Please read these instructions completely before beginning installation.

**CONTROL MODULE KIT CONTENTS**

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<th>DESCRIPTION</th>
<th>QTY.</th>
<th>DESCRIPTION</th>
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<td>PWM Cover</td>
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<td>50 Amp Circuit Breaker</td>
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<td>1</td>
<td>Foam Pad</td>
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<td>4” Wire Ties</td>
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**TOOLS NEEDED**

- Drill
- 5/32” Drill Bit
- Retaining Clip
- 1/8” wide blade
- Multimeter
- 5/16” Nut Driver
- Wire Crimping Tool
- Standard Screw Driver
- 11/32” Nut Driver
- 7/16” Socket and Ratchet
- Allen Wrench
- Open End Wrench

**IMPORTANT**

The Control Module utilizes an auto resetting circuit breaker to protect the fan(s) and controller circuit. In the event of an electrical short, the breaker will “trip” and open the connection between the battery and the controller. If this happens, turn the vehicle off and let it cool before restarting the system. The breaker will automatically reset.

**MAXIMUM CAPACITY: 65 AMPS**

**HOW IT WORKS**

The Derale PWM Control Module is designed to adjust the electric fan speed to maintain the desired engine temperature. The Control Module has an AC override circuit available that when activated, will ramp up the electric fans to 60% running speed. As the engine temperature increases the fans will increase accordingly.

If the override circuit is not being used for the AC, an optional toggle switch could be connected to it to manually activate fans at 60%. PWM will automatically increase fan speed if needed to maintain temperature.

Toggle switch part # 16740.

**CONTROL MODULE INSTALLATION PROCEDURE ON A SINGLE FAN SHROUD**

1. Identify the pieces of the Control Module.
   - 1 - PWM Control Module
   - 1 - Corner Mounting Bracket
   - 2 - 1/4” Allen Head Bracket Bolts

2. Install the bracket onto the Control Module using two 8-32 x 1/4” Allen Head Bracket Bolts and an Allen Wrench.

3. From the backside of the shroud slide the Control Module into the mounting corner. (See Diagram #13 on page 5)

4. From the sides of the shroud thread in two 6-32 x 1/4” Allen Head Bracket Bolts (supplied). Using an Allen Wrench tighten screws.

5. Place Control Module Base into position on shroud. To keep the Base in position you may need to tape it temporarily.

6. Install the Electric fan & run the wiring to the controller and make connections using the correct size connectors. Please reference wiring instructions on page 3 and the quick reference guide on page 5. Fan Positive (+) & Negative (-) wires can be run through the face of shroud, through the wire holes of the Controller as shown. The remaining wires can run from the sides of the Control Module.

7. Position wires to avoid Control Module Cover mounting holes and place Cover onto the Base. Make sure the wires are all within the sealing foam area of cover. Then align holes and thread-in two 8-32 x 1-1/4” Allen Head Cover Bolts using a Allen Wrench.

**Note:** The above photos are only to show Control Module Installation. Please review wiring instructions on page 3 and the Wiring Diagram on page 5.
**CONTROL MODULE INSTALLATION PROCEDURE ON A DUAL FAN SHROUD**

1. With the Control Module in hand, find the front two mounting holes on controller bracket. These holes will match up to the backside of the Fan Shroud Face.

2. From the backside of the shroud slide the Control Module into place and hold it.

3. On the front of shroud thread in two 8-32 x 1/4” Allen Head Mounting Bolts (supplied). Using a Allen Wrench tighten screws.

4. Place Control Module Base into position on shroud, To keep the Base in position you may need to tape it temporarily.

5. Install the Electric fan & run the wiring to the controller and make connections using the correct size connectors. Please reference wiring instructions on page 3 and the quick reference guide on page 5. Fan Positive (+) & Negative (-) wires can be run through the top of shroud, through the wire holes of the Controller. The remaining wires would run from the sides of the Control Module as shown.

6. Position wires to avoid Control Module Cover mounting holes and place Cover onto the Base. Make sure the wires are all within the sealing foam area of cover. Then align holes and thread-in 8-32 x 1-1/4” Allen Head Cover Bolts using a Allen Wrench.

**Note:** The above photos are only to show Control Module Installation. Please review wiring instructions on page 3 and the Wiring Diagram on page 5.

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**THERMOSTAT PROBE INSTALLATION**

**Placement:** The Thermostat Sensor is designed to be installed on the outlet side of the radiator, therefore sensing the cooler fluid returning to the engine. (See Diagram #4)

**Warning:** Do not install the Thermostat Sensor on the Hot side of the radiator, Waterneck or Cylinder heads.

**Installation:**

1. Take the Radiator Probe and thread it clockwise onto the Thermostat Sensor.
2. Carefully insert the probe assembly into the fins of the radiator until Sensor is flush with radiator. (Probe should not make contact with AC condenser or auxiliary coolers. Probe may be trimmed to allow clearance.)
3. Install the Foam Pad onto the Radiator Probe.
4. Install Retaining Clip onto the Radiator Probe until tight. (See Dia. #5)
5. Route the Sensor Probe wire to the Control Module. The Sensor Wire splits into two wires near the end. Using a Red #8 Ring Terminal, connect either of the wires onto the Negative (-) Sensor Terminal on the Control Module.
6. Using a Red #6 Ring Terminal, connect the remaining Probe wire onto the positive (+) Sensor Terminal on the Control Module. (See Dia. #7)

**Note:** Sensor Wires are not polarity specific. Sensor Wires can be lengthened if necessary. When lengthening wires always use good quality wire & connections to assure proper function.

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**CIRCUIT BREAKER MOUNTING**

1. Choose a convenient location for the Circuit Breaker that is between the Fan Controller and the Battery.
2. Using the breaker as a template, mark and drill two 5/32” holes.
3. Using the two #10 sheet metal screws supplied, secure the Circuit Breaker in place.
**WARNING:** When following steps 5 and 8, Only connect Battery Positive and Negative Leads direct to Battery. Do not connect to Alternator or Starter. Failure to connect to Battery will Void the Warranty.

**WIRING CONTROL MODULE & ELECTRIC FAN**

Before starting, disconnect the Negative (-) cable on the vehicles battery. Using the electrical connectors & wire ties provided, follow the instructions below. (See Dia. #6 for proper lug stacking) (Before installing the shroud into the vehicle, the Control Module must be installed. Remove all pieces from the package and locate the two, 6-32 x 1/4" BH allen bolts. If installing onto a single shroud the provided Corner Mounting Bracket and two, 8-32 x 1/4" BH allen bolts will be used also. These will be used to fasten the Control Module to the shroud as shown on pages 2 or 3 & on page 5 Dia. #11. Once securely attached to shroud, you may connect the fan(s) wires to the module by following steps 6-9 of the installation section).

1. Using a Yellow 5/16 Ring Terminal & 10 AWG Red Wire supplied, connect one end of the red wire to the vehicles Positive (+) terminal on the battery.
2. Route the 10 AWG Red Wire now connected to the battery to the Circuit Breaker previously installed and cut the wire to the appropriate length.
3. Using a Yellow #10 Ring Terminal, connect the 10 AWG Red Wire to the “BAT” Terminal on the Circuit Breaker.
4. Using a Yellow #10 Ring Terminal, connect the auxiliary side “AUX” of the circuit breaker to another length of 10 AWG Red Wire.
5. Route the Red 10 AWG wire now connected to the auxiliary side of the circuit breaker to the Positive (+) Battery Terminal on the Control Module Circuit Board and connect using a Yellow #8 Ring Terminal.
6. Using the Red 10 AWG wire and a Yellow #8 Ring Terminal, connect into the positive (+) Fan Terminal on the Control Module.
7. Using a Yellow Butt Connector, connect the loose end of the Red 10 AWG wire connected to the Control Module positive (+) Fan Terminal, connect to the positive (+) side of the fan(s). (If connecting to a Two Speed single Shrouded Derale Fan, connect to the positive (+) Brown wire and Gray wire on the Electric Fan. See Diagram #8 and on page 5 diagram #10).
8. Using a #8 Yellow Ring Terminal, connect the 10 AWG Black wire to the Negative (-) Terminal on the Control Module. Route the other end of the wire to the Negative terminal on the vehicles battery & connect using a 5/16 Yellow Ring Terminal. Do not connect to a chassis ground.
9. Using a Yellow Butt Connector, connect the 10 AWG Black wire to the Negative (-) lead of the fan(s). Connect the other end of this wire to the fan (-) terminal of the Module using a #8 Yellow Ring Terminal.

**Green Wire: Override Circuit (Optional)**

The green wire is designed to work in two different configurations. When used, this will allow the Electric Fan(s) to be turned on regardless of the temperature of the thermostat. The fan speed will quickly ramp up to 60% and will operate between 60 and 100% as the temperature increases. **Note:** Use of the Override terminal is optional and not required for the PWM Control Module to work properly.

1. A/C Override - Using the Blue Wire Tap Connector provided, attach the green wire to a Positive (+) 12V output on the A/C compressor.
2. Manual Switch Override - Attach the Green Wire to the 12V output on the manual switch (not provided).
**TEMPERATURE ADJUSTMENT**
The Control Module is set from the factory for use with a 180°F Engine Thermostat. If desired, the temperature can be adjusted using the Multi-Turn Potentiometer on the Control Module.

**Reference Diagram #9**
1. Using a standard Multimeter (set on DC voltage).
2. Connect the negative lead of the Multimeter to the Negative (-) terminal on the Control Module.
3. Then connect the Positive (+) lead of the Multimeter to the calibration terminal on the Control Module.
4. Using a small screwdriver turn the Multi-Turn Potentiometer on the Control Module until the Multimeter reads the desired voltage.
5. Using a 3/32” Allen Wrench, Reinstall the Control Module cover.

**VEHICLE TESTING**
1. Before you start the vehicle, make sure all wires are safely zip tied and away from any moving parts.
2. Start the vehicle.
3. If the Manual Override function is being used, turn on the A/C or Manual Switch. Electric Fan(s) should start running immediately.
4. Turn off the Manual Override or A/C function & allow the engine to warm up.
5. If the electric fan does not turn on or you feel that it is not set correctly, check all connections and refer to the “Temperature Adjustment” Section above.
6. Once you have the fan cycling on and off using the control module, take the vehicle for a short test drive. For personal preference, some additional adjustment may still be necessary.

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**Diagram #9**
*Adjustment: One complete revolution equals 3 1/2°F*

<table>
<thead>
<tr>
<th>Engine Thermostat Temp</th>
<th>Calibration Terminal Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>160°F</td>
<td>3.16</td>
</tr>
<tr>
<td>170°F</td>
<td>2.89</td>
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<tr>
<td>180°F [Factory Setting]</td>
<td>2.63</td>
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<tr>
<td>190°F</td>
<td>2.38</td>
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<tr>
<td>200°F</td>
<td>2.14</td>
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<tr>
<td>210°F</td>
<td>1.91</td>
</tr>
</tbody>
</table>

**Warning:** Installation of accessories should only be undertaken by those with mechanical knowledge and are familiar with working on vehicles. Always use eye protection (goggles, safety glasses or shield). Park the vehicle in a well lit area, on level ground and apply the parking brake. Only work on a cold vehicle that has been sitting overnight, failure to do so will result in severe burns and injury. Before starting the vehicle, make sure no tools or any other items are left under hood that could interfere with or be drawn into moving parts of the engine. Failure to follow instructions can lead to severe damage and personal injury.
Temperature Adjustment
Factory Preset at 180°F
See instruction sheet for
detailed procedures

IMPORTANT
Positive and Negative
wires must be
connected directly to
the vehicle's battery

Adjustment Screw

Battery
Yellow 5/16
Ring Terminal
Yellow 9/16
Ring Terminal
Yellow #8
Ring Terminal
Yellow #8
Ring Terminal
Yellow #10
Ring Terminal
Red #6
Ring Terminal
Red #6
Ring Terminal
Red #8
Ring Terminal
Red #8
Ring Terminal

Circuit Breaker

PWM Fan Controller

Optional
Override Circuit
12V (+)

Single Two Speed FAN

Dual FAN

Diagram #10
Attach Red wire
to positive (+)
Fan Terminal on
Control Module

Attach Black wire
to negative (-)
Fan Terminal on
Control Module

Diagram #11

Radiator Probe must be installed on the cold side of the radiator near outlet

IMPORTANT

PWM Installation
on Single Fan Shroud

PWM Installation
on Dual Fan Shroud

Customer Service
800-421-6288
U.S. Patent No.
7,006,762

(Page 5)
ATTENTION

If you have any technical questions about this controller, please contact Derale Performance.

Email: dp-tech@derale.com
Phone: 800-421-6288