

## AC Motor Kits Quicky Sheet

Thanks for purchasing an AC drive system from Thunderstruck Motors! Here are some things that we hope will help you get started more easily.

The detailed Curtis Controller manual, programming instructions, and other information is available on our website:

<http://www.thunderstruck-ev.com/product-manuals-and-data-sheets.html>

### Wiring

Your box should include a note that will refer you to the HPEVS website where you can find the appropriate wiring diagram (usually it is the most recent version for On Road Vehicles). Some pointers regarding the wiring diagram:

Always refer to the pin number on the left hand side of the drawing. The color of the wire will usually match up, but the pin number is what is important. The 35 pin connector rows are faintly labeled 1, 12, 24 and 35 on the actual black connector.

Notice that on many systems, the fwd/rev direction wire (you do need to use at least one) as well as a few others, gets connected to pin 25. Sometimes pin 25 also goes directly to the spyglass display. In this case you have to splice into the wire, most likely near the 35p connector, so that you can access pin 25. This may be the most inconvenient part of the wiring and we are trying to get the manufacturer to upgrade their harnesses to include a tap into p25.

Another easily overlooked wire that is usually necessary for your system to run is pin 9, the pedal interlock. If yours is required, it will also need to connect to pin 25. The good news is that you can leave it connected all the time if you like.

If using a PB-8 throttle, wiring is as follows:

Pin 15 (black) connect to pb-8 red wire.

Pin 16 (yellow) to pb-8 black

Pin 18 (purple) to pb-8 white

The microswitch on the PB-8 is optional and can be used as a safety mechanism in conjunction with pedal interlock.

If using an ET throttle, we've likely already wired it for you, so you can ignore wiring p9, as well as the fwd and rev switch.

The "menu button" pin 10 is connected to the small red momentary button while the other side of the button goes to pin 25 as per the wiring diagram. Tap this button to cycle through the display items on the Spyglass.

Your wiring diagram and wiring harness most likely includes wires that you do not need for the system to function such as the clutch switch, economy

mode, brake switch, etc. I recommend cutting these short (after you have established you won't be using them) and putting shrink tubing on the ends.

The logic side of the controller is powered ON by pin 1, depending on model, either through a 12v supply in reference to pin 7 ground, or by direct connection to battery positive with reference to B- on the large battery terminal of the Curtis. This should cause the controller to either close the contactor if all is well, or give you a fault code visible on the two LEDs on the Curtis. If you are not getting a fault and the contactor is closing, then your system should spin as long as you give it a direction, there is throttle input, and your motor is properly connected. Note that some of the above will not give a fault if not enabled.

In some rare cases we have seen a programming glitch that necessitates the U and W cable positions to be reversed on the motor. The symptoms include a slow or oscillating motor and hot cables.

## **Programming**

If you want to make changes to your programming, it is highly recommended that you either save your profile before any changes are made, or if this isn't possible record the original setting and make only one change at time. Experienced engineers are not immune to making mistakes and asking us to reflash their controllers.

Changes can be made through the spyglass but it is quite tedious. If you plan on racing, or fine tuning the throttle response for instance you may want to rent a handheld programmer from us as the interface is much quicker and easier. At this time, only OEM's are able to buy the programmers.

## **Installation**

If you haven't already made your motor cables, we do offer 2/0 premade cables on our site under AC Accessories. If your cables are getting too hot, you are wasting energy and need a larger diameter cable.

Note that the Curtis needs to be mounted onto a heatsink with access to fresh air, especially if used under heavy load; we have these available on our site as well. A piece of finned aluminum is much better than steel at moving heat, but may still need a fan if used in high-current situations. Use thermally conductive heat grease between the controller and heatsink to aid with cooling. In racing applications we have also had success using forced air into the motor.

If you are having difficulty with your system feel free to send questions, a photo of your wiring and a description of your symptoms to:

[Connect@Thunderstruck-ev.com](mailto:Connect@Thunderstruck-ev.com)