BTI
Performance Vehicle Telemetry Displays

www.btigauges.com

TFT CAN Bus Gauge for Link / Vipec
Plug and Play Installation Manual
Doc version 1.0

**Notice: This product is intended for Off-Road use only.
Never take your eyes off of the road while using this device.
If you are uncomfortable with wire termination, please have
this device installed by a competent shop.**

**** Notice! This device should be configured by competent personnel.
Raising the BOOST too much, reducing the Traction Control too much,
improper use of nitrous, or improper use of a line lock can have severe
consequences.   You could blow your engine and or lose control of your
vehicle****

Software Configuration:

You will need the bti_gauges.lcs file which can be downloaded from:
(This file may be found on the Link / Vipec product page at the bottom).
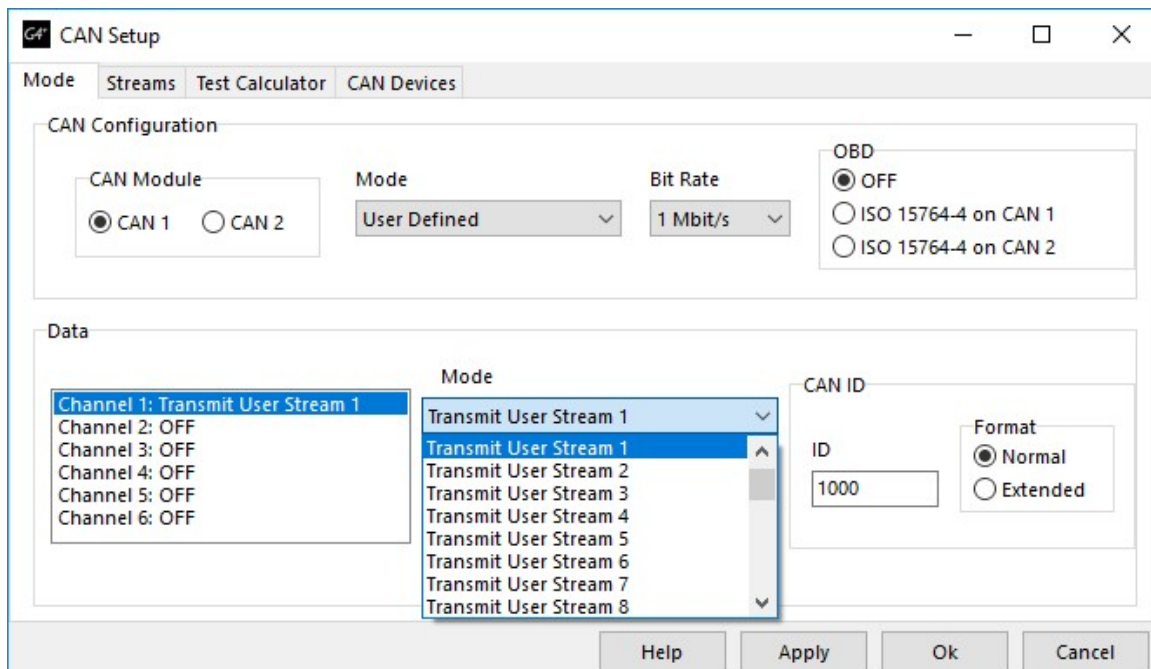
Drop this file into the CAN directory that typically resides at:
C:\Link G4\PCLink G4+\CAN

Open the Link or Vipec software and proceed to ECU Controls / CAN Setup:
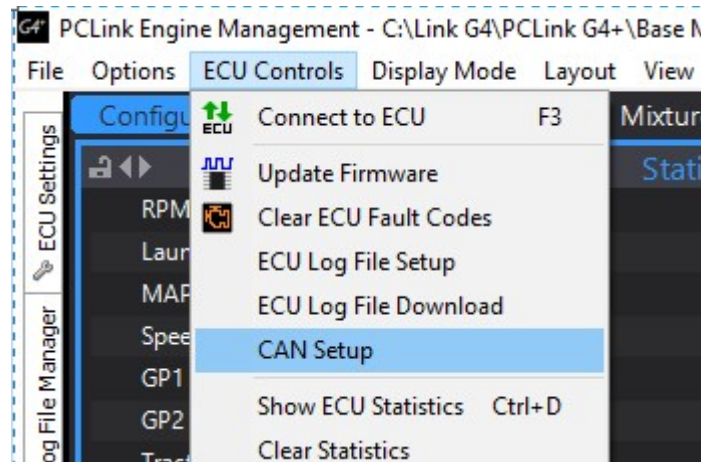
Under the Mode tab, ensure that Mode is set to "User Defined", Baud Rate is   "1 Mbit/s" OBD is OFF.
Ensure that Channel 1 is set to "Transmit User Stream 1, CAN ID = 1000, and set the Format to Normal.

Ensure that the "Transmit Rate" is set to "20 Hz"

Proceed to the "Streams" tab, select "Stream 1" in the left hand pane and click "Load Stream". Select the BTI_Gauges LCS file.
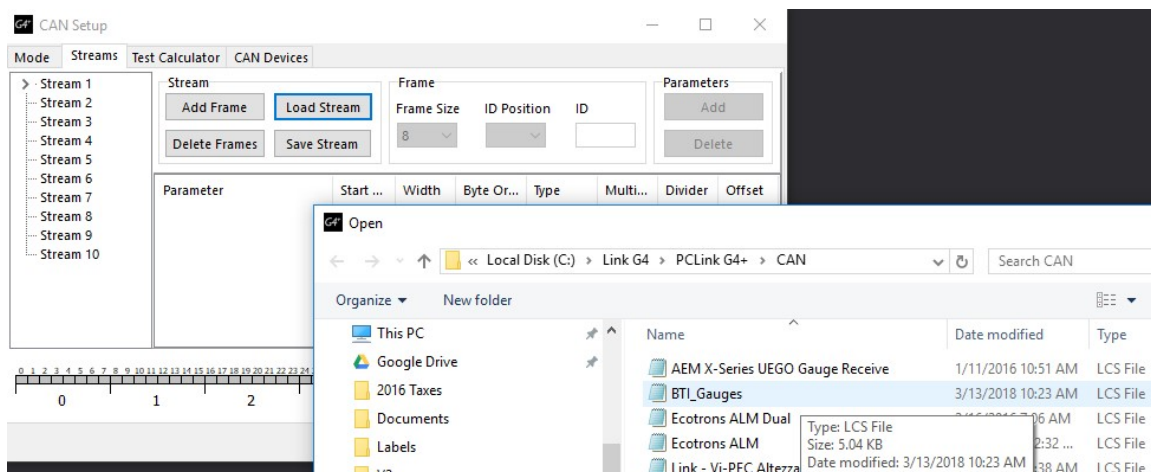
Click "Apply" and "OK" to finish the setup.

Plug and Play harness installation:

Wiring Instructions

The Link / Vipec integrations are available with three different cable options:

1. 6 Pin Amphenol connector

2. Plug and Pin harness that must be pinned into the main ECU connector

3. Drop in ECU header connector

6 Pin Amphenol connector:
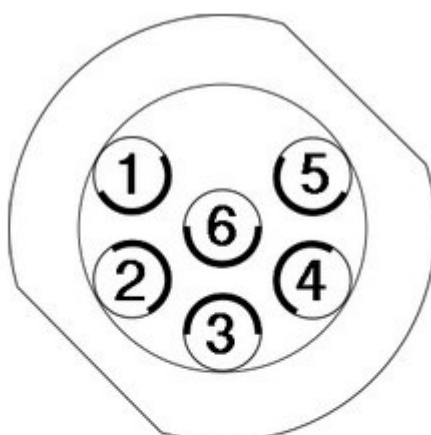
CAN_F Pinout
looking into back of connector

Pin	Colour	Function
1	Brown	Ground
2	Blue	NC
3	White	CAN H
4	Green	CAN L
5	Yellow	ECU RS232 TX
6	Grey	ECU RS232 RX

Notice that the red wire in the harness must be terminated to a switched on 12 volt power source.

Plug and Pin termination:

Viewed looking into ECU header (or wire side of loom connector)

Inj 4	Inj 3	Inj 2	Inj 1	+14V	DI 4	Shield/Gnd	Trig 1	Trig 2
Brown/Orange	Brown/Red	Brown	Brown/Black	Red	Red/White	Green	Black	Red

Ign 4	Ign 3	Ign 2	Ign 1	An Volt 4	Temp 1	Temp 2	An Volt 1
Blue/Orange	Blue/Red	Blue/Brown	Blue	White/Black	Yellow	Yellow/Brown	Yellow/Blue

| Aux 4	Aux 3	Aux 2	Aux 1	An Volt 2	DI 3	Gnd Out	Ground
Orange	Orange/Red	Orange/Brown	Orange/Black	White/Brown	Grey/Red	Green	Black

Aux 6	Aux 5	CAN H	CAN L	DI 1	DI 2	+5V	An Volt 3	Ground
Orange/Purple	Orange/Blue	Orange/Green	Orange/Yellow	Grey/Black	Grey/Brown	Red/Blue	Yellow/Black	Black

Drop-in ECU Connector:

This cable plugs directly into the 5 pin header CAN 1 or CAN 2 header on the circuit board:
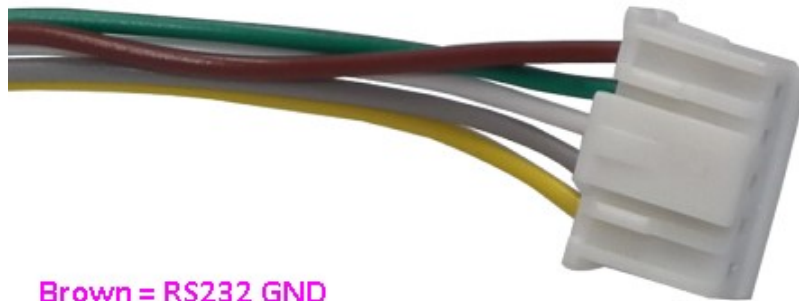
Brown = RS232 GND
**Green = CAN L**
White = CAN H
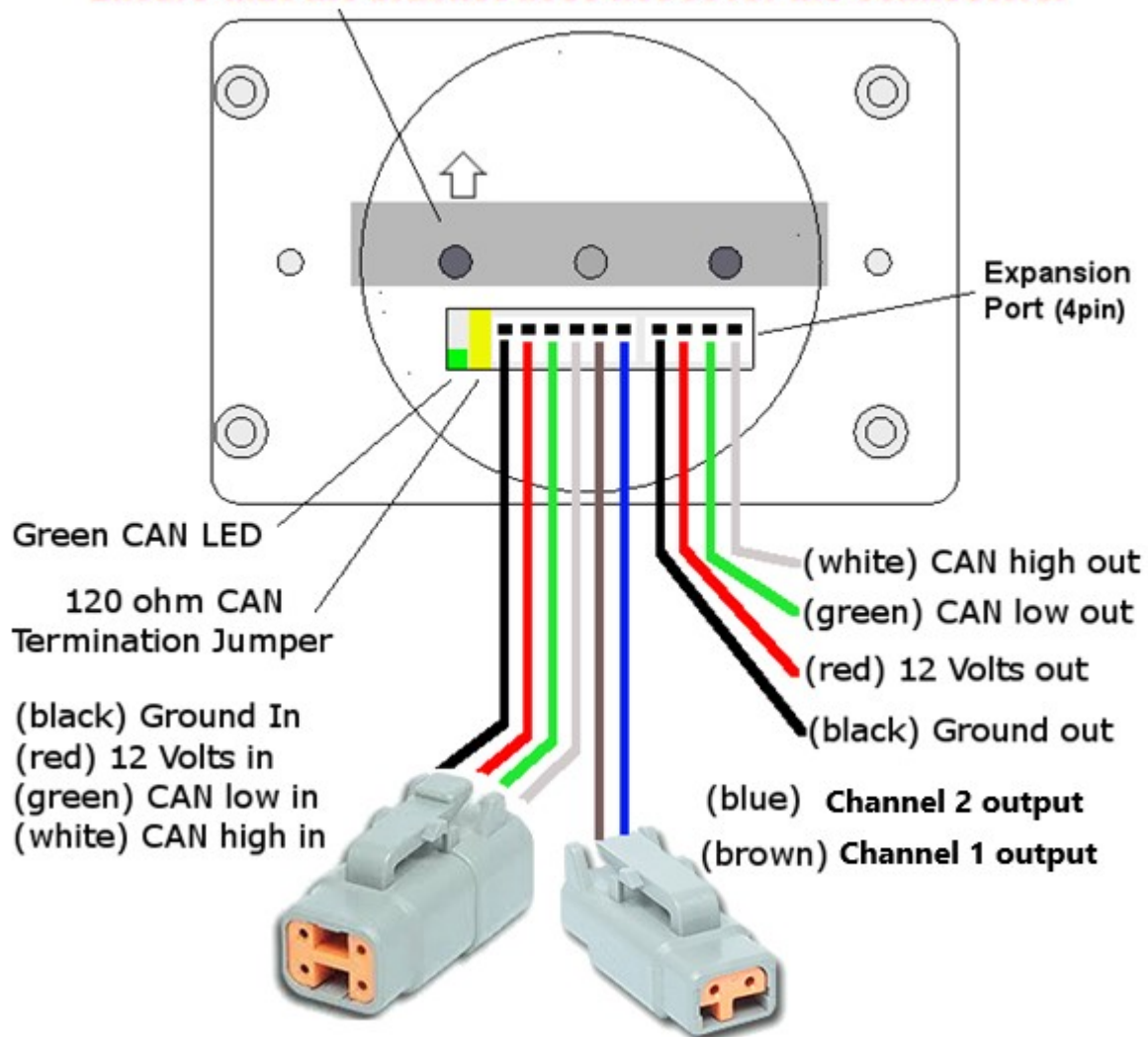**Grey = RS232 Rx**
Yellow = RS232 Tx

Notice! The Drop-in ECU connectors do not have power. There will be a RED pigtail coming off of the connector that must be terminated to a switched on power source. We include a 3M T-tap connector for easy termination.

2 Pin Analog Out Connector (Brown and Blue Wires)
The termination of these two wires is dependent on the inputs that are assigned in the G4 Tuner software. These two outputs are configured for Boost Control and Traction Control. Either output may be connected to a different ECU analog input (5 volt low current) .

BROWN: Channel 2
Analog Output
(0-5v Traction Control)

BLUE: Channel 1
Analog Output
(0-5v Boost Control)
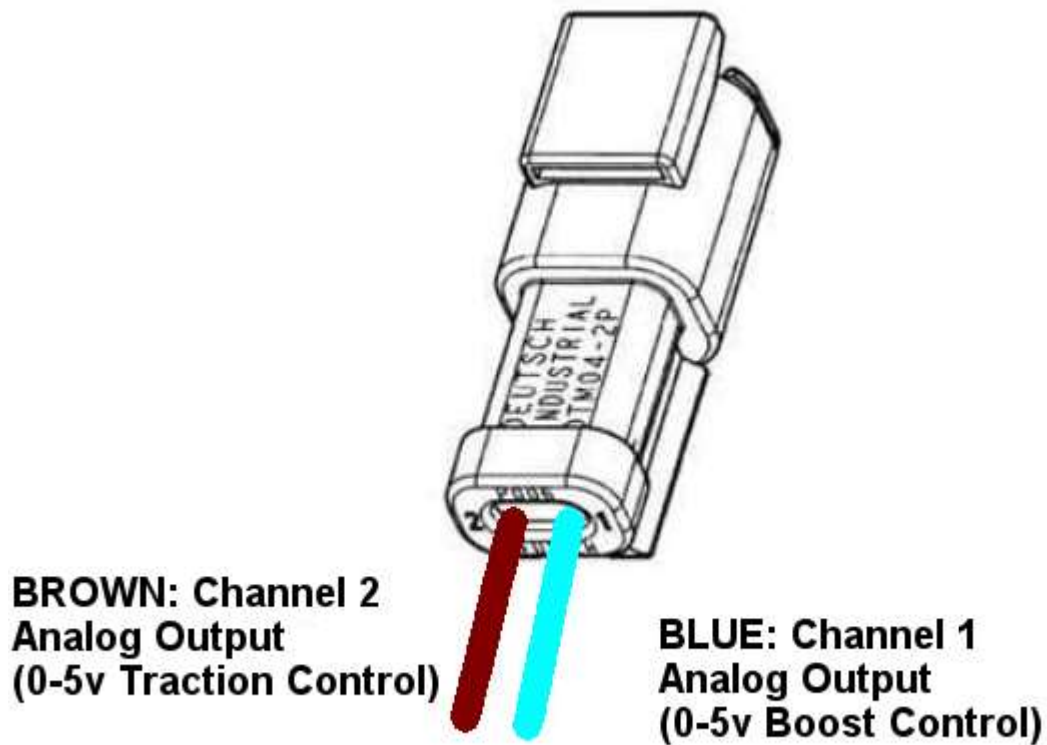
Please note the offset post holes in the aluminum bracket.
Ensure that the bracket does not cover the connectors.

Expansion
Port (4pin)

Green CAN LED

120 ohm CAN
Termination Jumper

(black) Ground In
(red) 12 Volts in
(green) CAN low in
(white) CAN high in

(white) CAN high out
(green) CAN low out
(red) 12 Volts out
(black) Ground out

(blue) Channel 2 output
(brown) Channel 1 output

Data LED: This indicator will flash whenever the gauge is energized and CAN communications are present. Use this to confirm communications.

CAN Bus Termination Jumper: Remove this jumper if the gauge is not the last device on the CAN Bus. If there are multiple gauges, the last gauge should be the only gauge with the jumper installed.
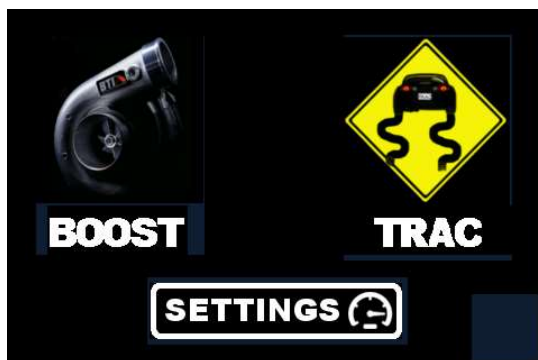Leave the jumper installed if the gauge is a standalone installation and there is nothing else on the CAN Bus.
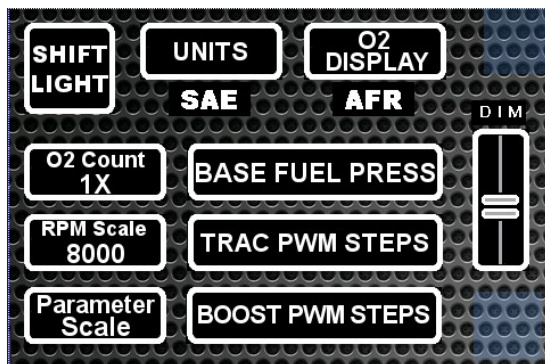
Configuration:

The Setup may be accessed by touching the cog wheel pictured on the top right of the diagram pictured. This is where the Units, Outputs, Boost level, Slip level, Map, Shift Light and output steps may be changed.

Touching the O2 Display button will change the O2 sensor output from AFR to Lambda
Touching the Turbocharger (left) will allow the boost level to be changed (if configured).
Touching the Traction button (center) will allow the traction control to be adjusted (if configured)
Touching the Map button (right) will allow the Map output to be changed (if configured)

Touching the **Units** button will change the units from **SAE** to **SI** units.
Touching the **Settings** button will allow for Outputs, Shift Light, Base Fuel Pressure, and Output levels to be configured:
O2 Count: Use this function to display 2 wide band sensors instead of 1.
RPM Scale: Use this function to switch between an 8K RPM scale vs. a 10K RPM scale for higher revving vehicles.

Parameter scale: Use this screen to set the maximum range for boost pressure and various temperature slide bars and graphs.
Example: You will be running a 30 psi boost target. The max boost pressure could be 35 psi to give the slide bars and graphs the best resolution. The same goes for temperatures. These values should be entered with respect to which units are selected: SI or SAE. If SI units are selected, Boost Pressure should be entered in kPa and temps should be entered in Celsius. If SAE units

are selected, Boost Pressure should be entered in psi and temps in Fahrenheit.

The **Shift Light** functions by RPM per gear. This means that a shift light may be configured in 1st gear at 6500 RPM while the Shift light could be illuminated in 2nd gear at 7000 RPM if desired. Simply touch the Gear or RPM that you wish to change and adjust accordingly using the arrow keys. Touch the Back arrow to save and the shift light should illuminate while saving.

Base Fuel Pressure: Use this feature to calculate the base fuel pressure while the vehicle is at normal idle. This will be used on the **Fuel** screen in order to verify proper fuel pressure regulator function (assuming that you are using a rising rate regulator with a 1:1 ratio).

TRAC, BOOST, and **MAP PWM Steps:** Use these screens to program how many steps that these feature will have. These outputs provide a low current 0-5 volt analog output. That output will be divided by how many steps are programmed. Example: You have boost assigned to Output # 1 and you wish to have the max number of steps (7). This will actually be 8 steps including 0. The full voltage will be divided by the number of steps. Example: (5 volts / 7 steps = .71 volts per step)

Operation:

Parameters written in White are live data, Green parameters are targets, parameters written in Yellow are peaks, and blue parameters are freeze frame data. In most cases, touching the peaks will reset that peak. The Boost peak is by episode (this resets every time positive boost is reached).

Warranty:
All BTI Gauges carry a 1 year warranty effective at the time of purchase.

□ This warranty extends only to products distributed and/or sold by BTI Gauges. It is effective only if the products are purchased and operated in the USA. (Within the USA including US 48 States, Alaska and Hawaii.)

□ This warranty covers only normal use of the computer. BTI Gauges shall not be liable under this warranty if any damage or defect results from (i) misuse, abuse, neglect, improper shipping or installation; (ii) disasters such as fire, flood, lightning or improper electric current; or (iii) service or alteration by anyone other than an authorized BTI Gauge representative.

□ You must retain your bill of sale or other proof of purchase to receive warranty service.

□ No warranty extension will be granted for any replacement part(s) furnished to the purchaser in fulfillment of this warranty.

□ Warranty claims must be sent to sales@btigauges.com.