

# **“SYSTEM 70”**

## **TEMPERATURE CONTROL SYSTEM**

11/04

### ***HOW TO INSTALL THE “SYSTEM 70”***

#### **Heat pump**

**Mounting:** Plan the location where the heat pump will be located. It must be positioned where nothing blocks the heat sink fins and the air will exhaust to a large well ventilated area. The mounting hole must be smooth on the mounting side and the connection be airtight to the cabinet.

**Exterior or cabin side:** The larger side mounts on the exterior of the compartment where no obstructions will interfere with the air flow around the heat sinks. The efficiency of this unit solely depends on how efficient the heat can dissipate from the aluminum fins. If any part of the heat sink is blocked by the thickness of the cabinet wall trim the opening on a 45 degree angle to deflect the air flow into the cabinet.

**Interior or compartment side:** Install the heat pump in a location where equipment will not block the fans or heat sinks. The heat sinks must be clear of any material or the efficiency will be lessened. If the material thickness exceeds the spacing of the fins cut the material on an angle to assist the air flow through the fins. Elevating equipment off of the compartment bottom will assist the air flow.

#### **Control panel**

**Mounting:** The control panel may be mounted in any convenient location within the length of the supplied wiring harness. It comes programmed for 70 degrees Fahrenheit and is user programmable. The digital controller always displays the current compartment temperature. **To display the “set” temperature press and hold the “\*” key. To change the set temperature hold the “\*” key and press the “up” or “down” keys until the desired temperature is reached.** To shut down the system turn off the rocker switch on the control panel.

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### **Electronic Interface**

**Mounting:** Position the interface module in a convenient location and Connect the wiring as follows:

**Wiring:** The black wire from the heat pump goes to the interface terminal marked “**black**”. The red wire from the heat pump goes to the interface terminal marked “**red**”.

The positive terminal marked “+” connects directly to battery positive through a supplied 20 amp fuse and 14 gauge wire (Negative terminal marked “-” connects to a convenient chassis or battery ground). Plug the 2 pin and 8 pin plugs into their respective locations on the Electronic Interface.

There are 2 fuses inside the unit. The 15 amp fuse protects the heat pump and the 5 amp fuse protects the controller. *Do not substitute any other sizes.*

\* For wire runs over 20 feet step up to 12 gauge wire.

**Temperature sensor** - Install the sensor inside the compartment near the middle of the compartment with the supplied clamps. This will give you an accurate reading of the compartment temperature. The two wires on the sensor connect to the two pin plug on the Electronic Interface. *Do not locate the sensor in direct airflow of the of the system fans.*

**Back up battery system - Optional** - Mount the Optima deep cycle gel battery in any convenient location in the interior. Any other battery must be mounted on the exterior of the vehicle. Wire the enclosed isolator as per supplied drawing.

**System Maintenance** - It is very important to keep the heat sink fins clean and free of dirt and dust.

**Insulate the compartments** - There are numerous ways to insulate a compartment. The thicker the insulator and the tighter the fit the better the “System 70” will perform. There are many styles of urethane sheet insulation on the market and some can be picked up in local home centers. Plan your compartment modification with a refrigerator in mind. *Do not use aluminum or other heat or cool conductive material that will make contact with the inside compartment and the outside of the compartment.*

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### **SYSTEM 70 WIRING**

#### **CONTROLLER WIRING**

1 BLACK  
2 WHITE  
3 GREEN  
4 BLUE  
5 ORANGE  
6 YELLOW  
7 TO SWITCH  
8 BROWN

RED TO SWITCH

#### **ELECTRONIC INTERFACE WIRING**

A TEMP PROBE BROWN  
B TEMP PROBE BROWN  
C BLACK  
D WHITE  
E GREEN  
F BLUE  
G ORANGE  
H RED  
  
I YELLOW  
J BROWN  
(+) TO BATTERY POWER  
(-) TO GROUND  
BLK TO HEAT PUMP BLACK  
RED TO HEAT PUMP RED

#### **"System 70" Programming Instructions:**

NOTES:     "^" is used to indicate the button marked with a triangle pointing up.  
              "v" is used to indicate the button marked with a triangle pointing down.  
              Not all of the symbols used on the display can be typed but this is close.

1. Turn on power to the unit.
2. Press and hold the "^" and "v" together until the unit enters the program mode. Release the buttons.
3. If display reads LEVEL 1, skip to step 5.
4. Press the "^" button until the display reads LEVEL 1,2,3,4,or 5. Hold the "\*" button and press the "^" or "v" button until the display reads LEVEL 1. Release the "\*" button.
5. Press the "^" button once. The display will read "TUNE OFF".

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6. Press the "^" button once. The display will read "BAND" and then a number. Hold the "\*" button and press the "^" or "v" button to adjust to 3.0. Release the "\*" button.

NOTE: All of the adjustments are made in this same way. Use the "^" or "v" alone to change steps. Hold the "\*" and press "^" or "v" to adjust within the step. Use the "^" or "v" alone to change to the next step. With this in mind, continue through the remaining steps and adjust as needed.

- |     |                                                                                                                                                                 |                    |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 7.  | INT>T                                                                                                                                                           | 5.0                |
| 8.  | DELT.T                                                                                                                                                          | 25                 |
| 9.  | DAC                                                                                                                                                             | 1.5                |
| 10. | CYC.T                                                                                                                                                           | 15                 |
| 11. | OFST                                                                                                                                                            | 0                  |
| 12. | SP.LY                                                                                                                                                           | OFF                |
| 13. | SPRR                                                                                                                                                            | 0                  |
| 14. | SPRN                                                                                                                                                            | OFF                |
| 15. | SOAK                                                                                                                                                            | --                 |
| 16. | SET.2                                                                                                                                                           | NOT ADJUSTABLE YET |
| 17. | BAND.2                                                                                                                                                          | 0.5                |
| 18. | CYC2                                                                                                                                                            | ON.OF              |
| 19. | The display will read LEVEL 1. Hold the "*" and press the "^" to go up to LEVEL 2. Release the "*" button. Press the "^" button. The display will read "SP1.P". |                    |
| 20. | SP1.P                                                                                                                                                           | 0                  |
| 21. | HAND                                                                                                                                                            | OFF                |
| 22. | PL.1                                                                                                                                                            | 100                |

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- |     |       |      |                                                                                                                       |
|-----|-------|------|-----------------------------------------------------------------------------------------------------------------------|
| 23. | PL.2  | 100  |                                                                                                                       |
| 24. | SP2.A | COOL |                                                                                                                       |
| 25. | SP2.B | NONE |                                                                                                                       |
| 26. | D.SP  | 1`   |                                                                                                                       |
| 27. | H.SC  | 86   | NOTE: This is the high set control. The number you program here is the highest you can set the unit during operation. |
| 28. | LO.SC | 60   | NOTE: This is the low set control. The number you program here is the lowest you can set the unit during operation.   |
| 29. | INPUT | RTD  |                                                                                                                       |
| 30. | UNIT  | `F   |                                                                                                                       |
31. Press the "^" until the display reads "LEVEL 2". Hold the "\*" button and press the "v" button to go down to "LEVEL 1".
32. Press the "^" button until you reach the step "SET.2" Adjust to 2.0
33. Hold the "^" and "v" buttons at the same time to exit the program mode. The display may read "PARK". Hold the "\*" button and press the "^" or "v" button to adjust to the desired temperature.
34. Test operation of the unit by setting the desired temperature to it's lowest setting. After the desired temperature has been achieved, adjust the desired temperature to it's highest setting. A properly sized and insulated cabinet should achieve 30 or more degrees of cooling and 60 or more degrees of heating.