

# TORQUE RUSH PERFORMANCE

## **D2A** Digital to Analog TPS Signal Converter(SENT protocol)

### **Terms of Use and Sale**

Our products are intended for off road use only. Torque Rush Performance Inc. assumes no responsibility for vehicle damage, personal injury, breach of law or any expenses resultant from vehicle modification or use of these products. Any modifications from the original design of a vehicle are done at the user's own risk. Purchase or installation of any of these products constitutes acceptance of these terms by the purchaser or user.

### **USES**

1. In D to A mode the **D2A** can be used to decode a digital SENT protocol throttle position sensor signal and convert it to the corresponding dual 0-5V analog signals.
2. In A to D mode **D2A** can be used to convert a pair of analog throttle position sensor signals to a digital signal. (requires external filter circuit)
3. In A to A mode the **D2A** can be use to change the ranges and/or directions of analog TPS signals.

### **Installation**

The **D2A** should be mounted where it will not be exposed to high temperatures.

#### wiring connections:

Pink -- 5V from throttle position sensor wiring

Black – ground from throttle position sensor wiring

Blue – digital signal from throttle position sensor

Green – TPS1 0-5V output signal

Purple – TPS2 0-5V output signal

Orange and Yellow wires – analog inputs for A to D and A to A modes

White – digital TPS signal out (requires external filter circuit)

## **Scaling the Outputs**

The output signals can be re-scaled to simulate those of any 0-5V TPS signal throttle body. The signals can be scaled to move in the same or opposite directions. Each signal can have its own maximum, minimum and slope.

1. Use the logging feature to record the peak and minimum values for the digital throttle or analog throttle body by moving the blade by hand to full closed and full open. Stop recording.
2. Set the maximum and minimum values for the throttle body you wish to simulate. These should have been obtained in a similar manner by moving the blade of that throttle body by hand to full closed and full open. These values cannot be obtained by using the pedal to actuate the throttle body.
3. Click the "Update" button to apply the new settings. The "Disable" button turns off output scaling.

## **LED Status Indicator**

When the device is running, the LED will be flashing at a rapid rate. Every flash indicates approximately 200 frames of digital data has been received from the throttle body.

Blink fault codes;

1 single blink = loss of digital input signal

2 single blinks = throttle body reports a fault condition

3 single blinks = throttle body reports a fault with one of the 2 sensors

Double blinks = hardware/processor faults

## **Firmware Updates**

If available, firmware updates may be installed to the **D2A** by the following procedure.

1. Download and save the latest firmware file from <http://torquerush.com/downloads.html>
2. Click the "Firmware Update" tab in the **D2A** PC software and connect the **D2A** to your PC.
3. Disconnect the **D2A** from vehicle power. Remove the cover screws and cover from the **D2A** enclosure and connect it to your computer using a type A male to mini B male USB cable.
4. Browse to and select the appropriate ".trp" firmware file.
5. Click "Update Module Firmware".

## Logging

The TPS signals can be data-logged using our **D2A** software.

Power up the **D2A** by switching on the vehicle ignition.

Remove the cover from the **D2A** box and connect the USB cable between the **D2A** and you PC.

Select either “Live Data” or “Record”. Selecting record will allow you to save the log file.

You can pause playback and use the cursor to view TPS values at any point in the chart.

## PC Serial Port Settings

Communication between your PC and the **D2A** may be improved by increasing the bit rate for the port assigned to the **D2A** to a value of 38400 in the Windows Device Manager.

