N-QUE FJ40 Digital Dash

Installation and Operation Manual V1.1
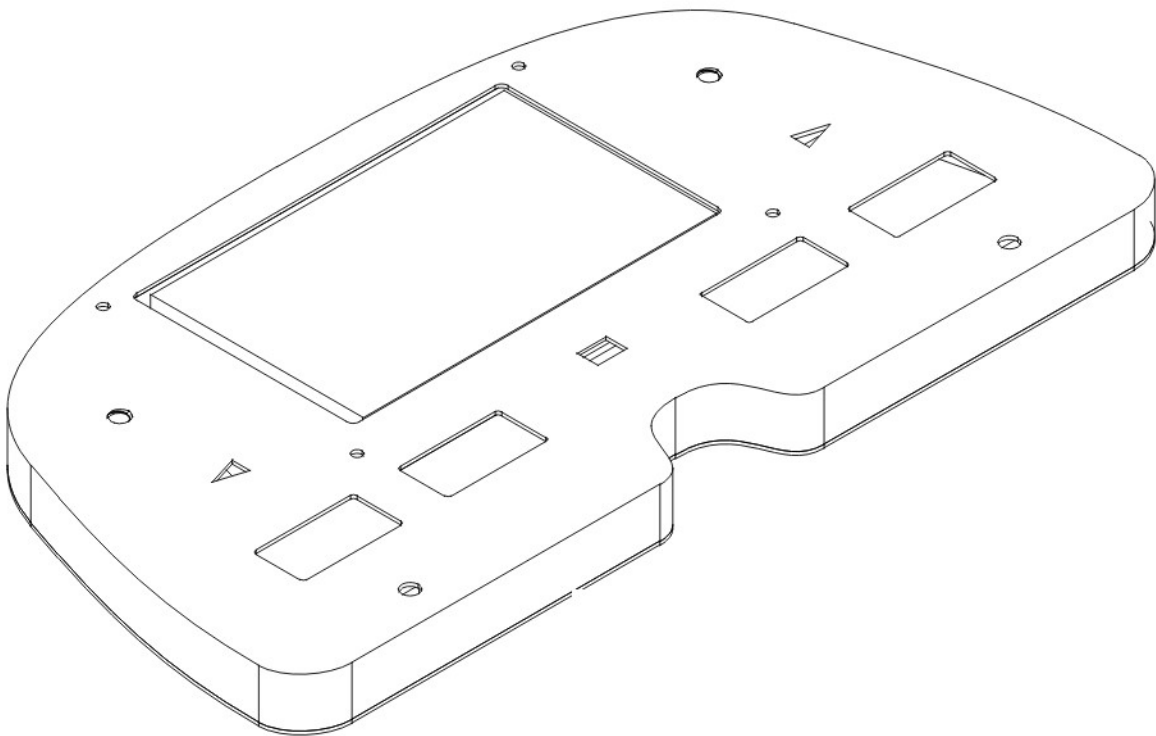
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Safety instructions

WARNING: Before performing any work on your vehicle or connecting to any electrical device, please ensure that there is proper energy isolation(disconnect the battery and power off the engine) and that you are wearing the necessary PPE. All installation tasks must be performed by a qualified mechanic or electrician.

The N-QUE FJ40 Gauge Cluster is a 12V electronic device which has a maximum rating of 24V. Do not exceed this voltage rating when operating the device.

Follow the instructions in this manual to correctly install and operate the N-QUE Digital Dash.

Specifications:

Each N-QUE FJ 40 Digital Dash Cluster comes with the following:

1x Digital Dash with a stainless-steel enclosure featuring:

1. 1 X 5" LCD capacitive touch display
2. 4 X 1.3" OLED Black and White displays
3. 3 X LEDs for L/R Turn indicators, Hi-beams, and Brake lights

1x Central Signal Converter featuring:

1. 1 X VSS Input for Speedometer
2. 1 X Tach input for RPM
3. 4 X Analog inputs for fuel, oil, temp and optional
4. 4 X Digital inputs for L/R turn signal, brake, Hi-beam and 4x4
5. 1 X GPS and Compass for Speed, heading, altitude, atomic time and coordinates.
6. 1 X OBD2 9-Pin connection for CAN Bus connectivity to OBD2 systems(9-Pin to OBD2 Cable required and can be supplied with your purchase).

1 x Toyota VSS sensor for LX450 and transfer cases from the mid 80s to early 2000s

1 x 6' of 22 AWG 4 pin wire for sensor connectivity

1 x Cat 6 cable for Signal Converter to Digital Dash connection

Electrical Specification			
Sensor/Input	**Min**	**Max**	**Notes**
Main DC Power	11V	26V	
VSS input	0V	14V	Pulse input with 4 pulses per revolution
Tach input	0V	14V	Pulse Input with 4 pulses per revolution
Hi-Beam, Left, Right	0V	12V	
Brake, 4X4	12V	0V	
Fuel, Oil, Temp	N/A	0V	All resistance to ground senders supported
Aux Input	0V	12V	
Power Draw	0ma	1.5A	

Digital Dash features:

The digital dashboard features a central **5" capacitive touchscreen** with three different display modes:
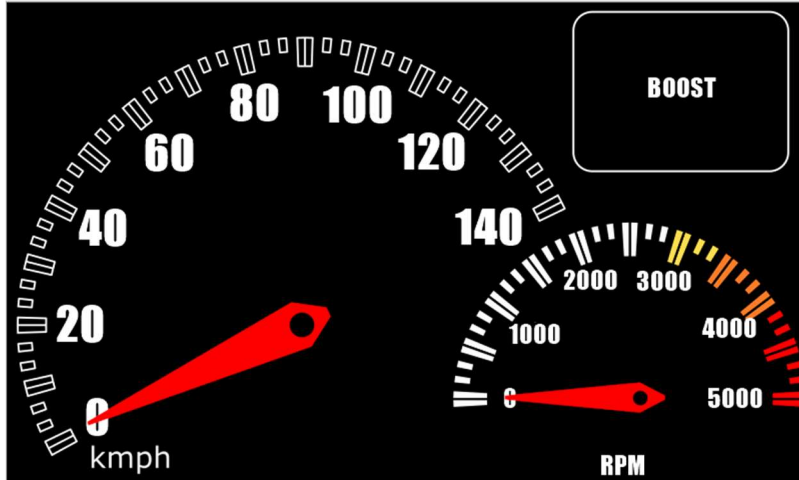

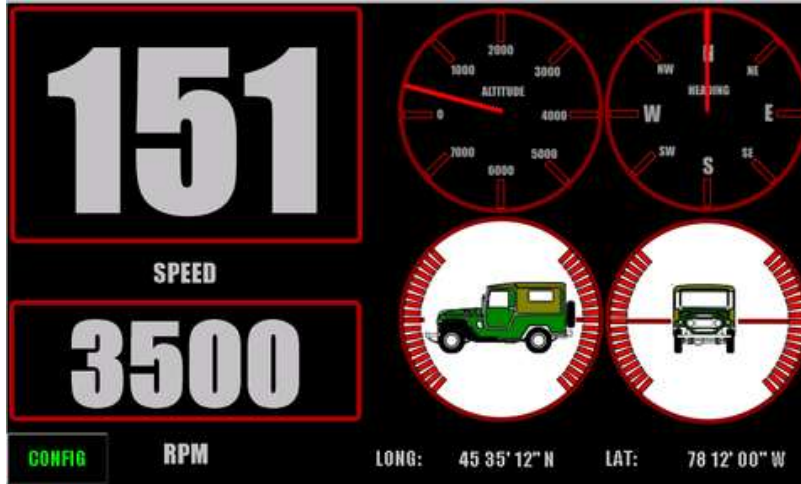*Figure 1 - Analog*

Figure 2 - Digital

Figure 3 - Raw

In addition to this there are four dedicated 1.3" OLED screens for Oil, Water, Fuel and Battery gauges just like the OEM FJ 40 cluster.

The Digital Dash also has three indicator lights for Left/Right, Brake and Hazard indicators.

Enclosed inside the Digital Dash is an accelerometer which is used to provide the vehicles Tilt/Roll on the "Raw" display pictured above.

Finally, the Digital screen allows you to configure and calibrate the sensors readings directly from a graphical user interface.
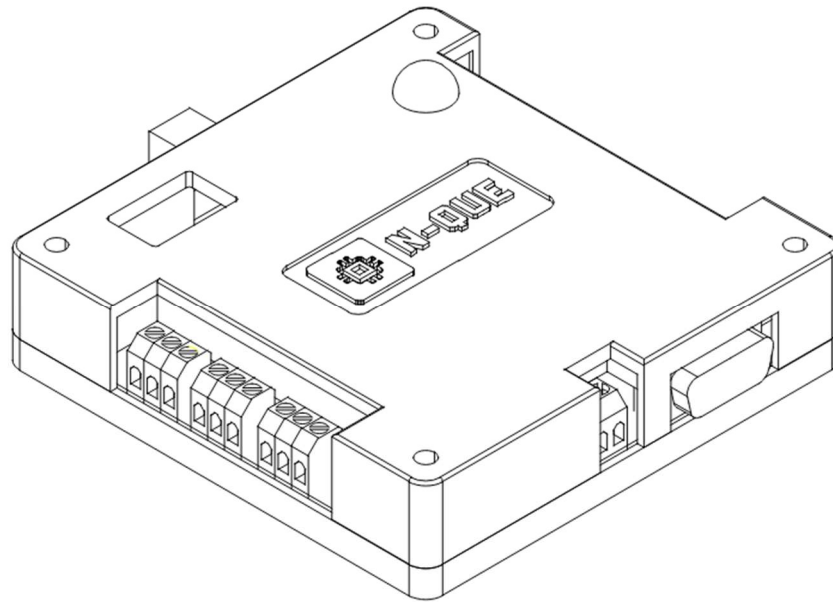
Central Signal Converter:
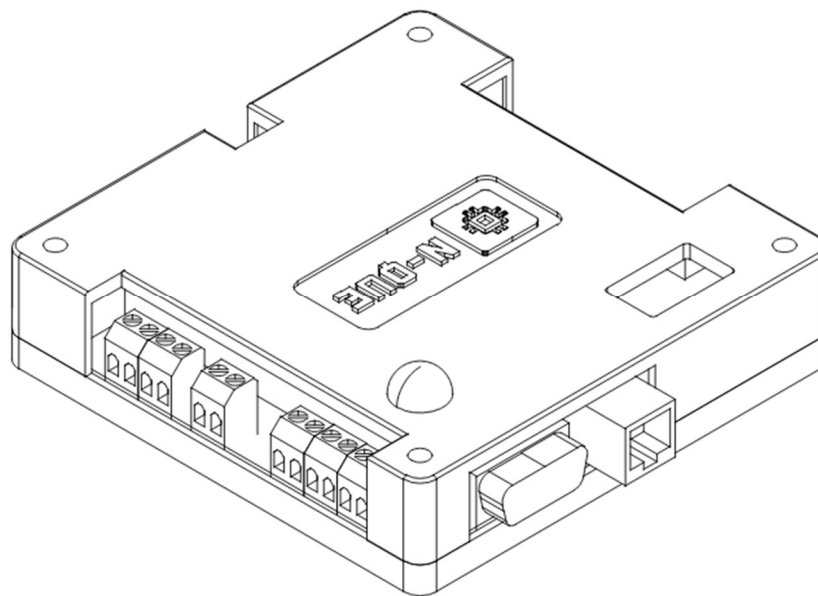

Figure 4 - Front View

Figure 5- Rear View

The Central Signal converter is the main broker which connects the analog and digital signals being transmitted from your vehicle's engine and accessories to the main digital dash. Most

connection from the sender can be wired directly into their respective screw terminals. If your FJ40 is using a 2008+ Engine or an LS swap, it can connect to the converter via an OBD2 port and communicate using the ISO-15765-4 protocol. **NOTE:** This requires a Serial to OBD2 cable which can be requested as part of your purchase. The wiring diagram will provide you a guide on where to connect each sensor wire from your vehicle to the Central Signal Converter. On a stock 3rd or 4th generation FJ40 most of the sensor wires are terminated in a round barrel jack style connector which can easily be reused to connect to the Central Signal Converter. The barrel jack connection is identified in **Figure 8.**

Installation:

Tools required:
1. Philips flathead screw driver
2. M6 size Hex screw driver
3. Multimeter
4. Wire stripper
5. 6-10 feet of 22 AWG electric wire
6. Electrical tape
7. Glue gun with gorilla glue

Installation of the FJ40 Gauge Cluster requires you to first map out and connect all your sensors. These include the following:

- Speed VSS Sensor
- RPM Pulse Sensor
- Fuel Sensor
- Oil Sensor
- Coolant/Engine Temp sensor
- Hazard lights and Left/Right Turn Signal
- Brake Lights
- Optional Sensors:
- 4WD Light
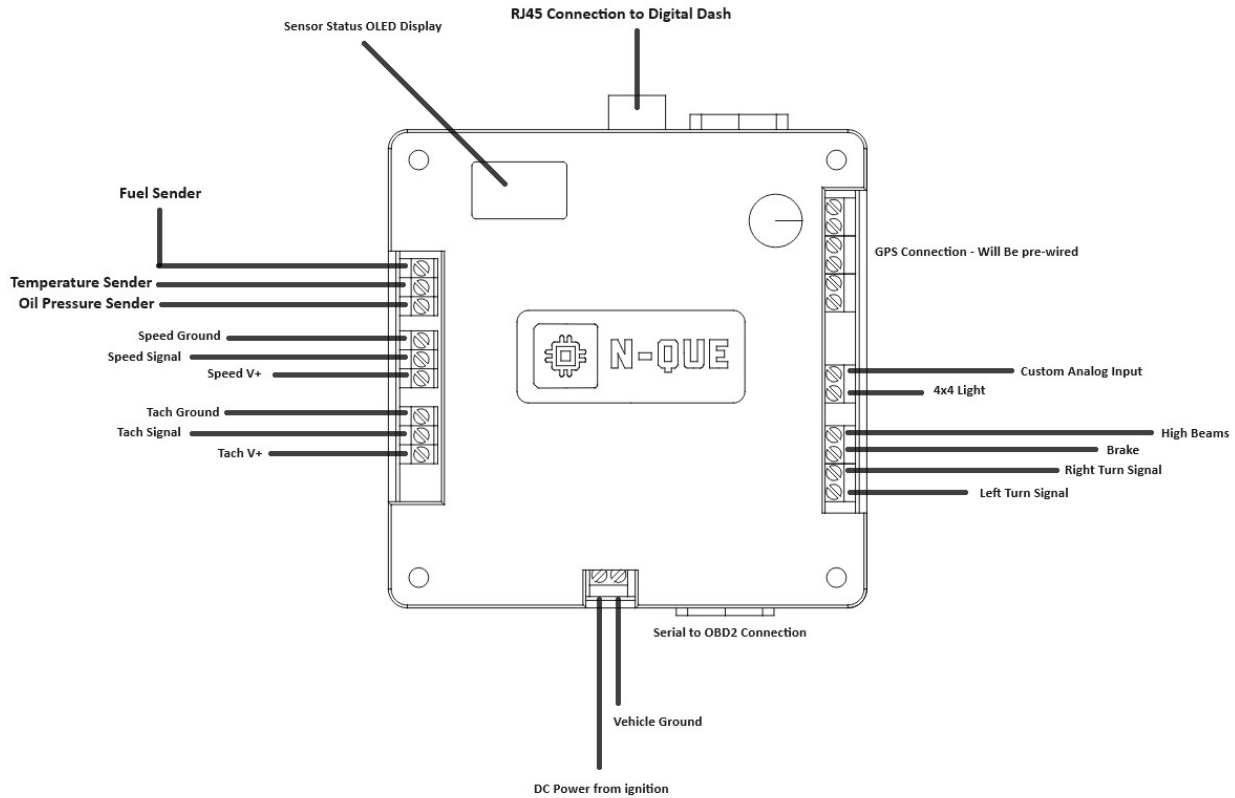- User Configurable Analog Sensor.

Wiring Diagram:

Sensor Status OLED Display

RJ45 Connection to Digital Dash

Fuel Sender

GPS Connection - Will Be pre-wired

Temperature Sender
Oil Pressure Sender

Speed Ground
Speed Signal
Speed V+

Custom Analog Input
4x4 Light

Tach Ground
Tach Signal
Tach V+

High Beams
Brake
Right Turn Signal
Left Turn Signal

Serial to OBD2 Connection

Vehicle Ground

DC Power from ignition

Figure 6 - Central Signal Convertor Wiring Diagram

Speed VSS Sensor:

The cluster is supplied with a Toyota VSS compatible with manual transmissions from the LX 450, 40, 60, 70 and 80 series Land Cruisers. The sensor has a three-pin connection as shown in Figure 1. The Power and GND pin must be connected to the vehicles positive and ground connections whereas the signal pin should be connected to the Speed signal screen terminal (marked "S") on the sender unit. The VSS itself usually fits into the side of the transfer case where the existing speedometer cable is screwed in. To find this location, follow your existing speedometer cable down to your transfer case. The image extracted below from the Toyota maintenance manual may be used as a guide.
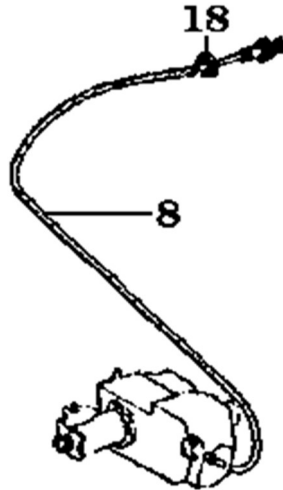
Figure 7- OEM Speedo cable to transfer case connection.

RPM Pulse Sensor:

 Much like the Speed VSS, the RPM Sensor needs to be connected to the tach sensor thread near your bell housing where it can count the teeth on your flywheel for diesel vehicle. For Gasoline/Petrol vehicles, you can pick the tach signal from the ignition coil or from the alternator.   The flywheel RPM sensor sends pulses for each tooth that passes the sensor in each amount of time and this information is calculated and converted to an RPM reading on your dash. The sensor only has two wires, one of which goes to your vehicles ground connection and the other goes to the RPM "S" screw terminal on the digital sending unit.

Fuel, Temp and Oil Sensors:

 The following sensors can be tapped directly into the stock FJ40 wiring harness barrel jack connector which currently plugs into the back of your existing gauge cluster. Figure 8 below has highlights the connections as seen when looking at the unplugged jack with the orientation notch in the center facing down. The empty connection(block holes) are not used for anything.
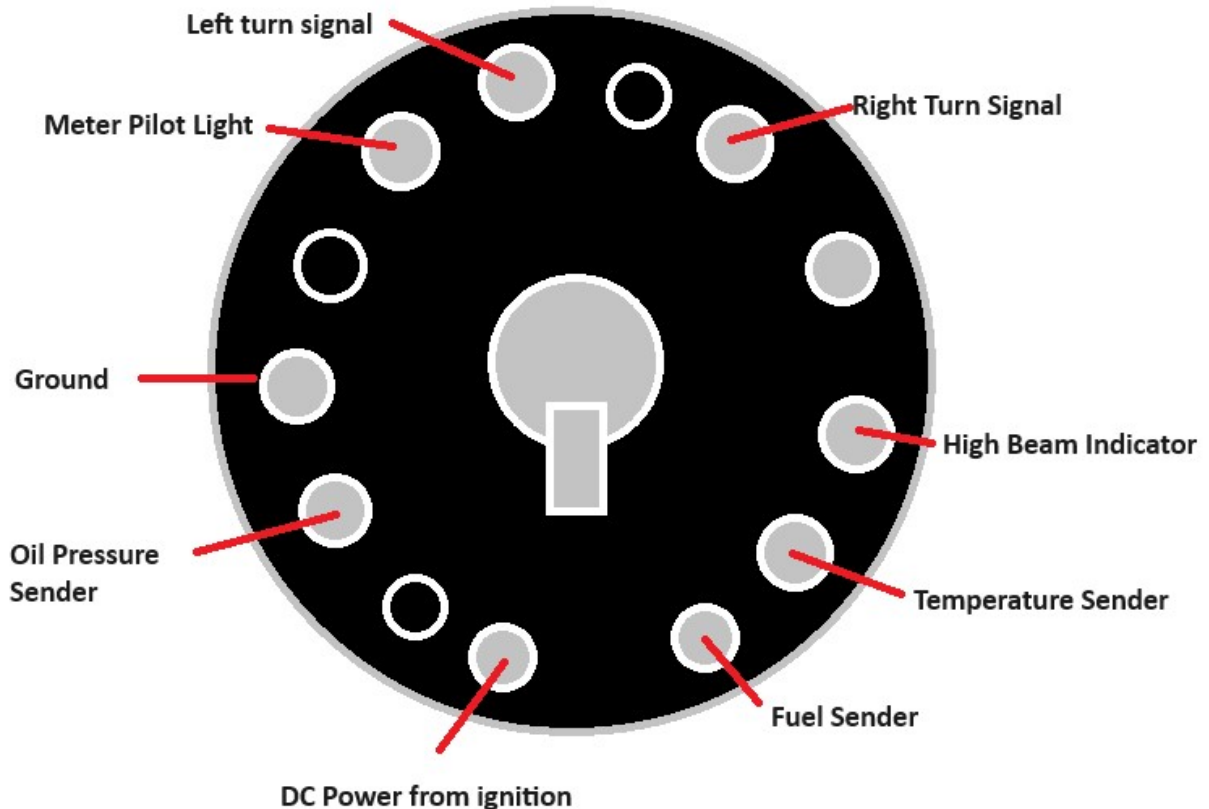

Figure 8 - Stock FJ40 Barrel jack connections

Once you have connected your sensors, do not connect the Central Signal Convertor to the Digital Dash yet. First turn on your ignition and test if everything works. The OLED Display should display the words "START UP" if the power is connected correctly. Once all connections have been checked, it will change to "GO" followed by a screen with 12 rounded rectangles in two rows of six. Each of these rectangles represents a signal from a specific sender. For the speed and Tach signals, you will see the rectangles blink each time a pulse is received. For the

other sensors, the respective rectangles will light up depending on the High/Low value received from the sender.

Digital Dash Installation:

Once you have confirmed that the sender unit is functioning correctly, you can now connect and install your main digital dash. Installing the Digital Dash consists of three steps:

1. **Connectivity:** Connect the RJ 45 Cable to the ethernet port on the rear of the Central Signal Convertor and the other end to the back of the Digital Dash.
2. **Mounting:** The Digital dash can be mounted in place of the stock FJ40 dash using a set of provide M6 bolts to screw the dash into place in the existing hole on the FJ40 dashboard.
3. **Configuration:** Once the Digital Dash is mounted, it needs to be configured to the settings of your VSS, Tach readings and High/Low values of each sender unit that it is communicating with your Central Signal Converter. If you are using a OBD2 connection, you do not need to perform any calibration. Please see the section below to learn more about configuring your dash.

Sensor Configuration:

Once you have connected your Digital Dash, turn your ignition on and wait for the Analog display to show up. If your engine is running, the RPM needle should be bobbing between 500-700 RPM. Click anywhere on the touch screen to switch to the Digital display. Click again to switch to the Raw display. In the bottom left corner of this display is a button marked "Config", click this button and it will take you to the configuration screen.

Figure 9- Configuration Screen

When using the VSS to capture real time speed, you need to provide the diameter of your wheel in inches to better calculate the speed in Kmph. This can be entered by sliding the "TIRE DIAM" slider left or right.

Depending on how you are capturing your Tachometer pulses, you will need to configure the RPM DIV value. If you're capturing from the flywheel, this value will be the number of teeth on the flywheel, the default value is 108 for a 2H engine flywheel. If you're capturing from the alternator or your ignition coil, this value will be between 1 to 8.

The function of each of the controls is described below, but the basic principle if to setup the high and low values that correspond with the reading you are expecting from your respective sensor.

For example, a Fuel sender gives a higher reading when the fuel tank is empty or low because it generates a high resistance to ground. Hence a value between 3000-4000 means your tank is empty whereas a value of 0-100 means your tank is full. To help configure your readings, you can click the "Calibration" button and see the actual reads coming from your senders. If you know that your tank is about ¼ full and you're getting a reading of 3000, then you should Fuel High to 4000 and Fuel Low to 100. Do the same for Oil and Temp.
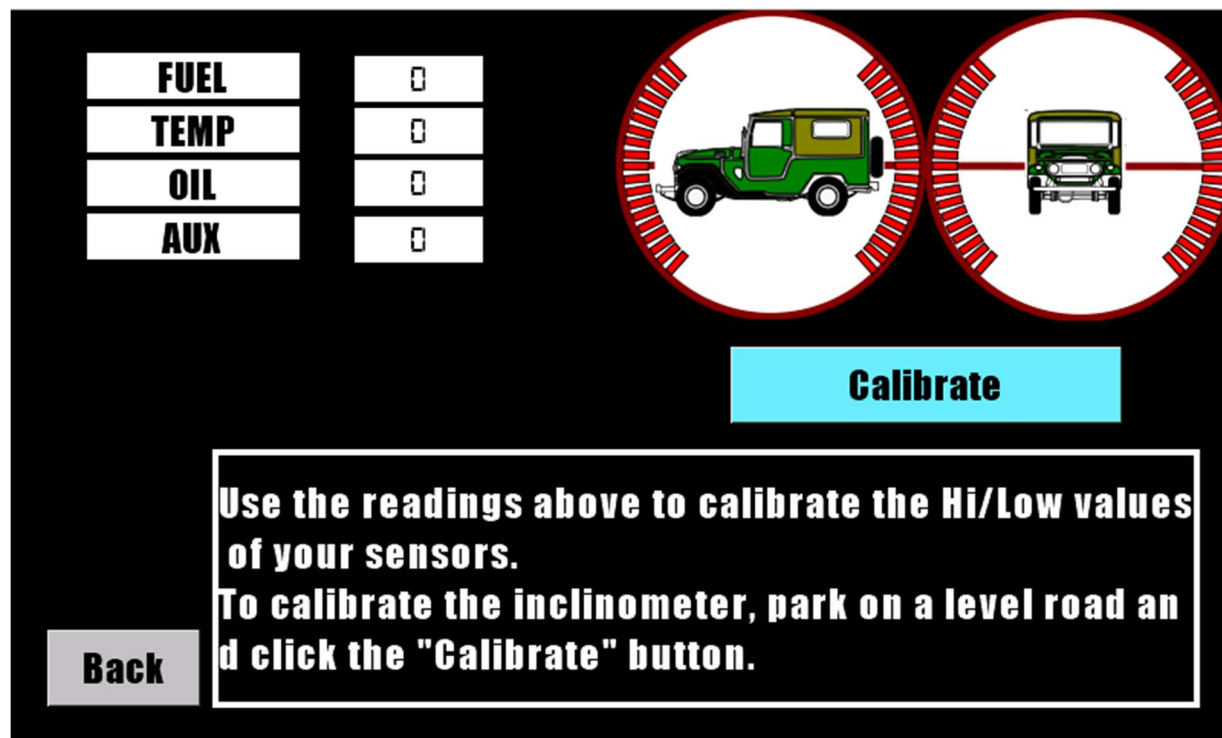

Figure 10 - Calibration screen

Finally, the Digital Dash comes equipped with an inclinometer that needs a one-time calibration **AFTER** the device has been mounted into your dashboard. On the configuration screen, click the Calibration button and at the next screen click "Calibrate", this will begin the calibration process and can take up to 10 minutes. During this time the inclinometer display will keep swinging until the calibration is complete.

Once you have setup the values, you can click "Save" and the system will save the configuration to the EEPROM. The new configuration will be used as soon as you click "Back" to return to the Raw display and will be retained every time your gauge starts up.

GPS Configuration:

There is no specific configuration required for the GPS, simply place the antenna unit is a location where it has clear line of sight to pickup a satellite signal. Once you have a clear signal, you will start seeing updates for the following readings on your screen:

- Time & Date
- GPS Coordinates
- Altitude
- Speed (If and only if the VSS is not connected and you are not using OBD2)

Troubleshooting:

Q: My Central Signal Convertor is not powering up.

A: Make sure that you have connected the power connections as per the wiring diagram. If you reverse the connections, it will not cause any major damage to the unit as it contains a reverse polarity protection circuit. Use a multimeter to make sure the unit is receiving 10V+ via the power leads.

Q: My Digital Dash comes on, but some of the LED screen seems to disappear or flicker on and off.

A: The start up of a vehicle's engine draws a lot of power from the battery, and this can cause a disruption to the OLED displays. Simply restart your engine and this problem should resolve itself as the Digital dash will have enough power in its capacitors to maintain a constant boot up supply on restart.

Q: My vehicle is on a level ground, but the inclinometer is showing them as tilted at a 45-degree angle.

A: Your inclinometer is not calibrated correctly, follow the instructions on Page 13-14 to recalibrate the inclinometer.

Q: I still have questions or need more information to setup my Digital Dash

A: Please contact N-Que at 514-430-9846 or send an e-mail at support@n-que.ca and we will provide you whatever support you need.

Contact
e-mail: support@n-que.ca

web: www.n-que.ca

REFUNDS AND WARRANTY:

This device and its related parts come with a six month warranty. If the device does not operate as per the specifications provided in this document, it may be returned for a replacement. If the defect is reported to the seller within 30 days, it may be returned for a full refund along with proof of original purchase. The cost of shipping and handling to the seller will be paid for by the purchaser. No refunds will be provided after 30 days.

LEGAL INDEMNITY CLAUSE:

Use this device at your own risk. By purchasing and operating this device, you (The Purchaser) agrees to indemnify and hold harmless N-Que Technology Services (the seller), its agents, employees, and affiliates from and against any and all claims, damages, losses, and expenses arising out of or in connection with the use, misuse, or inability to use the electronic device sold by the seller, including but not limited to personal injury, property damage, and any claims or actions arising from any infringement of any intellectual property rights. The purchaser assumes all responsibility and liability for any injury or damage caused by the electronic device, and the seller shall not be liable for any direct, indirect, incidental, special, or consequential damages resulting from the use or inability to use the electronic device.

The purchaser also agrees to comply with all laws and regulations applicable to the use and sale of the electronic device, and to indemnify and hold harmless the seller from any and all claims, damages, losses, and expenses arising from any failure to comply with such laws and regulations.

This indemnity clause shall survive the termination or expiration of any agreement or transaction between the purchaser and