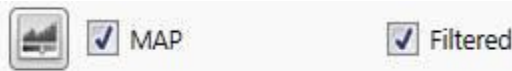


MAP Sensor

Settings and Calibration



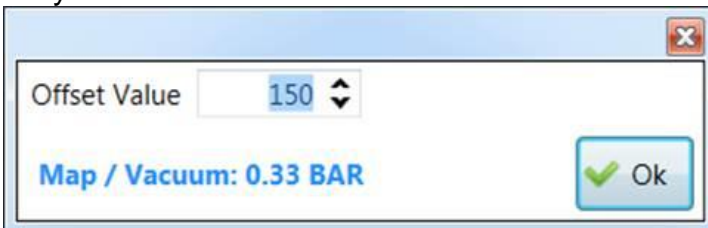
This sensor measures the MAP (Mean Absolute Pressure) in the intake plenum. This is the main sensor for the ECU to calculate the fuel amount which is injected into the engine at different conditions and load requirements. This sensor, however, does have its shortcomings when it comes to engines with overlap cams where the intake vacuum falls away at low RPM's. Then the ECU need to rely on other type sensors like TPS or Mass volume in conjunction to air temperature, altitude and RPM's. For multiple throttles this sensor also is inadequate but there is a feature that the ECU can use to remedy this. (See multiple throttle bodies.)



This 'calibrate' button will only appear when the custom sensor is selected.



Only custom sensors can be calibrated. Click on it to adjust calibration.



If you click calibration this block will appear. The offset value will change the MAP reading. Adjust it to read the same as the barometric pressure of your altitude above sea level. **Note:** Remember to take temperature into account.



The Filtered checkbox can be used to smooth an erratic map sensor signal. It will average the current sample with the previous sample. The down fall is that it may create a minor flat spot under blip conditions. This needs to be corrected with the accelerator pump feature.

The sensor must to be set up correctly by selecting the Type and range under Engine Configurations.



Calibration is done in the firmware.

If the sensor is not used, uncheck it to free up valuable processor time.

Sensor Description

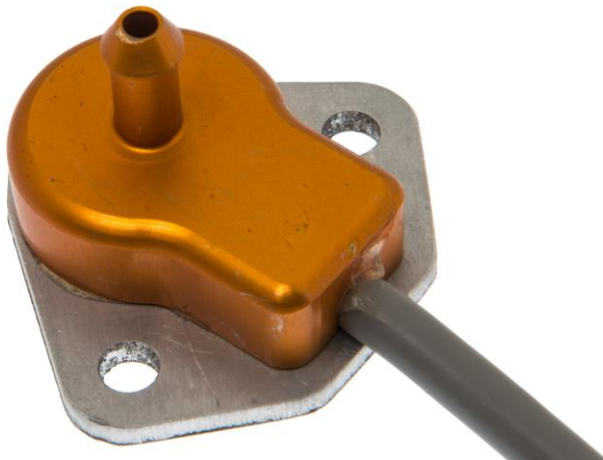
The Mean Absolute Pressure (MAP) sensor provides instantaneous manifold pressure information to the ECU. The data is used to calculate air density and determine the amount fuel required for optimum combustion. This sensor influences also the advancement or retardation of ignition timing. This sensor is a reliable replacement for the Mass meter type sensors.



The Plastic Housing sensors come in 1.1 Bar version or 2.5 Bar version. Due to popularity of the 2.5 Bar for turbo engines, the supply and demand for 1.1 Bar increased its price and availability became scarce. Orion2 is mostly supplied with the 2.5 Bar sensor. The 2.5 Bar is also used if you use an external Altitude sensor.



This Surface PCB mount sensor model comes in 1.1 Bar, 2.5 Bar, 3 Bar and 4 Bar versions. They can be soldered on the PCB of Orion2 and be used as a MAP sensor or Altitude sensor. The 3 Bar sensor is the most popular and is used as the Altitude sensor on PCB.



This Aluminum model comes in 1.1 Bar, 2.5 Bar, 3 Bar and 4 Bar versions. It also use the surface mount sensor above.

Operation

The Pressure Sensor requires 5 volts DC which is supplied to the sensor by the ECU. It then generates a signal from 0 to 5 volt equivalent to the pressure range of the sensor.

Sensor Location

The manifold take off point should be at a position that best represents the average manifold pressure with minimum pulsations. A filter can be fitted inline to reduce manifold pressure pulsations. Do not T-off idle or brake booster fittings etc. The take-off pipe must be direct to the manifold. When mounting the MAP sensor, face the intake port down and mount it above the take-off point. This will prevent moisture to build up so it can drain out. Ensure that the hose runs downhill all the way to the manifold if possible.

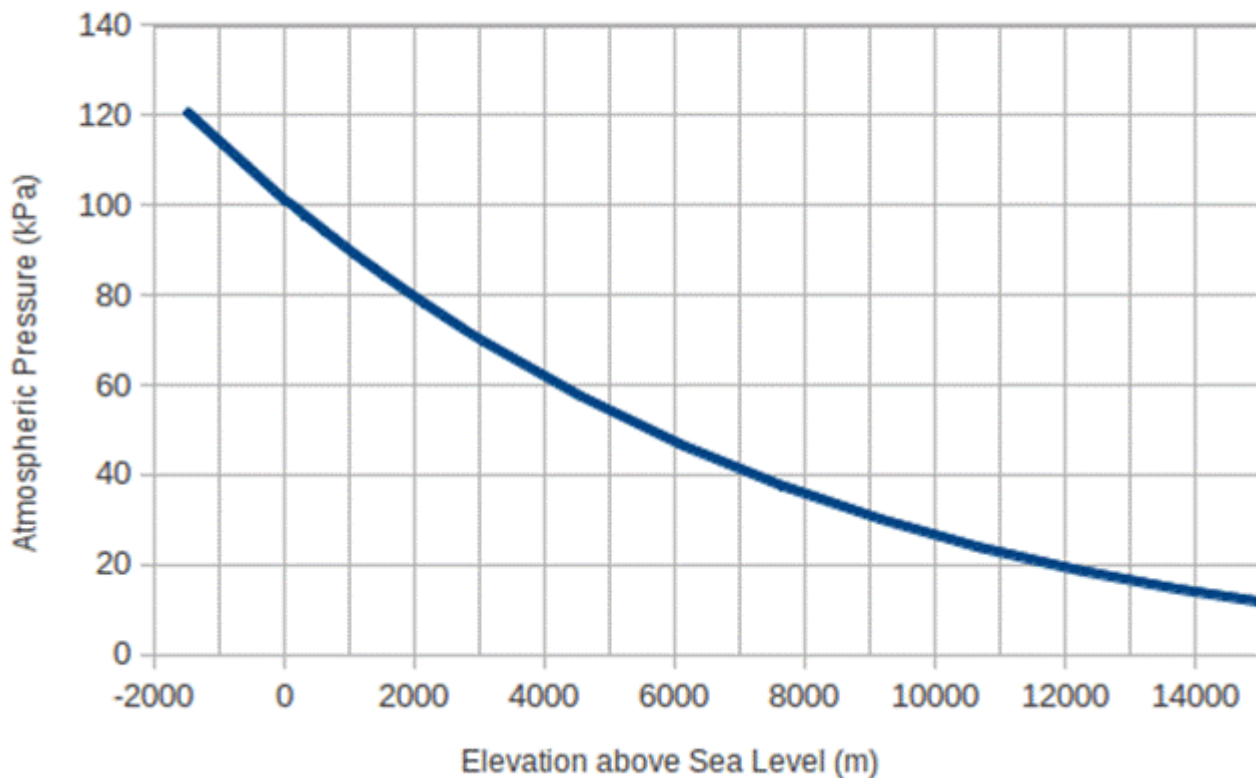
MAP sensor types

The MAP sensors available from Spitronics is the NXP series sensors that come in three packaged styles; Raw Surface mount Sensor for PCB Installations, Sealed plastic enclosure or Aluminum machined enclosure. The MAP sensors are rated at 1.1 bar, 2.5 bar, 3 bar and 4 bar. Be sure to order the correct map sensor for your application. In some cases, the vehicle's existing MAP sensor can be used, ensure that you have the sensor wired and calibrated correctly.

Map Sensor Calibration

The MAP sensor is pre calibrated to the specifications of the 4 models. If you use another map sensor you may select custom and calibrate it yourself. Make sure you use the correct altitude pressure value from your altitude level in order for this to function correctly. Calibration needs to be done with the ECU switched on, but the engine must not be running.

Elevation and Atmospheric Pressure



Sample Sensors and Pin-Outs



Ford 1 Bar
1 - 5v +
2 - Signal
3 - Ground



MPX4115 1bar
1 - Signal
2 - Ground
3 - 5v +



MPX4250 2.5bar
1 - Signal
2 - Ground
3 - 5v +