

RON FRANCIS

Wiring

AR-99 Ice Box System (Dual Fans) With Surge Reduction & AC Request

This dual cooling fan relay handles two separate fans up to 70 amps combined. The module has two legs that will turn on the fans separately. This dramatically reduces the surge on the electrical system by turning on one leg at a customer set temperature and a second speed at about 10 degrees higher. The higher setting will cycle on and off as needed at that higher level. It is always approximately 10 degrees higher than your preset level for the first speed. This kit is equipped with an electronic sensor that attaches to the engine such as under an intake manifold bolt. We recommend an intake bolt near a water jacket shielded from strong air movement from the fan that could adversely affect temperature the sensor may see. The unit is fully adjustable between approximately 140 and 230 degrees.



NOTE: The electronic temperature sensor is located *inside* of this lug!

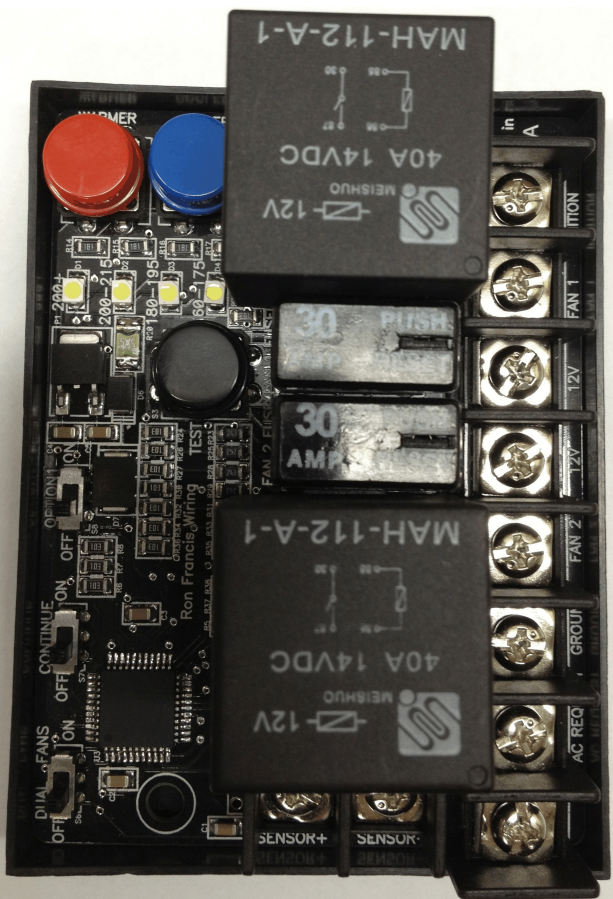
Do not cut it off or modify it for any reason.

Mounting

Choose a location inside the vehicle for the fan module in an accessible location. If you have any ignition components inside the firewall, this module cannot be mounted near them. The fan module has two holes in the base of the module for mounting the unit. **DO NOT DRILL ANY OTHER HOLES OR MODIFY THE MODULE IN ANY WAY. DOING SO WILL DAMAGE THE MODULE & VOID WARRANTY.**

Wiring

The photo below is the connection points on the terminal block of the module. Refer to the photo and text to make the proper connections.



<----IGNITION - ORANGE WIRE

<----PRIMARY FAN WIRE - DARK BLUE WIRE

<----BATTERY - RED WIRE
>note jumper on unit
>note jumper on unit
<----BATTERY - RED WIRE

<----SECONDARY FAN WIRE - DK BLUE WIRE

<----GROUND - BLACK WIRE

<----A/C REQUEST - PURPLE WIRE

<----TERMINAL NOT USED

^SENSOR^ CONNECTIONS. WHITE TO +, CLEAR TO -

NOTE: The black sensor cable is a jacketed cable containing white and clear wires. After cutting the cable to length "carefully" strip the outer jacket off exposing the two inner wires.

OVER

Orange (IGNITION) (18 gauge wire): Connect wire to the module and run the other end to an ignition hot/ignition fed circuit. Hot with the key on.

Black (GROUND) wire (18 gauge wire): Connect the black wire to the module and run the other end to a good ground.

Red (12V BATTERY FEED) (10 gauge wire): Connect the red wire to the module and run the other end to the battery connection on the starter solenoid. Complete the connection using the supplied ring terminal. Jumper factory installed on unit must remain to connect both 12V inputs. Attach Red Battery Feed wire to either of these terminals.

Dark Blue (PRIMARY FAN) (12 gauge wire): Connect the blue wire to the module and run the other end to the cooling fan wire. Ground the other wire running from the cooling fan(s). **NOTE: Check the fan rotation to assure the completed unit is pushing or pulling the air according to your application. It may be necessary to reverse the two wires at fan to change rotation.**

Dark Blue (SECONDARY FAN) (12 gauge wire): Connect the blue wire to the module and run the other end to the cooling fan wire. Ground the other wire running from the cooling fan(s). **NOTE: Check the fan rotation to assure the completed unit is pushing or pulling the air according to your application. It may be necessary to reverse the two wires at fan to change rotation.**

Purple (AC REQUEST) (18 gauge wire): Connect the purple wire to the module and run the other end to the wire supplying power to the air conditioning compressor clutch. This turns the PRIMARY FAN on whenever the A/C clutch is engaged. The SECONDARY FAN is controlled by engine temperature. Splice the purple wire into this wire. **NOTE: This wire does not operate the compressor clutch. The compressor clutch should operate even if this wire is not connected.**

Sensor Cable: **Note: do not route this cable around or near high (2-3 inches) amperage or voltage wires such as alternator, battery cable or spark plug wires. Doing so "will" damage the module. Leave a minimum of two inches.** Take care when stripping the outer cable jacket not to damage the inner wire insulation. Install the wires on the module as shown above.

BUTTON AND SWITCHES

BLACK BUTTON: This is a test button that will activate the fan when ignition is on and button is pushed. This is a test button only.

RED BUTTON: A push of this button increases fan turn on temperature by 5 degrees.

BLUE BUTTON: A push of this button decreases fan turn on temperature by 5 degrees.

(#1) DUAL FAN SWITCH: Turning this switch on will activate the secondary fan circuit for control of two fans.

(#2) CONTINUE SWITCH: This switch activates the fan run on feature. Turning this switch on will allow the fan(s) to run for 2 minutes after the ignition has been shut off. Module monitors the ignition input to determine when ignition circuit is turned off.

(#3) OPTION 1 SWITCH: This switch activates the load monitoring feature. Turning this switch on will allow the module to monitor when amp/current draw increases during fan operation (due to the fan fighting airflow at highway speeds) and will shut the fan down until module determines increased amp/current draw is no longer present.

Fan Temperature Adjustment Setting

We have adjusted the fan on setting to operate with a 180 degree thermostat. The module is set to turn the fan on at "approximately" 200 degrees. The turn off temperature is preset at approximately 10 degrees lower than the on setting and is not adjustable. . This pre-setting was done while testing the unit after final assembly. This setting "**MAY VARY**" depending on temperature sensor location in your vehicle. If you are running a different degree thermostat or would like to change/adjust the temperature setting follow the procedures noted below.

The temperature setting can be adjusted by using the RED (hotter) and BLUE (colder) buttons on the module. Every push of the button will adjust the temperature 5 degrees. There are corresponding LED lights next to these buttons for a visual confirmation of the temperature the module is set at. First light (160-175 degrees, Second light (180-195), Third light (200-215) and Fourth light (220+).

To set fan on temperature start the engine and allow it to warm. When the temperature gauge reaches the temperature you desire the fan to turn on, push the BLUE button until the relay clicks and turns the fan on. The module will automatically turn the fan off at approximately 10 degrees lower than the on setting. **NOTE: The relay "may" cycle/click a few times at the fan on and off threshold. This does not indicate a problem and will not cause any damage to the unit.**

FOR TESTING PURPOSES, THE FOLLOWING CHART INDICATES SENSOR VOLTAGES BASED ON THE TEMPERATURE AT THE SENSOR. USING A MULTIMETER, APPLY THE NEGATIVE (BLACK) LEAD TO A GOOD GROUND, AND APPLY THE POSITIVE (RED) LEAD TO THE + TERMINAL OF THE ICE BOX MODULE.

THIS INFORMATION IS PARTICULARLY VALUABLE WHEN ATTEMPTING TO DETERMINE TRUE ENGINE TEMPERATURE WHEN VIEWING A DASH MOUNTED TEMP GAUGE. DUE TO VARIANCES IN SENDING UNITS AS WELL AS POSITION OF SENDING UNITS IN THE COOLING SYSTEM, THE TEMPERATURE A WATER TEMP GAUGE IS REPORTING MAY BE DIFFERENT THAN WHAT THE ICE BOX SENSOR IS READING.

<u>VOLTAGE</u>	<u>DEGREES FAHRENHEIT</u>
3.442	130
3.369	135
3.286	140
3.198	145
3.105	150
3.007	155
2.915	160
2.817	165
2.724	170
2.631	175
2.539	180
2.446	185
2.363	190
2.275	195
2.192	200
2.114	205
2.036	210
1.958	215
1.884	220
1.816	225
1.748	230
1.684	235
1.621	240