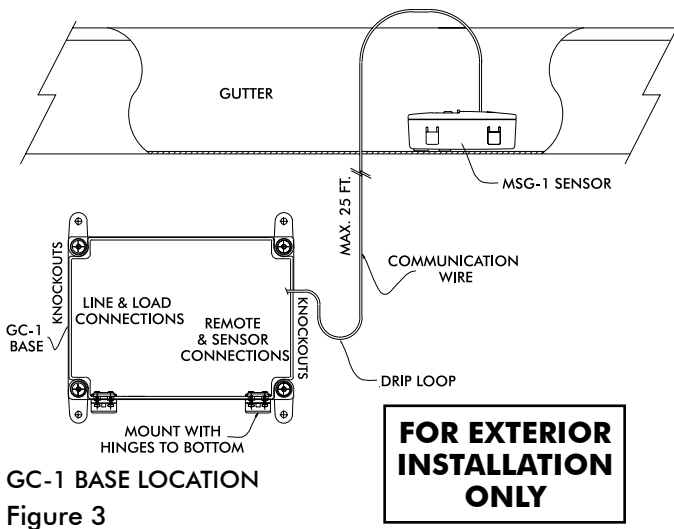
WARNINGS

1. This is not a “do-it-yourself” product. A qualified electrician must install the GC-1 system.
 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 GC-1 and MSG-1 body enclosure or wires for possible shipping damage. Do not install a damaged GC-1 controller or MSG-1 sensor.
 4. All heating equipment, controls & associated systems must be installed in compliance with the latest editions of all applicable electrical codes and ordinances.
 5. Any heating cable that is to be connected to the GC-1 must be installed according to the manufacturer’s instructions.
 6. Do not connect more than a 24 Amp load to the GC-1 (See Fig.4, 5 wiring schematics). Risk of fire, electric shock or ice build up can result from a larger cable being connected.
 7. Secure the GC-1 in an area where it will not be damaged by tree movement or traffic.
 8. The MSG-1 has been designed for the sole purpose of connection to an EasyHeat GC-1 Controller. The risk of fire or electric shock exists if the MSG-1 is connected to any device other than the GC-1 Controller.
 9. Secure the MSG-1 housing within the gutter in an area where drainage is unimpeded and that is free of debris accumulation such as leaves, etc. to prevent any damage to the sensor housing.
 10. Secure the MSG-1 sensor wire to the roof in an area where run-off is unimpeded and that is free of debris accumulation such as leaves, etc. to prevent any damage to the sensor wire.
 11. Avoid excessive shock or vibration.
 12. Do not install an MSG-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.
 13. Do not run the MSG-1 connection wire in the gutter. The connection wire is not suited for water/ice submersion, as would be expected in a gutter.
 14. These instructions must be saved and made available to owners or users of this product and/or transferred to future owners.
2. Mount the GC-1 base securely to the exterior or outside wall with four #10 screws, position with the hinges on the bottom. Secure the GC-1 in an area where it will not be damaged by tree movement or traffic and will sense outside temperatures. The unit is water-resistant, but not designed to be submerged or immersed in water. Ensure that the mounting location is close (less than 25 feet) to the MSG-1 gutter sensor position. See Fig. 3.
 3. Carefully remove one of the knockouts on the low voltage (right) side of the GC-1 base, fasten a watertight connector for the MSG-1 sensor wire into place. If a remote control is also being installed, use the second side knockout for an additional connector. The side knockouts are metric sized, M32/M20, the M20 knockout will accommodate a 1/2” fitting. See Fig. 3
 4. Figures 4 and 5 show the wiring schematics for connecting the GC-1. Before connecting the controller to the electrical power supply, consult the local, state or provincial, and national electrical codes. The electrical code may require a Ground Fault Protection device to be used.
 5. Carefully remove two knockouts on the line voltage (left) side of the GC-1 housing for the line and load wire connections, secure two watertight connectors into place and run the wires through. See Fig. 3
 6. Select a location in the gutter for the MSG-1 housing, ensure it is in an area where drainage is unimpeded and that is free of debris accumulation such as leaves. An area closer to the low end of the gutter slope is preferable. Secure the MSG-1 housing within the gutter using the mounting strap and screw provided, note the water flow direction arrow on the top of the housing. The screw provided is sized to fit into the hole on top of the MSG-1 housing. The wings on the side of the housing are designed to fit over heating cables in the gutter. The housing will sit at a slight angle off horizontal when installed, this is normal, and the unit is designed to sit in such a manner. The unit is water-resistant and may be submerged or immersed in water in the normal course of operation See Fig.6, 7.
 7. Route the MSG-1 sensor wire along one triangular weave of the heating cable on the roof. At the peak of the second triangle, attach the sensor wire up the roof, at least 2 feet past the heater wire. Use the clips provided to secure the sensor wire to the roof. Gently squeeze the coated end of the clip around the sensor wire. See Fig. 8.
 8. Run the communication wire from the MSG-1 back to the GC-1; do not run in the gutter.
 9. Carefully lock the GC-1 cover into the base hinge. The two pieces should easily slide together when open 1/2 way (45deg.).

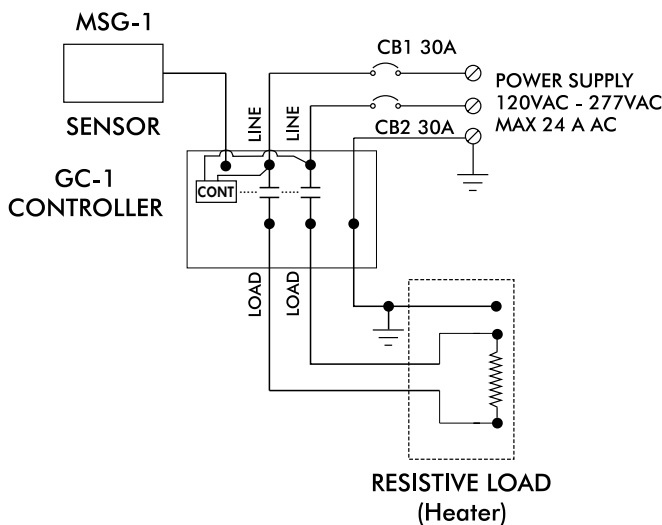
INSTALLATION INSTRUCTIONS

1. Loosen the four screws on the GC-1 cover and open the box 1/2 way (45deg.). Carefully separate the cover and base at the hinge, the two pieces should easily slide apart. You will see that line and load voltage connections (left) are separated from the sensor and remote signal connections (right).

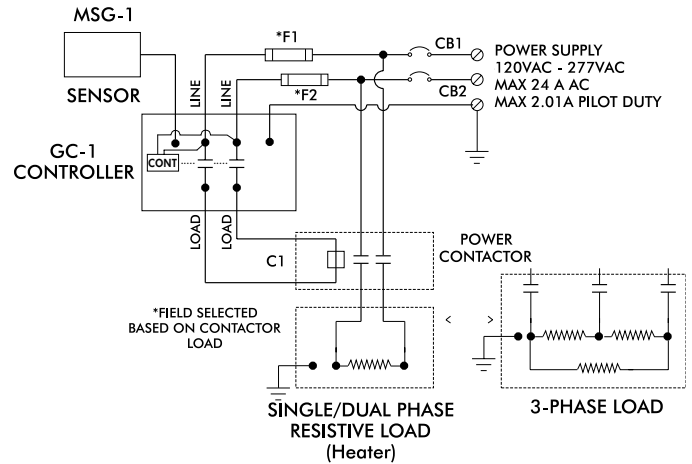
10. Connect the load (de-icing cable or contactor coil) wires to the two leads marked "LOAD".
11. Connect the power supply wires to the two leads marked "LINE".
12. Connect the GC-1 ground wire to the power supply and load ground wires.
13. Attach the MSG-1 communication wire to the 3 segment terminal block. See Fig. 9.
14. Tighten down the watertight connectors, and form drip loops on all external wires.
15. Tighten the four screws on the GC-1 cover snug.



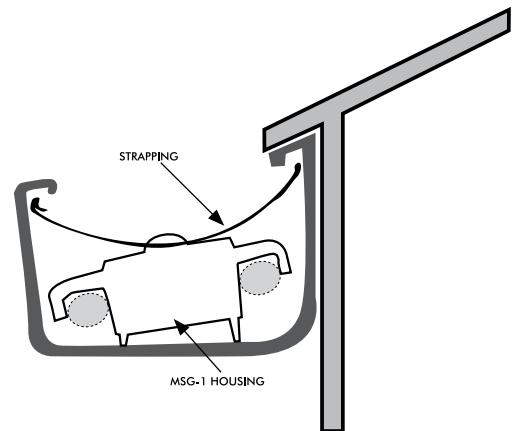
GC-1 BASE LOCATION
Figure 3



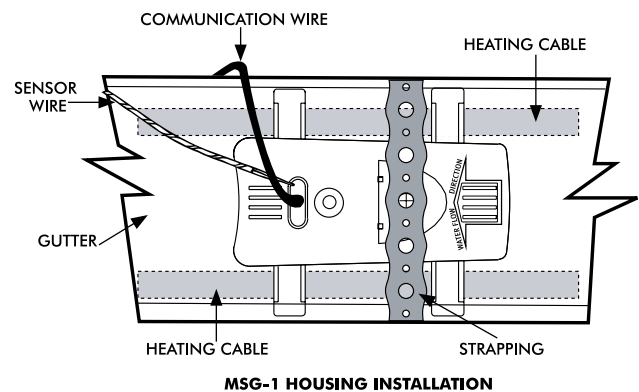
GC-1 CONTROLLER WITH SINGLE/DUAL PHASE LOAD LESS THAN OR EQUAL TO 24A
Figure 4



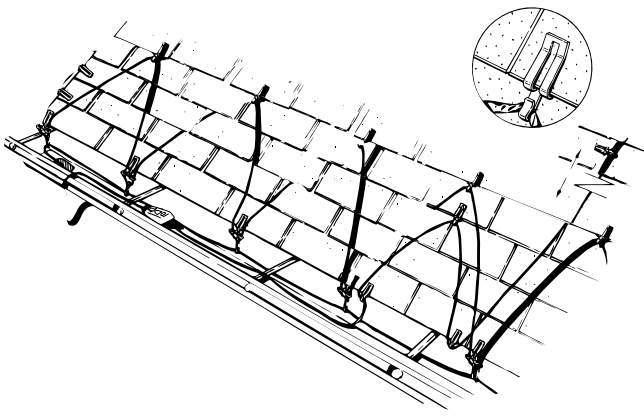
GC-1 CONTROLLER WITH LOAD HIGHER THAN 24A OR 3 - PHASE LOADS
Figure 5



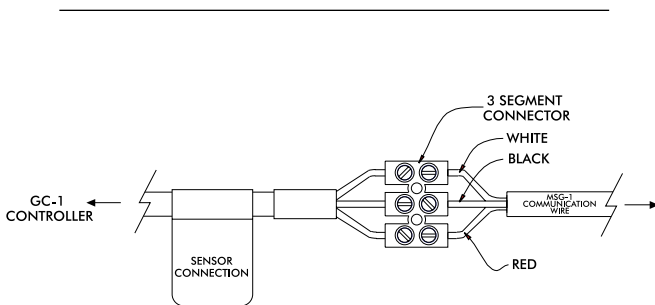
MSG-1 HOUSING INSTALLATION
Figure 6



MSG-1 HOUSING INSTALLATION
Figure 7



MSG-1 SENSOR WIRE INSTALLATION
Figure 8



MSG-1 CONNECTION
Figure 9

OPERATION INSTRUCTIONS

The GC-1 roof and gutter de-icing controller is designed to energize the heating cable only when moisture conditions exist and there is risk of freezing. If the temperature is below 3°C (38°F) and the MSG-1 sensor detects moisture, the controller will apply power to the heating cable. The cable remains energized until 3 hours (hold time) after the sensor is dry. The delay is necessary to ensure the heated area dries. If at any time moisture is detected the controller restarts the de-icing cycle.

The optional remote control allows the hold time to be dialed from 0.5 to 10hrs. There are 2 LED's on the remote. The top LED indicates the remote is powered and functioning, the lower gives the status of the GC-1 power relay (heating cables on - energized or off - de-energized). If the cables are off, pressing the push button will turn the cables on for the hold time, and then the control will revert to automatic operation. If the cables are on, pressing the push button will turn the cables off, only if the sensor is dry, otherwise the control will continue to finish the hold time in automatic operation.

The MSG-1 may be tested for functionality if outside temperature is below 3°C (38°F). Submerge 2" of the sensor wire in water, the GC-1 should energize the heating equipment in the associated zone, the green LED on the GC-1 will illuminate. After this test, dry the sensor, the heating equipment in the associated zone should de-energize after the pre-set hold time.

At the beginning of the heating season and monthly during operation inspect for and remove all leaves and combustible debris from roofs gutters and downspouts.

At the beginning of the heating season the MSG-1 must be inspected for physical damage and the snow sensor surface cleaned. To clean the snow sensor surface:

1. Lock-out the power supply to the GC-1.
2. Remove the MSG-1 sensor housing from the gutter.
3. With a clean wet swab clean up the surface of the snow sensor.
4. Replace the MSG-1 sensor housing in the gutter.
5. Reconnect GC-1 to the power supply.

ELECTRICAL SPECIFICATIONS

Functional	
Activation temperature	+3°C (38°F +/-1°F)
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	120VAC, 208VAC, 240VAC, 277VAC
Frequency	60 Hz
Maximum power consumption	50W
Output characteristics	
Output type	relay (wet contact)
Contact output	N.O. max. 24 Amps @ 277VAC
MSG-1 characteristics	
Power supply voltage	24VAC class2
Maximum Amperage	500mA
Accessories	Screws, coated strapping, coated clips
Connection Wire	30'



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.