

## **INTERMEDIATE DIGITAL THERMOSTAT PROGRAMMING**

### **RParts Part Number 015-0003 o Carel Part Number IR32W00**

*This thermostat is the "ECM controller" upgrade option for Glacier Bay refrigeration systems built between 1994 and 2008. The programming instructions below pertain to Glacier Bay applications but are also suitable for other similar systems.*

The Carel IR32W00 "W" thermostat is very similar to the Carel IR32V0E "V" thermostat (RParts part number 015-0001) except that it can regulate the system operation by using a second internal relay within the thermostat. The second internal relay allows another method of controlling the system with two sets of parameters rather than just one. This feature is enabled by switching between the two Carel internal relays with an external relay that is activated by the engine ignition switch or other source of voltage when the engine or other charging source is running. This allows the control system to know when the engine and/or generator is running and use the additional power being generated to "top-off" the holding plate without over-cooling it.

The model "W" thermostat is able to recognize the presence of additional power (i.e. running engine or generator) when a positive DC voltage is applied to the proper terminal in the Glacier Bay control box via a key switch or oil pressure switch. It does not respond to a rise in buss voltage, therefore it is not activated by a shore-power charger, wind generator or solar panels. During "normal" operation, the system is driven by the values programmed into the first relay's set of parameters. When the engine is started, the system begins operating from the second relay's set of parameters.

### **PROGRAMMING THE THERMOSTAT MODE**

To make mode selections to the Carel model "W" thermostat, the following procedure is used. When programming, if the display does not show the expected values or if there is uncertainty of the current programming status, just press "**SEL**" then "**PRG**" and start over.

1. Hold down both "**PRG**" and "**SEL**" together for about 5 seconds until the display changes.
2. Use the arrow keys to change the display to "**22**", then press "**SEL**". (22 is a password).
3. The display should show "**C 0**", if so press "**SEL**".
4. Use the arrow keys to change the display to "**9**".

5. Press **"SEL"** to enter the mode setting.
6. Press **"PRG"** to retain the mode setting.
7. Turn off power so the display is dark. Wait a few seconds, and then turn the power back on.

## **PROGRAMMING THERMOSTAT TEMPERATURE SCALE**

The following procedure is used to program the thermostat to display the temperature in degrees using either the Centigrade or the Fahrenheit scale.

1. Hold down both **"PRG"** and **"SEL"** together for about 5 seconds until the display changes.
2. Use the arrow keys to change the display to **"77"**, then press **"SEL"**. (77 is a password).
3. The display should show **"C 0"**, if so use the arrow keys to change the display to **"C18"** and press **"SEL"**.

### **THE FOLLOWING SHOULD BE ADDED FOR GLACIER BAY "ECM CONTROLLER" APPLICATIONS.**

- Change **"C33"** to **"1"** (parameter MUST be "1").
- Change **"C36"** to **"100"** (parameter MUST be "100").
- Change **"C37"** to **"-100"** (parameter MUST be "-100").

### **THIS INFORMATION COMES FROM PAGE IM-10 IN THE GLACIER BAY MANUAL.**

4. Use the arrow keys to change the value to **"0"** for the scale to be displayed in degrees Centigrade or **"1"** for the scale to be displayed in degrees Fahrenheit.
5. Press **"SEL"** to enter the unit setting.
6. Press **"PRG"** to retain the unit setting.

## **PROGRAMMING SECOND PROBE FOR BOX TEMPERATURE**

The following procedure is used if an optional second probe is installed.

1. Hold down both **"PRG"** and **"SEL"** together for about 5 seconds until the display changes.
2. Use the arrow keys to change the display to **"77"**, then press **"SEL"**. (77 is a password).
3. The display should show **"C 0"**, if so use the arrow keys to change the display to **"C13"** and press **"SEL"**.
4. Use the arrow keys to change the value to **"1"** if the optional second probe is installed or **"0"** if the probe is not installed.
5. Press **"SEL"** to enter the unit setting.
6. Press **"PRG"** to retain the unit setting.

## **PROGRAMMING THE SET POINTS & DIFFERENTIALS**

The following procedure is used to program the holding plate set point (**ST1, ST2**) and differential (**P1, P2**) parameters. The set point is the temperature at which the system will turn off, and the differential added to the set point will be the temperature at which the system will turn on.

The first set point **"ST1"** and first differential **"P1"** are active in the "normal" mode and control the system when the engine (or generator) is not running. The second set of parameters **"ST2"** and **"P2"** take over whenever the engine (or generator) is started and control the system in "engine-drive" mode.

The Glacier Bay factory default setting for **"ST1"** and **"ST2"** is 22° F for the TSS-26 Glacier Bay refrigerator plate and -16° F for the TSS-10 Glacier Bay freezer plate. The factory default setting for **"P1"** is 8° F for the TSS-26 refrigerator plate and 16° F for the TSS-10 freezer plate. The Glacier Bay factory default setting for **"P2"** is 4° F for the refrigerator plate and 12° F for the freezer plate. Glacier Bay freezer plates made before 2001 are TSS-5 plates. **"ST1"** and **"ST2"** was factory programmed for -9° F, with **"P1"** set at 9° F and **"P2"** set at 5° F.

1. Hold down **"SEL"** until **"ST1"** is displayed. **"ST1"** will flash when **"SEL"** is released.

2. Use the arrow keys to adjust the display until the desired system shut off temperature is displayed. This should be a few degrees below the freezing point of the plate, 22° F for a Glacier Bay refrigerator plate, and -16° F for a Glacier Bay freezer plate.
3. Press **"SEL"** to enter the **"ST1"** setting.
4. After entering the **"ST1"** set point, enter the **"ST2"** set point with the arrow keys. The set point for both **"ST1"** and **"ST2"** should be entered as the same value.
5. Press **"SEL"** to enter the **"ST2"** setting.
6. Press **"PRG"** to retain both the **"ST1"** and **"ST2"** settings.
7. Hold down **"PRG"** until **"P1"** is displayed. **"P1"** will flash when **"PRG"** is released.
8. Use the arrow keys to adjust the display until the desired number of degrees above the setpoint the system is to turn on at appears. For a Glacier Bay refrigerator plate, this should be 8° F, for a Glacier Bay freezer plate it should be 16° F.
9. Press **"SEL"** to enter the **"P1"** setting.
10. After entering the **"P1"** differential, enter the **"P2"** differential with the arrow keys. The differential for **"P2"** will always be lower than **"P1"**. Setting **"P2"** at a lower value will cause the compressor to start sooner when the engine is running than it does under normal operation. For a Glacier Bay refrigerator plate, this should be 4° F, the Glacier Bay freezer plate setting should be 12° F.
11. Press **"SEL"** to enter the **"P2"** setting.
12. Press **"PRG"** to retain both the **"P1"** and **"P2"** settings.

These settings are a starting point; they may be optimized by careful observation of system operation. Changing the values will change the run time and holdover time, at an optimum setting maximum holdover will be obtained with optimum run time. The values should be varied and records made of changes to determine the best settings for any individual system. This is time consuming and should be left to the vessel operator to experiment with to determine the best settings.