

Thank you for purchasing the

SWAPHelper.COM GRID HEATER HELPER

Where required, please solder all wire connections and cover in the included shrink wrap for best performance. Wire nuts, butt connectors and other similar connection methods can lead to issues.



Your Grid Heater Helper has a total of ten wires. Here is the list of the wire colors and their use:

- Black** : Ground, if you are unsure of your grounds, please connect directly to battery
- Red** : Battery Positive, please connect directly to battery
- Grey** : Ignition circuit (switched +12 volts)
- White** : Starter circuit (disables heaters while cranking)
- Purple** : Heater Solenoid
- Brown** : Heater Solenoid
- Yellow** : Dash LED positive
- Orange** : Dash LED negative
- Blue** : IAT Sensor signal
- Green** : IAT Sensor negative

Opening the box:

The following items are included with your controller:

1. Grid Heater Helper
2. Controller Wiring Harness
3. Solenoid Ground Wiring
4. Dash Light
5. 10 x Marine Grade Shrink-wrap
6. Instructions

Installation:

The controller itself can be mounted under hood or in the cab. Mount the controller in such a way to avoid excessive moisture and heat. While the controller is sealed from the elements, prolonged submersion and/or exposure to moisture could possibly damage it.

The controller is designed to operate in temperatures from -40°F to 212°F (-40°C to 100°C) but should be kept as cool as possible to increase controller longevity. Do NOT mount near exhaust, turbos, hot/charge pipes, radiators, fan exhaust, etc., as this will severely degrade the controller's life span!

The wiring harness was designed with wire lengths to facilitate installation on the driver's side fender/firewall area.

Wiring:

The wiring harness includes enough wire to connect the ground (**Black**) and positive (**Red**) wires directly to the battery. The ground *can* be shortened and connected to the chassis or body but should only be done after confirming correct grounds are in place. If an inadequate ground is used, the controller's voltage sense may not work properly, and the heaters may be disabled by a faulty voltage reading. If in doubt, enough cable is included on the ground wire (**Black**) to connect directly to the battery ground.

The **Grey** wire should be connected to an accessory or ignition circuit that provides 12 volts when the key is on. It is important that this circuit stays on during

cranking/starting. Some older vehicles interrupt the ignition voltage while cranking, which would cause the controller to reset.

The **White** wire should be connected to the starting circuit that goes to 12 volts when the starter is engaged. Make sure you get 12 volts on the **White** wire only while cranking, as a constant 12 volts will permanently disable operation of the controller since it will think the vehicle is constantly cranking.

A good place to tap into the starter and ignition circuits is in the fuse box. Find the corresponding circuits and use an Add-A-Fuse to tap into the circuit. Another option is to tap into the starter circuit at the starter solenoid. As an example, here is a “start only” circuit on the Ford 6.0 and 6.4 starter solenoids:



If you follow the wire connected to the post circled above in red, you can tap into it with the **White** wire to get “start only” power.

The **Purple** and **Brown** wires provide power to cycle the grid heater solenoids. It does not matter which post on the solenoid you connect to, as long as one post is connected to ground and one post is connected to the **Purple** or **Brown** wire. A solenoid ground wire is included to assist with installation.

The **Yellow** and **Orange** wires power the dash light. When looking at the light with the logo facing up and the connectors towards you, the yellow wire goes to the left side, and the orange wire goes on the right, as follows:

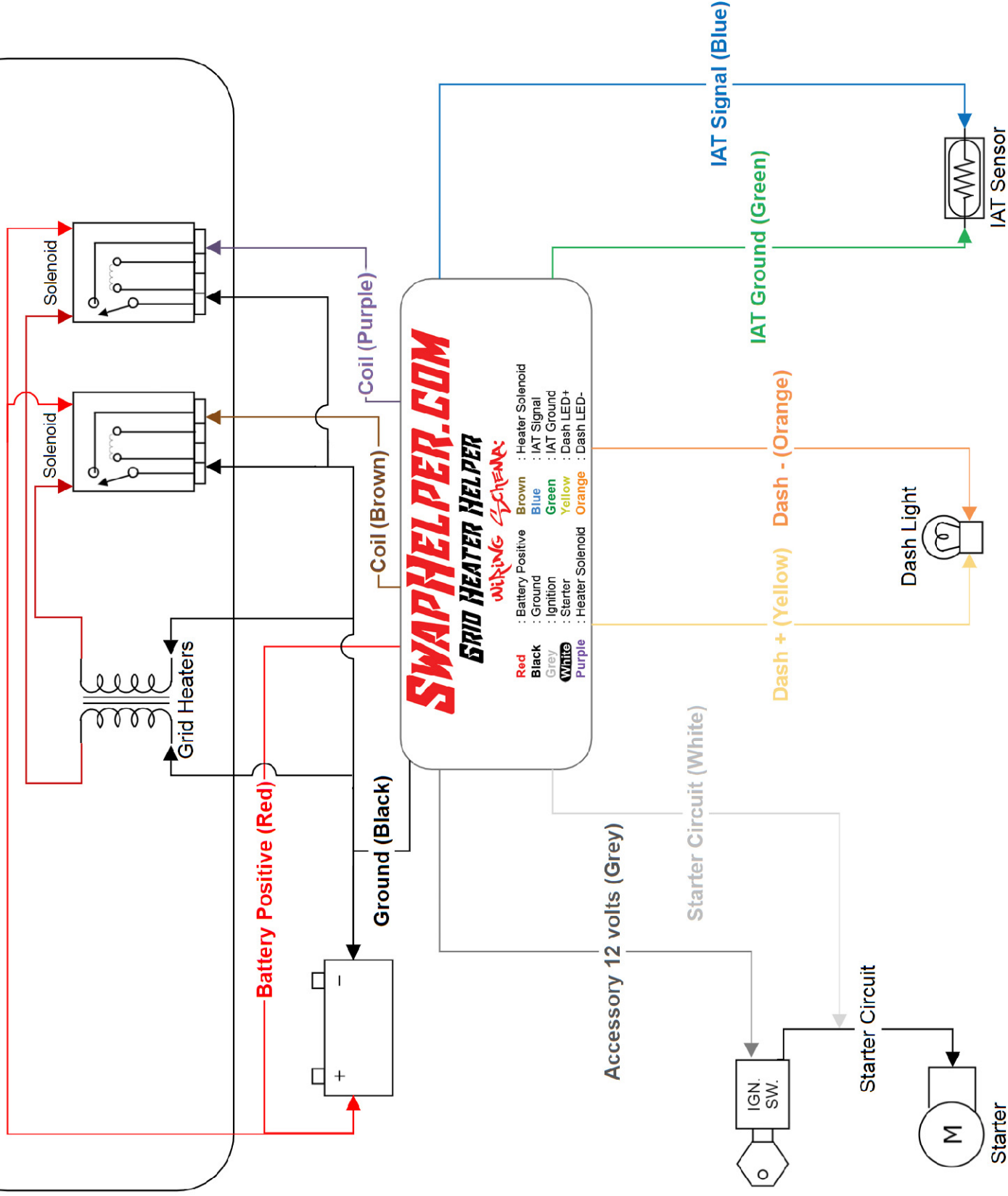


The **Green** and **Blue** wires go to the IAT sensor (not included). The wiring harness comes with the connector pre-installed, so all that needs to be done is to plug the connector into the sensor. The controller is compatible (as is the IAT connector) with all Dodge/Cummins IAT sensors from '89 to '02.

If the wire lengths need to be modified to create a cleaner final installation, the included shrink wraps can be used in conjunction with soldering to shorten or lengthen the wires.

On the following page is a wiring diagram to help you visualize installation of the controller:

Not Included



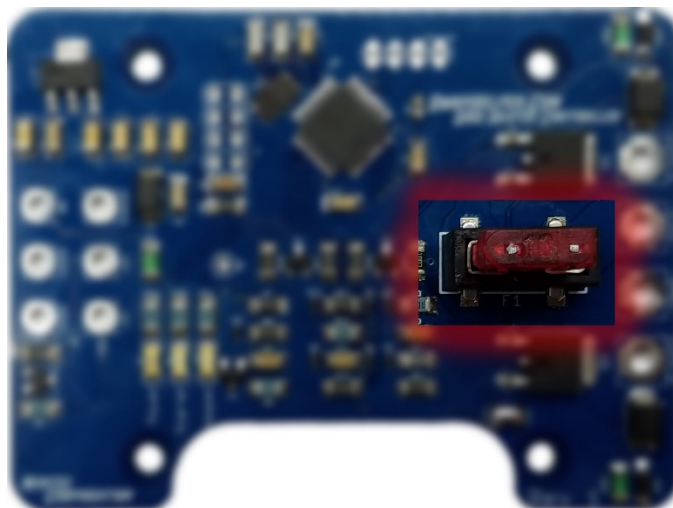
Operation:

*****Do NOT use Ether or Starting Fluid on your engine! Severe damage may result!*****

The controller turns on when the ignition is turned on. On startup, the controller goes through a series of tests to check for issues. If an issue is found, an error code will be blinked out on the dash light (see below, *Error Codes*). If no errors are found, the IAT temperature is checked, and if cold enough, the controller will start the preheat cycle. During this time the Dash Light will stay illuminated. Wait until the light turns off before attempting to start. After the Dash Light turns off, you have 100 seconds to crank the engine, or the controller will shut down. After attempting to start the engine, the post heat cycle will start three seconds after you disengage the starter. If the engine did not start, cycle the ignition within these three seconds to restart the pre heat cycle. If the engine did start, no further steps are necessary, and the controller will run the post heat cycle until completion.

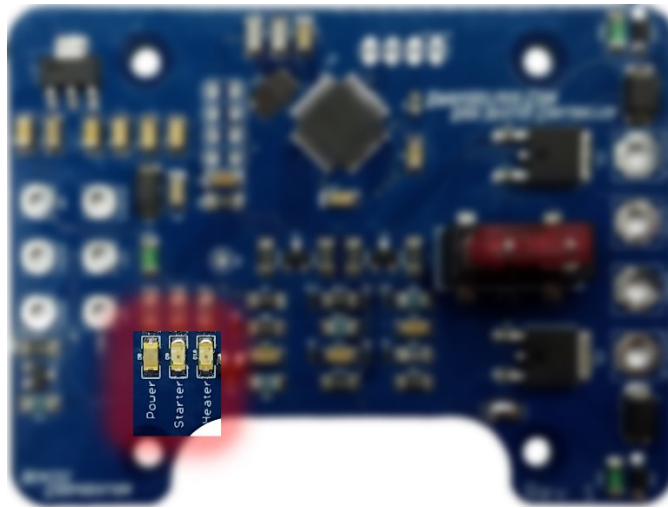
Error Codes and Troubleshooting:

On startup, the controller checks the voltage on the **Red** wire, which is used to power the solenoids. **If the controller does not sense voltage on this wire, it will blink one time, every two seconds, for twenty seconds.** The cause of this issue can be incorrect wiring or a blown fuse. The controller uses a 10-amp mini-blade fuse to protect the solenoid circuit. If it is suspected that the fuse has blown, the fuse can be inspected by removing the cover of the controller (four screws) and checking/replacing the fuse, as seen below:



After the voltage is checked, the IAT sensor is checked. If the controller finds that the sensor is unplugged or shorted, it will blink out the error codes. If the IAT sensor or wires are shorted, the dash light will blink two times, every two seconds, for twenty seconds. If the IAT sensor is unplugged, the dash light will blink three times, every two seconds, for twenty seconds. In these cases, check wiring and the sensor itself.

If the cover of the controller is removed, diagnostic LEDs are available to help diagnose issues:



Power LED: This **Red** LED should turn on when the ignition is turned on. It should not be on when the ignition is off.

Starter LED: This **Yellow** LED will turn on when the controller sees the starter engage. If this LED is always on, the **White** wire is incorrectly connected to constant 12 volts. If it does not illuminate when the starter is engaged, the controller is not seeing the starter signal.

Heater LED: This **Yellow** LED will turn on when either of the heaters are turned on.

Still can't figure out your issue? Shoot us an e-mail for additional support:

Contact@SwapHelper.com

Technical specs:

Operating temperature range	: -40°C to 100°C (-40°F to 212°F)
Operating voltage range	: 2v to 18v, DC only
Reverse Polarity Protection	: Yes
Load dump protection	: Yes
Water Resistance	: IP65

Return Policy:

Unopened, unused product(s) may be returned within 30 days of purchase date by original purchaser for a refund, minus original shipping charges and a 25% restocking fee. Customer is responsible for return shipping. Used products(s) are not eligible for return but may be repaired or replaced under Warranty policy. Return requests must be made by submitting a request to Contact@SwapHelper.com.

Warranty:

Nentec Corporation (SwapHelper.com) warranties this product to be free of defects in material and workmanship for one (1) year from date of purchase. This warranty is limited to the correction of any such defect, or the replacement of any such defective item, provided that: (a) item(s) was/were purchased from SwapHelper.com or an authorized Nentec Corporation distributor; (b) we are properly notified and consent to the return of the item(s) in question; (c) the item(s) is/are returned with proof of purchase date; and (d) it is found upon inspection by us that the item(s) is/are defective as noted above; (e) the return request is made by original purchaser. This warranty does not cover labor costs, consequential damages, nor does it apply to any item(s) that have been improperly installed, overloaded, altered, or otherwise abused by the customer, its agent(s) or employee(s). Other than the described obligation, we assume no further liability with respect to the sale or use of our products. We make no warranty, expressed or implied, and disclaim any warranty of merchantability or fitness for a particular purpose. Warranty requests must be made by requesting a Return Merchandise Authorization from Contact@SwapHelper.com.