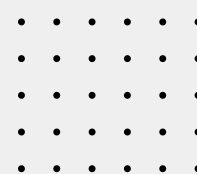


# **LDperformance**

## Electronic Boost Controller

# **Manual**



# Table of content

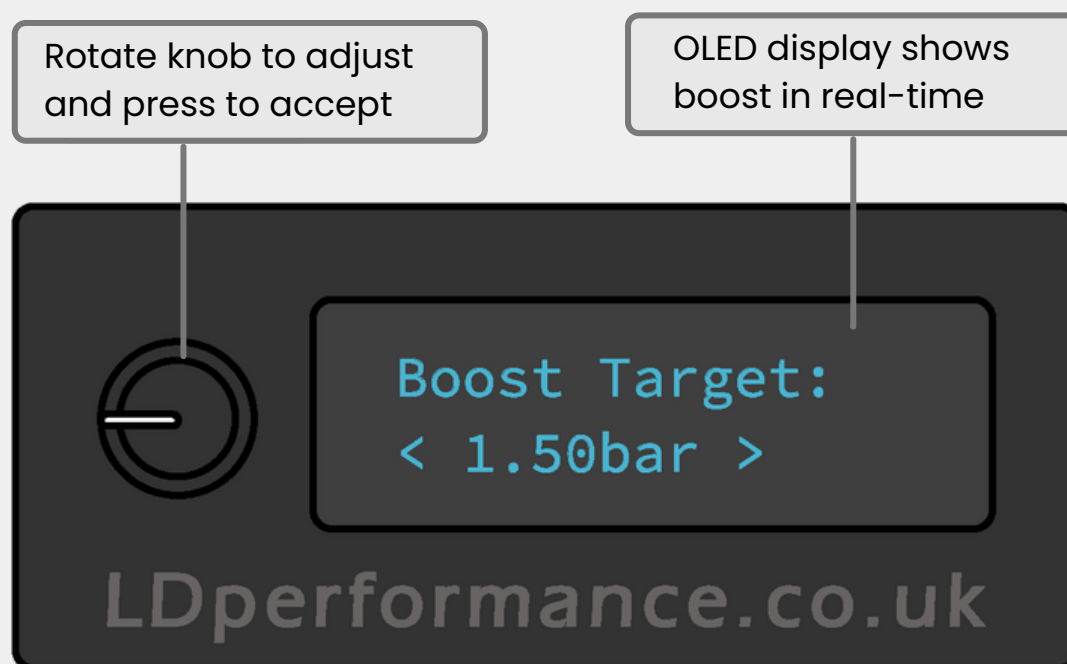
Safety Advice	03
Product description	03
Features	04
Connector Pinout	05
Solenoid installation	05
Internal Wastegate	05
External wastegate	06
Wastegate spring pressure	07
MAP sensor hose	07
Wiring diagram	07
Basic operation	08
Hi/Lo Boost settings	09
Boost by RPM	10
Advanced menu	11
Reset to default settings	12
Switch between Bar and PSI	12
VNT option for some diesel engines	12
External wastegate control with dual 3 port solenoids	13
Using external map sensor	14



## Safety advice

Please use this manual at your own risk. LDperformance is not responsible for any damage or injury. All LDperformance products are not to be used on public road. Increasing boost pressure can increase power dramatically but may also cause damage to the engine and other components. Do not operate the product while driving. Please seal all wire connections to avoid short circuits or fire. Do not install product close to ignition coils.

## Product description

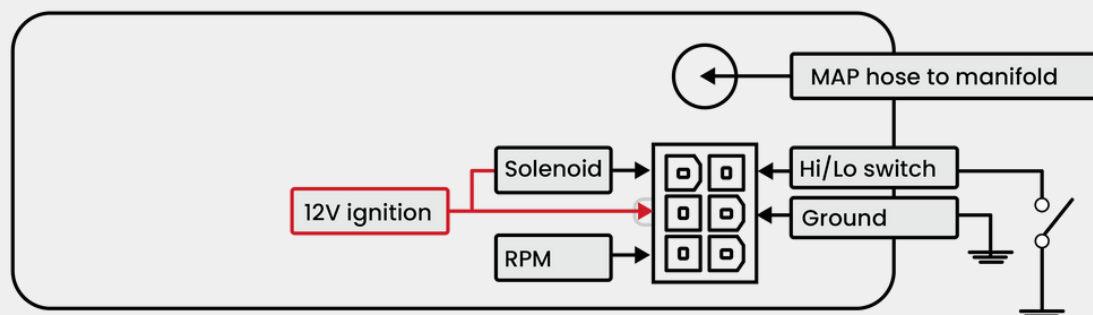




## Features

- ✓ High-visibility OLED display shows boost in real-time
- ✓ Internal MAP sensor for up to 3bar boost
- ✓ Adjustable DUTY and Target Boost
- ✓ Boost by RPM
- ✓ Fast response and no target overshooting
- ✓ Hi/Lo boost settings
- ✓ Overboost safety protection
- ✓ Shows current boost and duty on screen
- ✓ Works with 3-port solenoid valve
- ✓ Size: LxHxThickness: 118x44x17mm

# Connector pinout

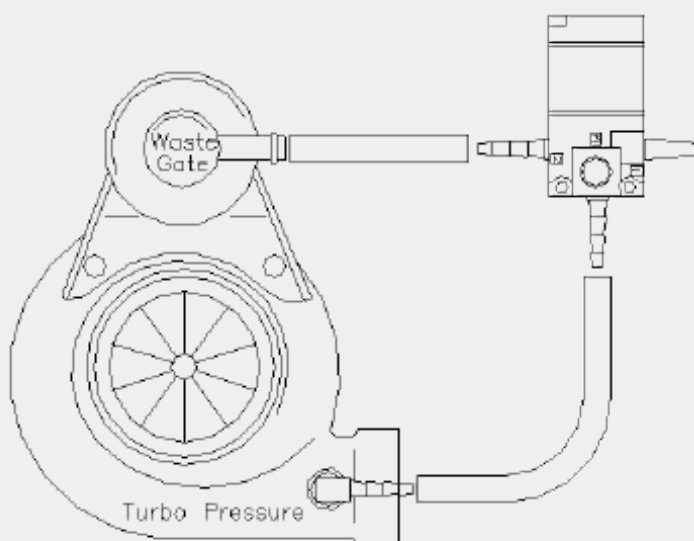


## Solenoid installation

If you have a factory fitted boost solenoid then it might work with the LDperformance boost controller just fine. Anyways, this has not been tested so it is recommended to use the supplied 3 port solenoid for best results.

In that case the factory boost solenoid can be left attached to its connector to keep the ECU happy. Of course all hoses from it would need to be removed.

## Internal Wastegate

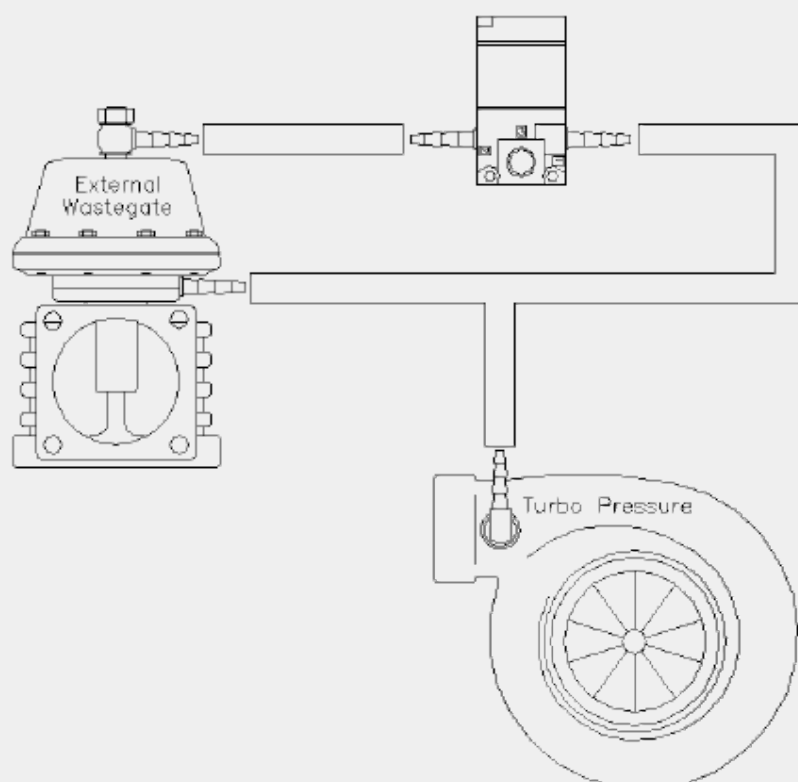


### Solenoid ports:

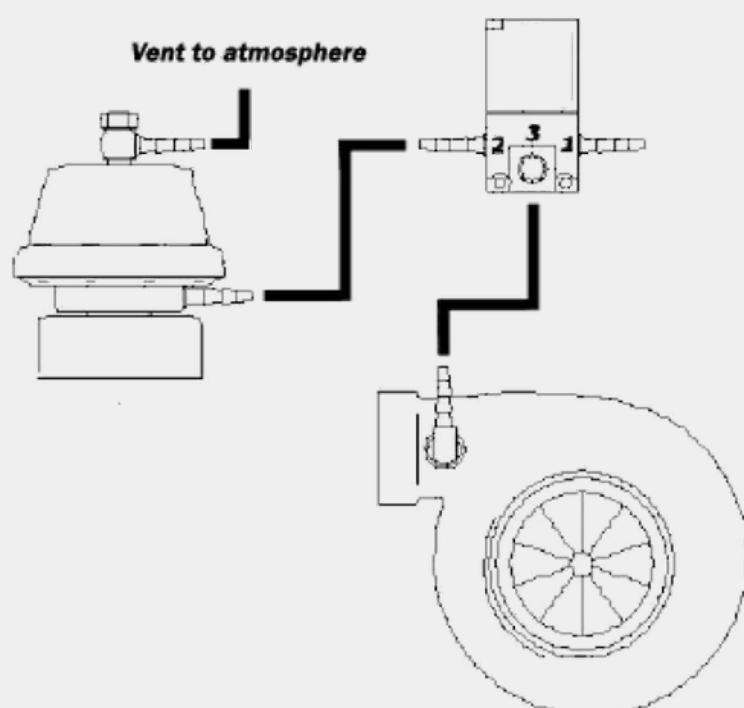
- 1 – Filter to atmosphere
- 2 – Wastegate
- 3 – Turbo pressure

Make sure the nut on the air filter is loose so air can get out easily.

## External Wastegate



Option 2 (not recommended):



## Wastegate spring pressure

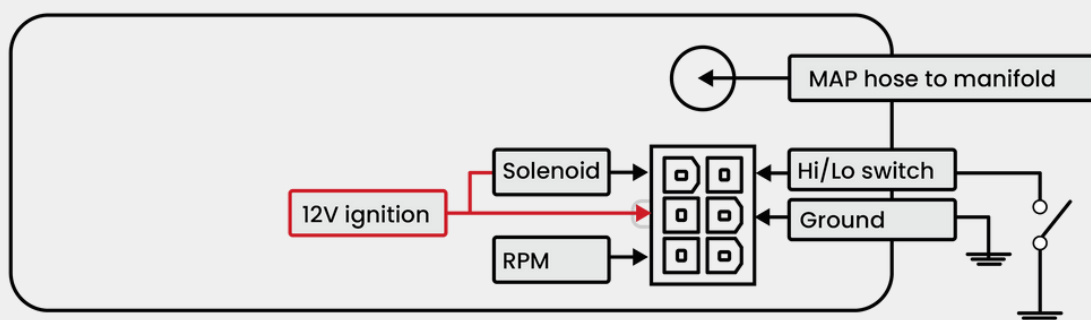
When using an electronic boost controller it can only increase the boost pressure and not decrease it. So if you have manually tightened the wastegate to achieve higher boost then you should put it back to below the lowest pressure you will need.

A way to verify this is to unplug the connector from the boost solenoid and make a test run. This will be the basic lowest boost pressure set by the wastegate spring. The controller will then be able to increase it by increasing the DUTY setting of the Controller.

## MAP sensor hose

The boost controller needs a vacuum hose connected to the intake manifold to read Boost pressure/vacuum. It will then display the reading on the screen and use it to effectively control the boost level.

# Wiring diagram



On the back of the unit is a 6 pin connector.

### Power wires:

- Middle left- 12V power – Connect to a 12V power source which is active when the ignition is ON.
- Middle right – Ground – Connect to a ground wire or chassis.

**Solenoid connection:**

- Top left – Control signal to Solenoid valve
- Middle left – 12V power

The solenoid uses the same 12V which also powers the Controller.

**Additional functions:**

- Hi/Lo Boost mode setting – connect an external switch to ground to change between High and Low boost settings.
- RPM from tachometer output or ignition coil (5v signal)

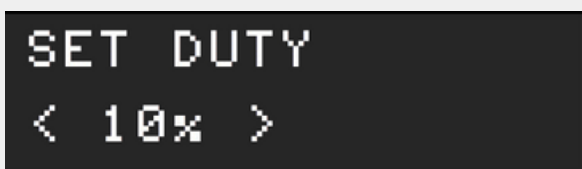
## Basic operation

When ignition is switched on the Controller will show the main screen:



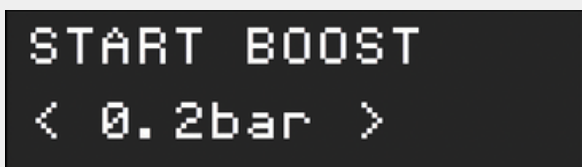
The main screen shows current boost level in bar. It is basically a gauge.

Use the knob to enter the main menu by pressing it. The menu has 3 items:



Values go from 0% to 100% where 0 is lowest boost possible and 100% is highest boost possible. Start increasing DUTY to get higher boost. Note that increasing DUTY a little bit may not do a great deal of difference in boost, or the other way

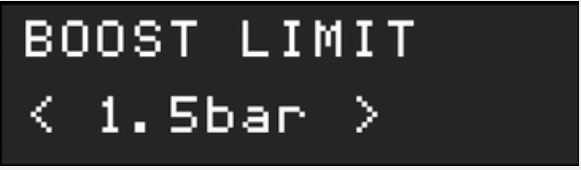
around... It is not a linear relationship and it depends on the actual turbo, wastegate, vacuum lines, etc... Press the knob again to go to the next setting:



START BOOST sets the boost level at which the solenoid will start operating. Until this point the wastegate will be fully shut to aid in lag reduction. When the pressure goes above the START BOOST the configured DUTY will be applied.

Once you have tuned DUTY you can use START BOOST to reduce lag. By increasing the value closer to the actual boost level, it will keep the wastegate shut all the way until that point. Going too much though, will cause an overshoot.





BOOST LIMIT  
< 1.5bar >

BOOST LIMIT is a safety feature. The controller will switch off the solenoid if the pressure reaches this level. It will also display on the screen that the boost limit has been hit. Set it to a value higher than the target pressure.

These 3 settings are enough to get the boost controller to work. Make sure you understand them and get decent results from the boost controller.

All settings are automatically saved in memory and loaded on the next ignition cycle.

## HI / LO Boost setting

An external switch has to be connected to switch between the two settings.

Normally, if no switch is connected all settings described above are part of the LO boost setting.

When a switch is connected and activated (connects the wire to ground) the unit will instantly switch to HI mode.

All settings (DUTY, START BOOST, BOOST LIMIT, etc...) are also available in HI mode and can have different values. This is like a second boost controller.

The modes can be switched at any time and the corresponding settings will be displayed and applied instantly.



HI 1.20

The main screen will show HI when this mode is active.

# Boost by RPM

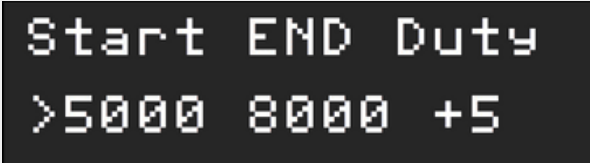
If for some reason the boost level drops with higher revs the boost controller can compensate by increasing DUTY after a set RPM level.

By default this feature is disabled.

To enable it connect RPM signal to the device and:

1. Turn off boost controller
2. Press and hold the knob and turn ignition on.
3. Adjust the RPM shown on screen to the correct value at the moment (engine running).  
Rotating furthest to the left will turn off the RPM feature.
4. Press the knob to confirm correct RPM and exit menu

Then a new menu will have appeared:



```
Start END Duty
>5000 8000 +5
```

**Start** – The RPM level when DUTY will start increasing – set it to the RPM level where boost starts dropping.

**END** – The max RPM where DUTY will reach its new higher maximum.

**Duty** – The max additional DUTY.

Example:

The engine is making 1 bar boost but it drops to 0.6 at 8k RPM. DUTY is set to 60%  
After enabling RPM compensation with the above settings, after reaching 5k RPM the controller will start increasing DUTY from 60% up to 65% (+5% as above) at 8k. This results in higher boost at higher RPM!

# Advanced Menu

Advanced menu allows access to the more advanced features of the boost controller. It can automatically adjust DUTY within certain limits in order to get constant boost in the whole RPM and gear range.

Long press the knob to enter the menu.



BOOST TARGET  
< 1.5bar >

BOOST TARGET is where you set what boost pressure is required. If you decrease it all the way to the left it changes to DISABLED which is the default setting and disables the automatic DUTY feature.



MAX CORRECTION%  
< 10% >

The maximum change the controller can do on the DUTY setting from the simple menu. So if DUTY is set at 60%, the controller will adjust it from 50% to 70% max to get a constant boost as specified in the target above.



PID

The default settings here should work well for most. Only change these if you understand how PID works. More about this on Google.

Automatic duty should only be used after tuning the basic settings. It is supposed to only compensate for small changes in boost and provide the final fine tuning to get constant boost, fast spool-up and no overshooting.

**Use it only if you need constant boost! If you need higher boost at high RPM disable it and use the Boost by RPM feature above.**



## Reset to default settings

1. Turn off boost controller
2. Press and hold the knob and turn ignition on
3. "RPM" appears, press again to continue
4. "More settings" appears, press again to continue
5. "Restore def?" appears, press again to confirm

Doing a restore to default settings will switch from BAR to PSI. SO if you need to use BAR do reset to default settings again.

## Switch between BAR and PSI

Just do a "reset to default settings" as described above.

## VNT option for some diesel engines

To enable the VNT option:

1. Turn off boost controller
2. Press and hold the knob and turn ignition on
3. "RPM" appears, press again to continue
4. "More settings" appears, press again to continue
5. "Rotate until you find the VNT? option and press it

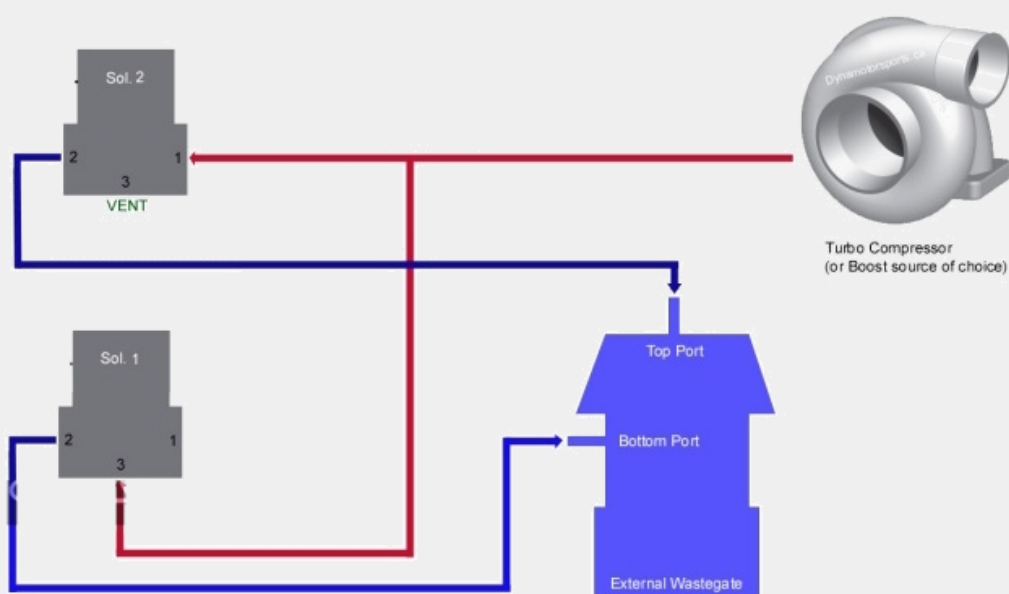
To change back to non VNT do the same process once again.

What this mode actually does is keep the solenoid at 100% until boost level reaches "start boost" then it applies the duty cycle.

# External wastegate control with dual 3 port solenoids

Usually having an internal wastegate limits the maximum achievable boost pressure to 2x the gate spring pressure.

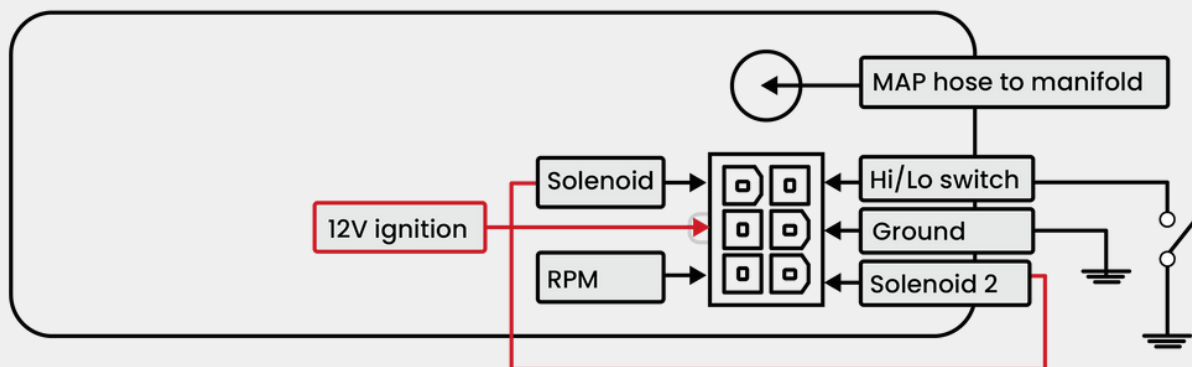
Having an external wastegate allows for higher boost than that but only if its connected correctly.



In this case at minimum boost setting both solenoids will be off and all the boost pressure will go to the bottom port while the top port will be vented to the atmosphere – same as before. But at maximum boost pressure both will be on so the bottom port of the wastegate will be vented to the atmosphere and not seeing any boost, while the top port will see all of the boost! That better than the previous option but what is even better is that by controlling the two solenoids in stages we can achieve a lot more resolution and precision!

How can we do that easily with the LDperformance electronic boost controller?

Simply connect the second solenoid (the one connected to the wastegate top port) to the boost controller like this:

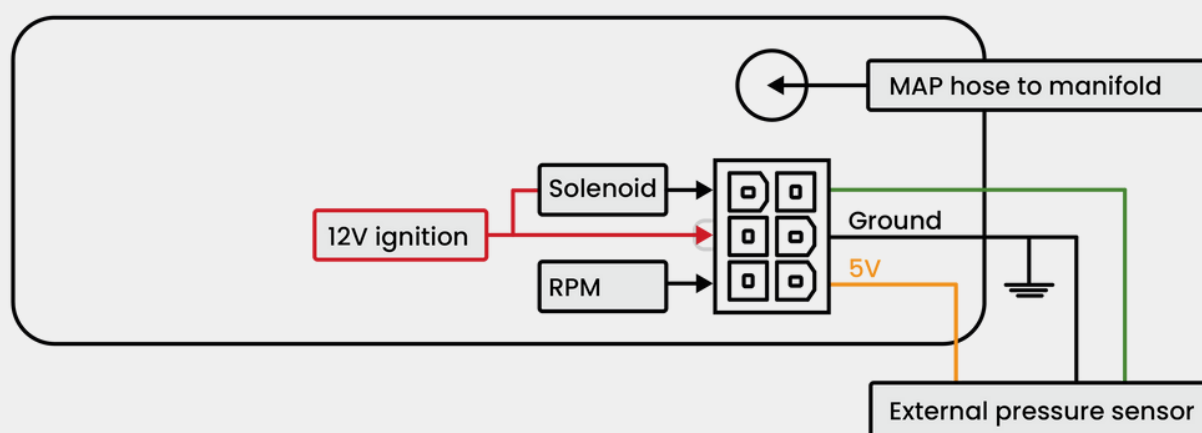


The boost controller will automatically detect a second solenoid and will allow setting Duty up to 200. So basically it works in exactly the same way as before when using duty 0-100% but now duty can be increased up to 200 where the second solenoid starts working. As simple as that. All additional settings for example Boost by RPM or Boost Target will keep working and allow duty up to 200.

## Using external map sensor

If more than 3 bar boost pressure is needed (4bar absolute) an external pressure sensor can be connected to the boost controller.

### Wiring diagram:



The pressure sensor is 0-10bar (0.5V - 4.5V) available here:  
<https://ldperformance.co.uk/product/oil-fuel-pressure-sensor/>

**How to enable the external sensor:**

1. Turn off the boost controller
2. Press and hold the knob and turn ignition on
3. "RPM" appears, press again to continue
4. "More settings" appears, press again to continue
5. Scroll left or right and choose "Ext map"

Please note that this option can't be used together with the dual solenoid option.

