

SEA FROST®

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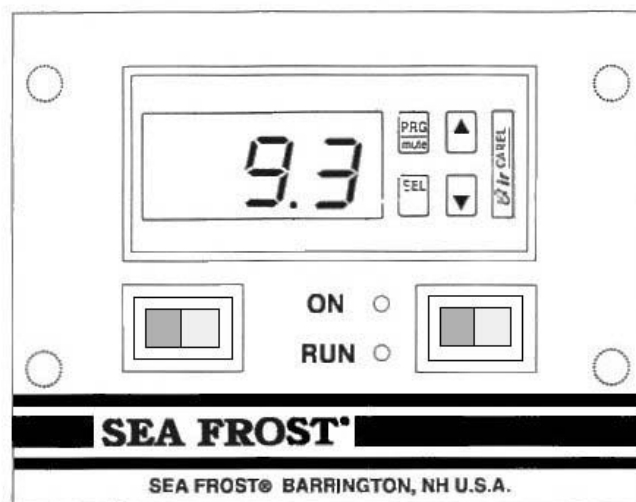
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ELECTRONIC THERMOSTAT AND THERMOMETER



- The Sea Frost ETT's (Electronic Thermostat/Thermometer) accurate operating settings and the programmable differential increases efficiency. In comparison, mechanical controls tend to over run the desired temperature range and must be set colder, running the compressor longer, to maintain the proper average temperature.
- The ETT is powered by low voltage and will operate any Sea Frost electric system, AC or DC.
- The ETT always shows cabinet temperature, displayed in Centigrade or Fahrenheit.
- Accurate numerical setting of operating temperatures and differential makes set up and temperature adjustment easy.

- Thermometer mode when operating dual systems.
- Wire leads allow mounting any distance from cabinet.
- Black faceplate with red L.E.D. operation indicators.
- Non-volatile memory, control will not lose settings.

The ETT is pre-wired with plug in connectors for the two 10' probes and 20' harness included.

The left hand rocker switch turns on the display. The right hand switch activates the control relay. Red L.E.D.s indicate ON and RUN modes.

Faceplate size: 4 5/8" x 3 1/2" (120 mm x 90 mm). Requires 2 1/2" (64 mm) behind mounting panel. Weight 1 lb (.4 kilo).

Specify the voltage of the system to be controlled: 110 volts AC, 12 volts DC or 24 volts DC.

CLEANING

Do not use acetone or any solvent on the control panel, clean with a damp cloth and mild detergent.

INSTALLATION AND OPERATION MANUAL

OPERATION

The Sea Frost Electronic Thermostat and Thermometer (ETT) is an electronic device using two probes installed in the refrigerated space. One probe is sensing the cabinet temperature, which is displayed. The other probe controls the compressor operation by measuring the temperature of a cold plate.

To operate the control, switch both rocker switches to the left position (off). Make sure power is available then push the left rocker switch to the right (on). The display will light and the temperature will be displayed. To switch on the compressor controlled by the ETT, switch the right switch to the on position. Both red indicators will light indicating the compressor switch is on and the compressor is running. When the compressor cools to the pre-set cut out temperature the RUN indicator light will go off with the compressor. The ON indicator light will remain lit indicating a standby or ready to run mode.

To display temperature only turn off the right ON/RUN switch.

To turn off both the temperature readout and compressor the left switch may be used however when turning it back on the compressor will start immediately. All settings will always be saved.

CHECKING THE TEMPERATURE SETTING

Before adjusting the thermostat be sure the refrigeration system is working properly.

The ETT can be adjusted and will maintain very stable temperatures. Care must be taken to adjust the settings to maintain obtainable temperatures. Do not set below -10 F. (-23 degrees C.) Excessive power drain and compressor wear will occur with no benefit if the setting is below the temperature the compressor system can easily obtain.

To check the cut out setting (cold stopping point) push and hold the SEL button until ST-1 appears. Release the button and a number will flash. This is the cut out temperature. Push SEL again and the readout will return to box temperature. The cut out temperature is associated with the second probe. This probe read out temperature is hidden. (Press and hold the down arrow button to view this read out temperature.)

CHECKING THE PLATE PROBE TEMPERATURE

To monitor the cooling progress, push in and hold the down arrow button. The plate probe temperature will be displayed while this button is held.

RECOMMENDED SETTINGS

The air temperature in a refrigerator is always 10 to 15 degrees F. (6 to 9 C.) warmer than the cooling device. This difference in temperature must be remembered when setting the control cut out temperature (stopping point). A refrigerator might have to be set to run up to 20 degrees colder than the desired box temperature.

Make several small setting changes over a period of several days to determine the proper setting.

CHANGING THE TEMPERATURE

To lower or raise the box temperature, hold the SEL button until the ST-1 appears. Release the button and the cut out temperature will flash. Use the up and down arrows to change the temperature. Push SEL when finished. The control setting has now been changed.

THE DIFFERENTIAL SETTING

The differential is the number of degrees the temperature must rise before the compressor will come back on after cooling to the set point. The factory setting is 6 degrees F. (4.5 C.)

To change the differential setting press and hold PRG until P 1 is displayed, then press SEL. Use the up and down arrows to change the setting. Press PRG when finished.

READOUT CHANGES ~ Fahrenheit to Centigrade

To change the readout to centigrade hold down PRG and SEL for 5 seconds until 0 is displayed. Using the up and down arrows select #77, which is the password. Press SEL. Using the up and down arrows scroll to C-18. Press SEL. Using the arrows keys set 0 for centigrade or 1 for Fahrenheit. Press PRG to store the change and return to the temperature display. **WARNING:** When changing temperature measurement units the cutoff setting and the differential setting must be changed to represent the proper units.

INSTALLING THE ETT

The ETT can be located anywhere as long as it is protected from water and spray. The leads to the probes may be extended if the connections are soldered and sealed with heat shrink.

The ETT requires a 3 5/8" x 2 3/4" (91 mm x 70 mm) panel cut out. The minimum depth is 2 1/2" (64 mm).

WIRE ROUTING

The gray 4-wire cable connects at the compressor.

The two black probe wires must enter the refrigerated space.

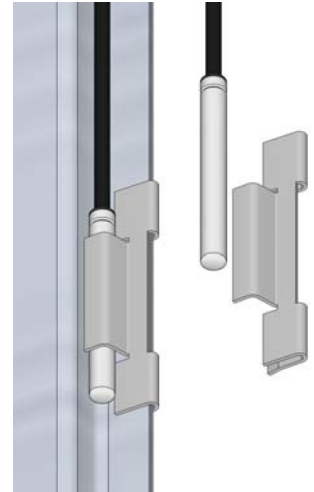
WIRING CONNECTIONS

The harness and the probes plug into the head unit and are polarized. **NOTE:** One probe has red bands and should connect to the head unit plug with the red band. The probe with the red bands must be routed to attach to the cold plate. If you need to disconnect the plugs, do not pull on the wires. See special instructions for series plates and twin valve systems.

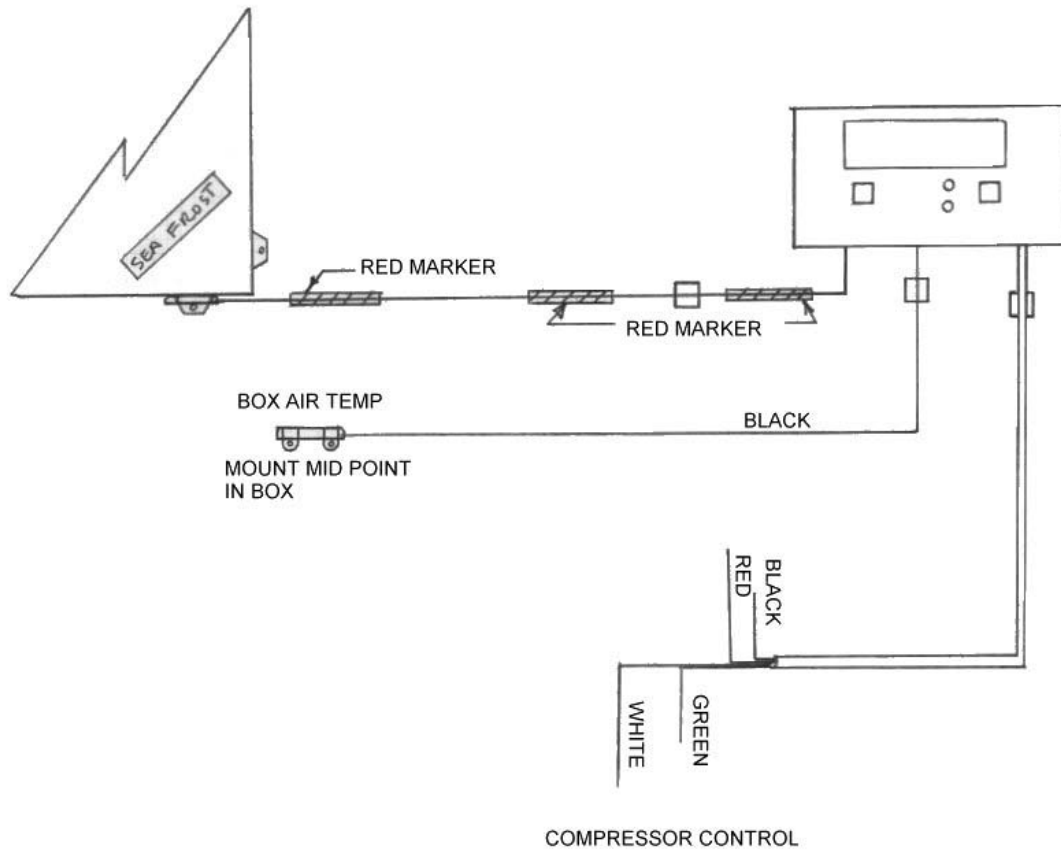
PROBE ATTACHMENT

The probe with red bands must be in excellent thermal contact with the cold plate. Use the stainless steel clip provided, and attach it to the edge of the plate as shown in the drawing to the right.

The probe without a red band should be installed at the mid point of the cabinet to get an accurate reading of the average temperature. Avoid installing this probe near a front opening door or too close to a cold plate. Mount the probe bulb with two nylon straps or self stick pads and tie wraps provided. Do not drill and screw into a vacuum panel box!



Secure the wires neatly using cable ties, self-stick pads, and proper yacht construction wiring practices.



COMPRESSOR CONTROL WIRING HOOKUP

AC Units – BG 1000 and Shore Assist Systems

Connect the white and green wires from the ETT gray cable to the two red wires coming from the (CC) condensing unit.

12/24-Volt BD and Tradewinds

Connect the white and green wires from the ETT gray cable to the end of the yellow harness. There is no polarity.

12/24-Volt BDXP and Tradewinds XP

Connect the white and green wires from the ETT gray cable to terminals T and C on the module. There is no polarity.

12/24-Volt DC 5000

Connect the white and green wires from the ETT gray cable to T1 and T1 in the solenoid junction box.

DC 5000 Twin Valve Systems

When connecting to a dual solenoid a second ETT is required. One green and white pair is connected to T1 and T1 and the second green and white pair is connected to T2 and T2.

ETT POWER INPUT

12/24-Volt DC5000

Connect the black wire with a 3/8" ring terminal to the negative supply grounding stud. Connect the red wire with a #8 ring terminal to the positive supply at the power solenoid. The red wire must be fused. (2 amps)
On twin valve systems, two ETTs must be connected to the DC 5000 solenoid panel. Connect the red wires from the ETT to terminal L with a 2-amp fuse. Connect the black wires to B-.

AC Units – BG 1000 and Shore Assist Systems

Wire the ETT to 12-volt DC power using a 2-amp fuse in order to maintain the temperature readouts. An optional 110-volt unit is available if needed.

12/24-Volt BD and Tradewinds

See electrical connections in the unit manual.

Crimp the red and black wires from the power source to the 12-10 gauge yellow piggyback terminals. Crimp a female 22-18 (red) terminal to the red and black wires from the ETT gray cable. Be sure to fuse the red wire with a 2-amp fuse. Slide onto the yellow 12-10 gauge piggyback terminals. Attach these to the positive and negative terminals of the compressor module. **Observe polarity, red is positive and black is negative.**

CLEANING

Do not use acetone or any solvent on the control panel, clean with a damp cloth and mild detergent.