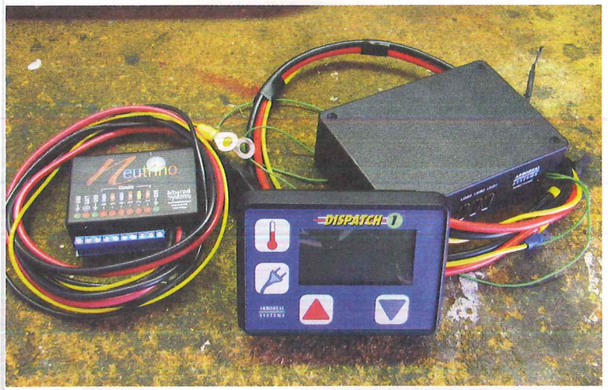
Arboreal Systems Neutrino Black Box

A Perfect Gadget For Farkle Freaks

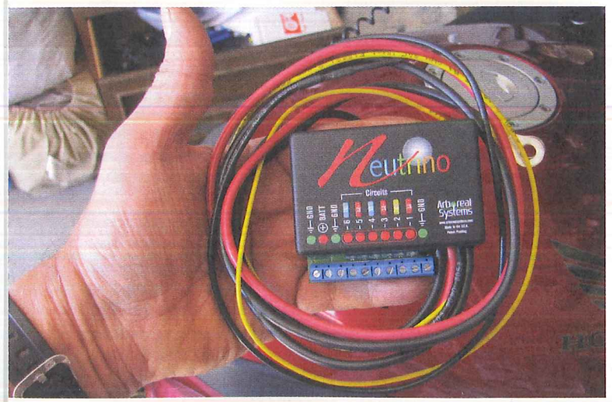
—W. Jeff Bertrand

In the field of physics, the neutrino is an extremely small, high-energy, sub-atomic particle. Neutrino then would appear to be an apt name for Arboreal Systems' latest version of their all-in-one power distribution and management solution. The unit's advantage lies in being able to manage multiple electrical accessories through a smart phone. Compared to Arboreal's previous offer, the Dispatch 1, the Neutrino has been shrunk to a size that should allow easy placement on almost any bike. With a 3" x 2" box that's less than 1" thick, it's even smaller than the remote control panel for the previous generation product (Figures 1 & 2). Further, the Neutrino actually eliminates the need for the second box by pairing with your smart phone. All of the Neutrino's functions are controlled via a free app, downloadable for Apple iOS or Google Android systems.

Besides size, Arboreal has addressed our other concerns about the Dispatch 1. All the circuits (there are six of them) are now individually assignable to whatever you want (recall that the Dispatch 1 pre-assigned four of the six 12V circuits to heated riding gear). All six of Neutrino's circuits can be set up for PWM variable power or simple on/off switching. The Neutrino loses the previous RJ11 and USB outlets, but this seems more than a fair trade-off for the additional flexibility. There are two 12A, three 15A and one 20A circuits. The latter is capable of handling high draw accessories such as HID lamps and has some built-in surge tolerance to accommodate the high startup draw of such lighting. The total amperage limit for all circuits is 60A. A seventh terminal is also provided for direct connection through the module to a battery charger.



(Fig. 1) The original Dispatch 1 (R), alongside the new version (L).



(Fig. 2) The Neutrino's small size makes finding a home for it easy.

Instead of replaceable fuses, the Neutrino has automatically resetting solid-state circuit breakers, and each circuit can be programed to trip its breaker at any amperage below the maximum using the phone app. The power module is now waterproof, too, further extending possible mounting options.

Installation

Installation is identical to the Dispatch 1, two heavy cables connect directly to the battery and a trigger wire is connected to any key-on circuit. A Scotch Lock connector is included. The main power cables were long enough to allow placement of the module under the seat, beneath either side cover, or even under the tail section of our Honda ST1300 test mule. The reduced size of the unit greatly simplifies locating it. For more distant locations, such as under a front faring, Neutrino offers an optional extension harness. In our case, we found plenty of space to just plop the unit under the rider's seat (Figure 3)—done. The plug-in connectors for each circuit have been eliminated in favor of a terminal screw strip. Not only does this further contribute to space savings, we feel the connections are actually more secure. Only three ground connections are provided but frame grounds–for accessories not sensitive to ground loop problems–can be used instead, conserving space and reducing wire clutter. For ground loop sensitive devices like communication and audio systems, using the grounding terminals on the device serve as isolators.

Like the Dispatch 1, Neutrino has a thermocouple wire for sensing ambient temperature. We ran the sensor out under the back of the passenger seat, well away from any engine-generated heat. Besides displaying ambient temperature on your phone, Neutrino makes special use of the sensor, which we'll address later in set up. Additional features include use of your phone's capabilities to display speed, direction and time. It also shows how many amps each connected device is drawing.

Setup/Configuration

After a quick app download, we were ready for set up. We connected an electric vest to circuit 1, and a GPS to circuit 3. This allowed us to test some of the new programming options. The Neutrino uses Bluetooth 4LE that does not require pairing. Upon powering up Neutrino and opening the app, one is instantaneously greeted with a green "connected" message. Once connected, the circuits can be individually assigned names and set up can begin. No programming will occur unless there is an active connection. We set C1 for "heated vest" and "variable" power. Using the ambient temperature data, we set the vest to automatically turn on when temperatures dropped to less than 55° F (Metric unit settings are available, too). We also programmed the circuit to switch off immediately with the key and to remember the last settings used. Since the vest doesn't require 12A, the max amperage was adjusted to 10A.

Right, on to configuring the GPS then. One of our pet peeves is that the GPS will auto-power off when the ignition is switched off, allowing only 30 seconds to catch it and select internal power. Most of the time, this is fine, but when on tour and making a quick fuel stop, I often fail to catch it in time. This breaks up the trip log into multiple pieces which must be tediously reassembled later to recreate the trip. With Neutrino, the GPS (or any other circuit) can be set to allow a delayed switch off. I set the GPS to stay on for 20 minutes after the ignition goes off, which allows plenty of time to finish fueling, gulp some water, and get back underway. This feature can be used to keep your communication system on-line for a short period also, which is extremely handy when traveling with other riders or a pillion.

Any of the six circuits can also be configured as always on, which is handy for a USB or 12V cigarette socket. The programming worked exactly as expected and the settings proved stable. Separate Neutrinos can be installed on multiple bikes and the same smart phone can control each of them individually. Since the settings are saved in the Neutrino unit itself, the app just reads them directly from the connected unit.

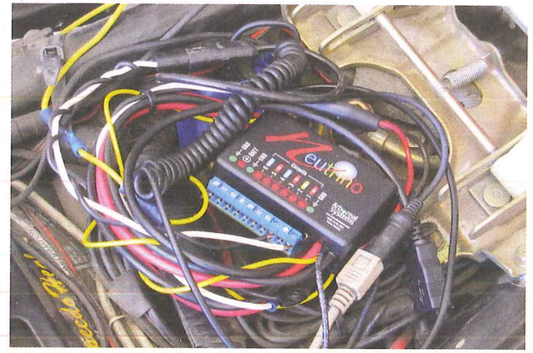
Gripes

Only minor ones: The Neutrino system addresses all of the important complaints we had for the Dispatch 1 system, namely size, inflexible circuit assignment and waterproofing, but has introduced a couple of new ones related to the use of a smart phone as the control module. If you have your phone paired with your communication system, it must also be able to pair simultaneously with the Neutrino if you wish to use both while underway. Also, smart phones aren't very glove friendly, being both small and touch insensitive. For the latter, there are special gloves and glove treatments to address touch sensitivity. Lastly, because on-the-fly adjustments require mounting your phone somewhere where it's safely accessible, there is also the question of weather-protection for your phone. Having said that, the degree of programmability will allow most connected accessories to be set and forgotten. Once configured, you can close the app, tuck your phone away and Neutrino will continue to work as programmed. Access to the app is only needed to turn things on or off and make changes to settings.

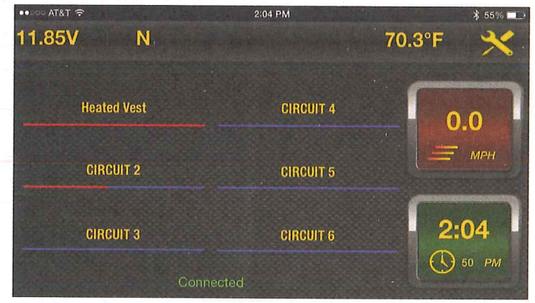
Although Neutrino uses a non-paring BT protocol that has the possibility of accidently connecting with a system on your buddy's bike, Arboreal assures us that the app will seek the closest Neutrino, and that once connected, the presence of a second unit will not interrupt the existing connection, so this might only be a concern when both users are powering up and parked in close proximity. The potential issue can be avoided by removing the BT dongle from the Neutrino and plugging your phone cable directly into the USB port instead. Doing this has the additional advantage of charging your phone.

Final Thoughts

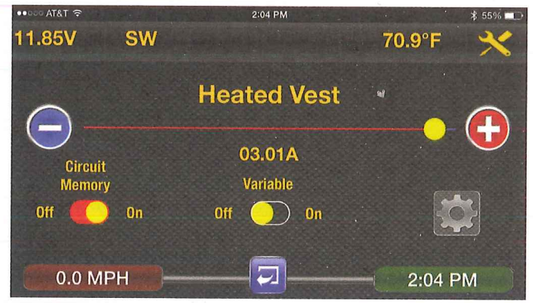
Arboreal has made a significant step forward with its new Neutrino system compared to its first generation product. In addition, it's priced $30 less, at $299, than the Dispatch 1—a good value. It competently performs the basic power distribution function, while adding an impressive level of programmability, control and automation. The smart phone app is quite simple and intuitive to use. Additionally, the application and the unit itself can be updated with new firmware in the future, hopefully staving off early obsolescence.



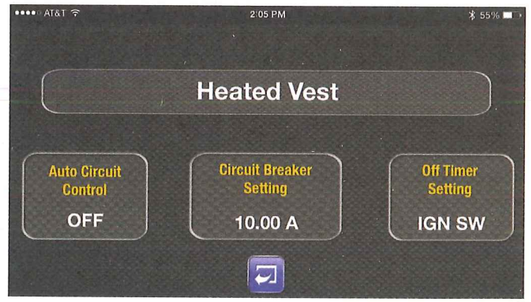
(Fig. 3) The black box takes up very little space under the seat.



The Neutrino efficiently manages multiple circuits.



Simple and easy to read functions.



A range of control allows the rider to tailor to personal preference.

Unlike the sub-atomic particle, the Arboreal Systems' Neutrino, though small, is not without potential.

Arboreal Systems, Inc. http://arborealsystems.com