Dynojet

WIDE BAND COMMANDER

Air/Fuel Ratio Monitor
INSTALLATION GUIDE

www.widebandcommander.com

The most complete kit available on the market today!

Dynojet Research 2191 Mendenhall Drive North Las Vegas, NV 89081 (800) 992-4993

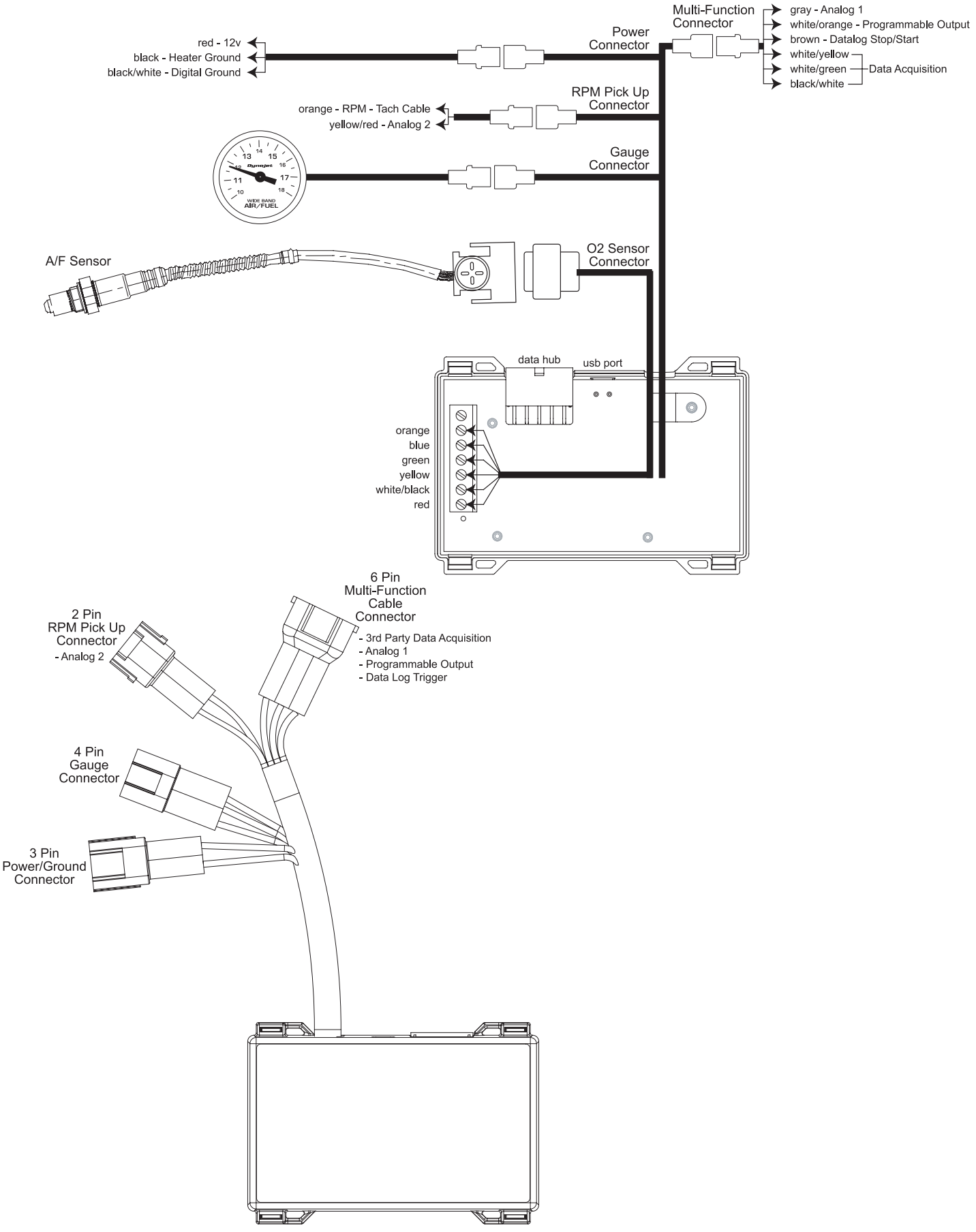
Wide Band Commander Parts List

Qty	Description	Qty	Description
1	Wide Band Commander Module	1	Bosch LSU 4 Wide Band Oxygen Sensor
1	2 1/16th Electric Gauge & Cable	1	Oxygen Sensor Cable
1	Power Cable	1	RPM Pickup Cable
1	Multi Function Cable	1	USB Software Cable
1	Oxygen Sensor Weld Boss & Plug	1	Gauge Mounting Hardware Kit
1	CD-ROM Software Package	1	9 volt Power Adaptor
1	Expansion Port Connector Seal	1	USB Port Connector Seal
2	Velcro Strips	4	Wire "T" Taps
1	Alcohol Swab	3	Cable Ties
1	Warranty Registration Card	2	Dynojet Decals

Wide Band Commander Specifications

Power Requirement:	11-15 VDC, 3A
Dimensions:	4.095"w x 2.82"h x .985"d
Sensor:	Bosch LSU 4
Inputs:	
(2) Analog	0-5 VDC
RPM Pickup	Square wave, 0-12 V nominal (coil (-) tachometer signal)
Data Logging Switch	Switch to 12v, 7mA
Outputs:	
Range (gasoline)	10-18 lb air/ lb fuel
Gauge	0-10 VDC analog
Data Acquisition Link	0-5 mA or 0-5 VDC analog
Programmable Output	2A (sinks to ground; does not Source 12V)
Computer Connectivity:	USB 2.0, Windows 98se/ME/2000/XP Computer required
Dynojet Dyno Connectivity:	TTL serial (Accessory cable required)
Onboard Memory:	256K Byte serial EEPROM
Sampling rate	10 samples per second
Time Limit	Approx. 10 minutes
Operating Temperature:	-20°F to 120°F

Electrical Layout



INSTALLATION

For in-vehicle Air/Fuel Ratio display, please follow the steps laid out in Sections 1-4

Section 1 - Install the Weld Boss and Oxygen Sensor
Section 2 - Install the Wide Band Commander Module
Section 3 - Connect the Power, Ground and Sensor Cables
Section 4 - Install the Electric Gauge in the vehicle dash

Optional Connections for advanced recording and software analysis / playback features

Section 5 - Connect the RPM Pickup (Tach) Cable
Section 6 - Connect the Analog 1/2

Additional Features

Section 7 - Warning Light Feature
Section 8 - Recording Stop / Start Feature
Section 9 - Data Acquisition Link Output Feature
Section 10 - Programmable Output Feature

Software

Section 11 - Installing and using the Wide Band Commander Software Package

Section 1 - Install the Weld Boss and Oxygen Sensor

Fig. 1A

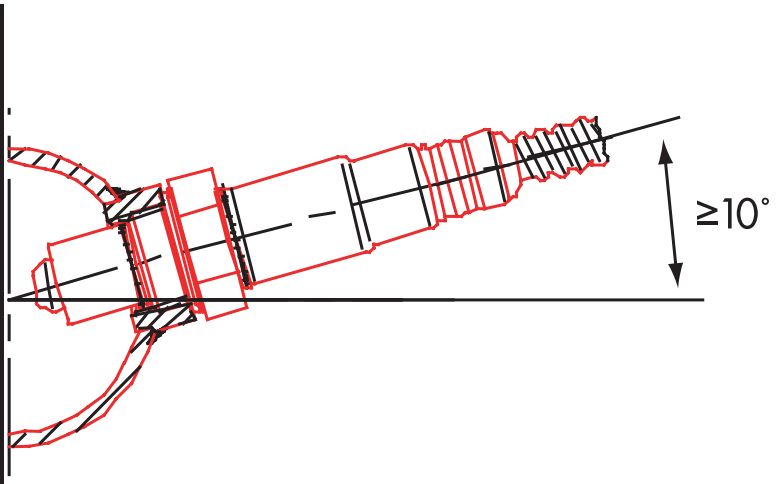


Fig. 1B

Fig. 1C

Installing the Weld Boss

Find a suitable location to install the included M18 x 1.5mm weld boss on the exhaust system (Fig. A). On vehicles equipped with catalytic converters, Dynojet recommends installing the weld boss before the converters. Vehicles that don't utilize catalytic converters are free to install the boss anywhere in the exhaust, but we recommend keeping it within 30" of the exhaust port.

Turbocharged vehicles have rather high exhaust gas temperatures and pressures. In these applications, it is best to install the weld boss in the down pipe as far away from the exhaust turbine as possible. *Never install the sensor in the exhaust manifold between the cylinder head and the turbo.*

The weld boss should be mounted in a manner that reduces the risk of moisture contamination on the sensor. Condensation can build up in the exhaust pipes and potentially damage the sensor. Ideally, you should orient the weld boss so the sensor is between the 9 o'clock and 3 o'clock position (reading clockwise). A 10° inclination off the horizontal plane should be considered a minimum.

Note: *Keep in mind that you need adequate clearance to allow room for the sensor and wiring harness.*

Installing the Sensor:

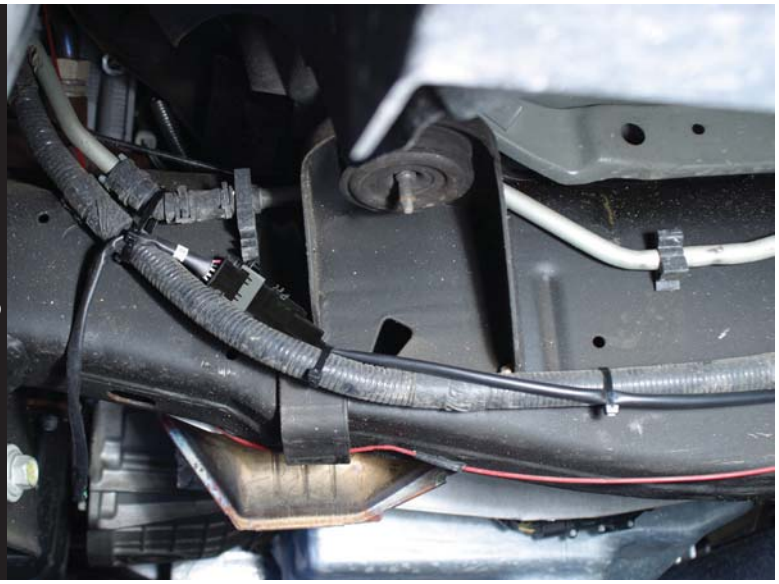
Thread the sensor into the weld boss (Fig. 1C).

Section 1 - Install the Weld Boss and Oxygen Sensor

Fig.1D

Connect the O2 Sensor to the supplied wiring harness (Fig. 1D).

Fig. 1E



Find a suitable location to run the wiring to the WBC control module, as shown in Fig. 1E. The wiring should be routed in a fashion that is free and clear of abrasion and heat sources.

Fig. 1F

If you can't find a factory grommet to pass the wiring through (Fig. 1F), drill a hole large enough to accommodate the wiring and be sure to use a grommet to protect the wiring.

It is very important that the Wide Band Commander Sensor is powered up when the vehicle is running. The sensor may become damaged if the vehicle is running and the WBC is not receiving power. In the event that you don't have power running to the sensor, remove it and install the weld boss plug included in the WBC kit.

Section 2 - Install the Wide Band Commander Module

Fig. 2A

Find a Location

The module is robust and water resistant and can be mounted inside the vehicle or under the hood. When mounting under the hood, be sure to install the USB and Expansion Port seals, when the ports are not in use. There are many places that the module could be mounted, but remember that the USB and Expansion Ports must be accessible for data downloads.

The module can be mounted using the Velcro Strips supplied (recommended for in vehicle use) or cable ties secured through the mounting eyes on the module, shown in Fig. 2B (recommended for under hood use). When using the Velcro strips, please clean the surfaces thoroughly with the Alcohol Swab supplied.

Section 3 - Connect the Power, Ground and Sensor Cables

Fig. 3A

Power Cable

Connect the three pin Power Cable to the Wideband Commander module. This cable has three wires exposed on the other end;

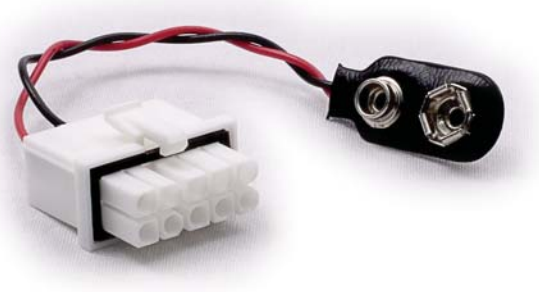
The red wire must be connected into a 12 volt "Fused Key On" Power Source, which only has Power when the ignition switch is turned on. If you are not sure, please refer to a workshop manual or electrical diagram for your vehicle or consult a specialist.

Ground

The Black and the Black/White wires are both ground wires, and must be connected to a good ground location.

The wiring should be routed in a fashion that is free and clear of abrasion and heat sources.

Fig. 3B



Note: *A 9 volt battery adapter has been included in the kit so that communication between the computer and the Wide Band Commander module can be established without a 12 volt power supply. (Fig. 3B)*

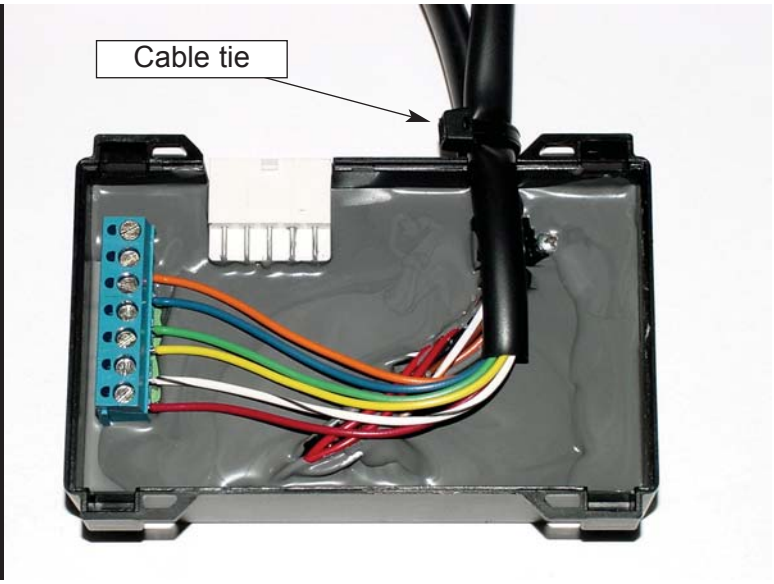
Section 3 - Connect the Power, Ground and Sensor Cables

Fig. 3B

O2 Sensor Cable

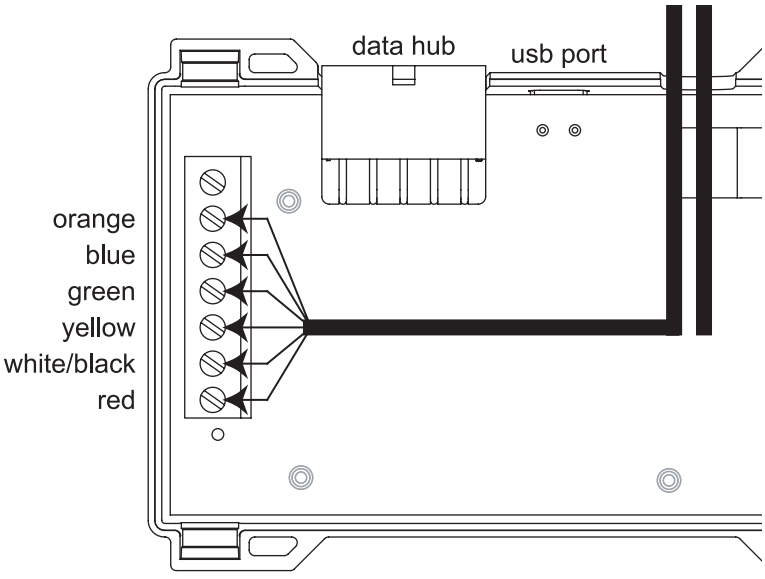
Pop open the back of the Wide Band Commander module by inserting a small screw-driver into each of the four back slots, releasing the holding tabs of the rear plate. (Fig. 3A).

Fig. 3C



Attach the O2 Sensor wiring harness wires to the screw terminal as shown in Fig. 3D. Replace the back panel, locking the holding tabs into their slots. The back panel does provide strain relief for the sensor cable, but it is recommended to secure the sensor cable to the main wiring harness with a cable tie for additional strain relief (Fig. 3C).

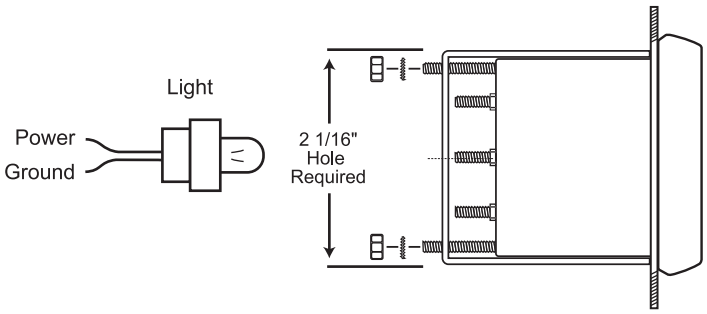
Fig. 3D



The schematic shown here in Fig. 3D outlines the connection points for the WBC Control Module.

Section 4 - Install Electrical Gauge in Vehicle Dash

Fig. 4A



A 2 1/16th diameter hole is required for the Gauge, which can be mounted in-dash or in an aftermarket gauge pod, using the supplied gauge mounting hardware kit.

The Gauge Cable must be routed through to the Wideband Commander Module and connected to the four pin connector on the Module.

If you want the gauge backlit, you must also connect the power and ground wires for the bulb. Tip: The power wire can be connected into a power source which is controlled by the dimmer switch. This will allow the WBC gauge to dim along with the factory gauges.

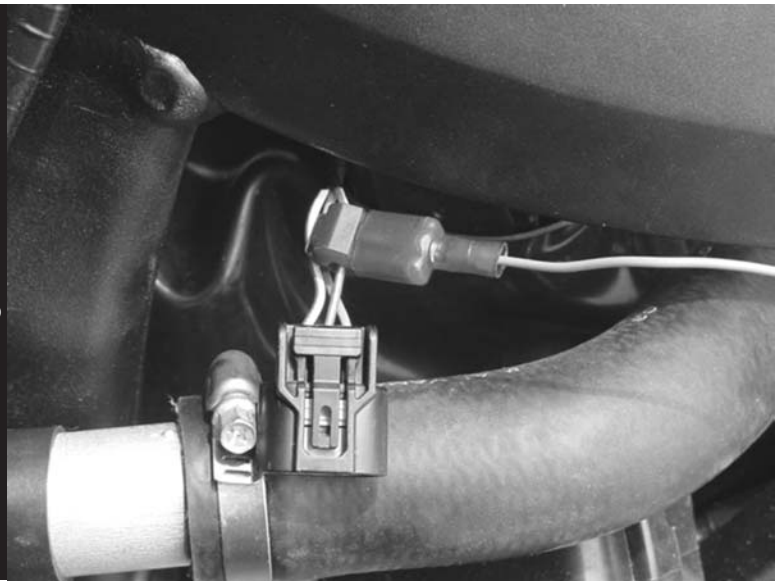
Your Wideband Commander should now be operational, providing a fast and accurate in-vehicle Air/Fuel Ratio display.

Section 5 - Connect RPM Pickup (Tach) Cable

RPM can be recorded and displayed in the Software. To enable this, connect the orange wire from the two pin RPM Pickup connector to the switch (non power) side of the ignition coil, using a supplied Wire "T" Tap or similar device. This will provide a stable RPM signal without the need for a special Tach adaptor. The software allows the user to select 2 different sensitivity levels to best suit each application. Check the web site for additional details on RPM connection.

Section 6 - Connect the Analog 1 / 2

Fig. 6A



There are (2) analog input channels built into the Wide Band Commander. Analog 1 is the gray wire in the Multi Function Cable, and Analog 2 is the yellow wire with a red stripe located next to the orange RPM wire (uses a 2 pin connector). Both of these channels are designed to capture the 0-5v "variable voltage" that is produced from specific senors on a vehicle. Most 0-5v sensors have three wires;

+5 volt reference
Ground
0 - 5 volt signal

If you are not sure, please refer to a workshop manual or electrical diagram for your vehicle, consult a specialist, or probe all three wires looking for the variable voltage circuit.

Section 7 - Warning Light Feature

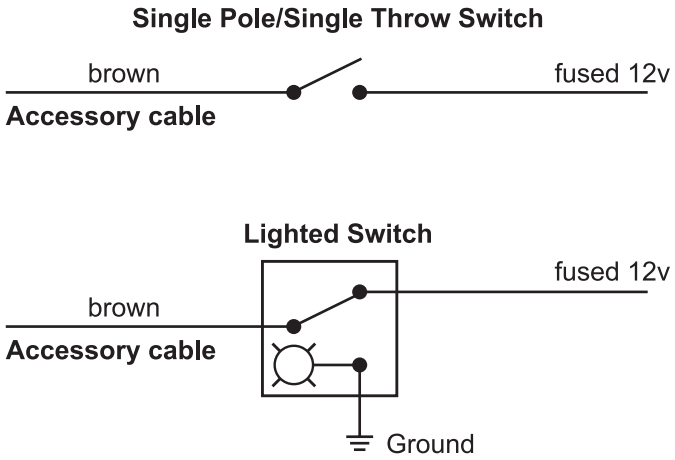
The gauge included with your Wide Band Commander kit has an integrated warning light. This feature can be configured in the software to trigger when certain thresholds are met. For example, you can define the RPM, Air/Fuel, and Analog 1 Input or any combination of the three to activate the light.

Section 8 - Recording Stop/Start Feature

Fig. 8A

Fig. 8B

Recording Stop/Start Wiring



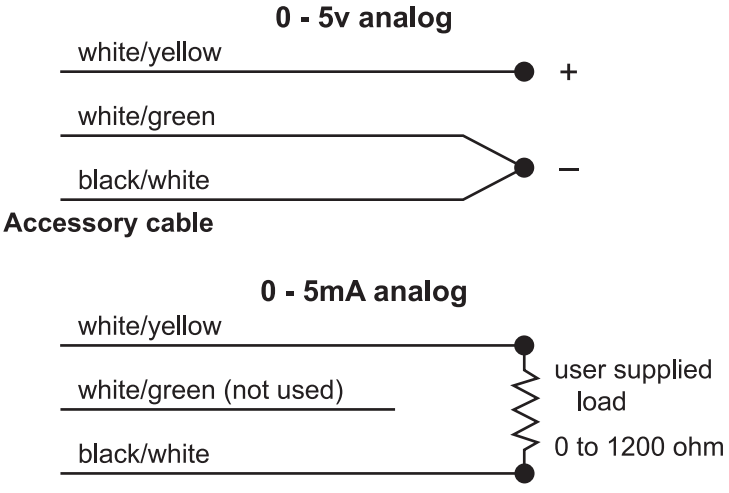
The Wideband Commander has onboard memory to record Air Fuel Ratio, Engine RPM, Analog 1, and Time. To use this feature, you need an aftermarket "Single Pole/Single Throw" Toggle or Rocker Switch mounted inside the vehicle. When the switch is open, the Wideband Commander is not recording, and when the switch is closed, the Wideband Commander is recording. If you select a "Lighted" type switch, then it will be lit when recording.

Please refer to the software Tutorials for sample rate settings.

Section 9 - Acquisition Link Output Feature

Fig. 9A

Acquisition Link Wiring

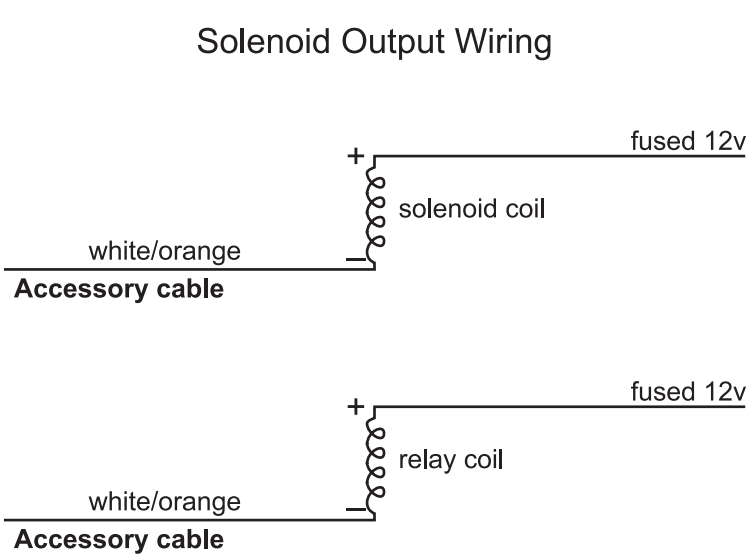


The Acquisition Link can produce one of two outputs. One variation of the output is 0-5v analog and the other is 0-5mA analog.

This feature is designed to produce an output signal for data acquisition systems or stand-alone engine management systems. Visit the website for further detail on this feature.

Section 10 - Progammable Output Features

Fig. 10A



The Programmable Output can be configured in the software to control nitrous, water injection, or other devices triggered from relay coils. The user defined output is configurable in the software and should be integrated into the ground loop of the circuit you desire to control.

Note: *If you exceed the maximum amperage rating of this circuit (2amps), you may damage the electronics. We recommend using a relay in a circuit that exceeds this rating.*

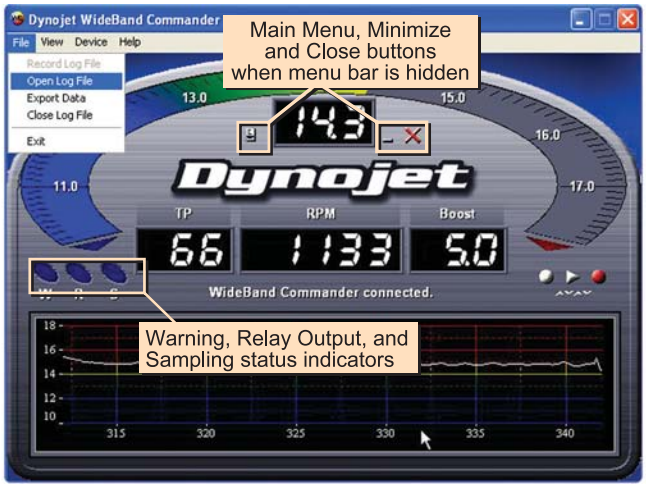
The programmable output feature uses RPM, AFR, and Analog 1 for its control logic.

Section 11 - Installing and Using Wide Band Commander Software

Fig. 11A

The Wide Band Commander comes with easy-to-use software. To install, insert the CD-ROM into your computer. The Wide Band Commander CD interface will auto run. Select "Install Software" to install the Wide Band Commander program. "Sample Log Files" will install sample log files onto your hard drive. "Install Guide" will bring up an electronic version of this document you are currently reading. "Tutorials" will launch the animated software tutorial.

Fig. 11B



The animated Tutorials will guide you through all of the features in the Wide Band Commander software package.