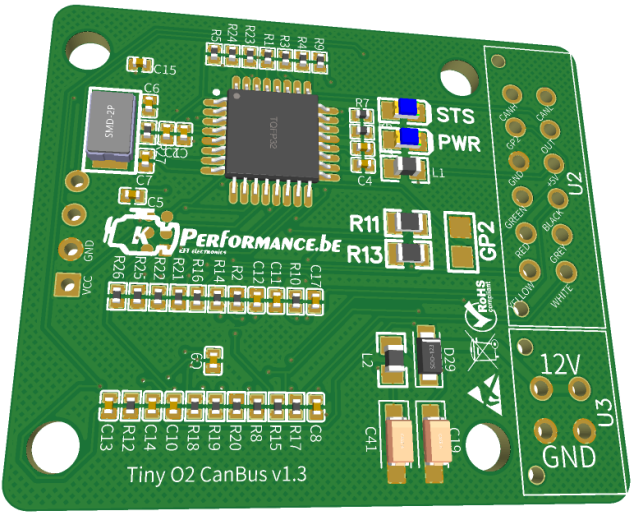
Tiny O2 Controller



Software,drivers and latest info can be downloaded at

www.Kperformance.be

Warning

- Do not connect or disconnect the Lambda Sensor while powered, only do so when unpowered.
- The Lambda Sensor gets very hot during normal operation, be careful when handling it.
- It takes roughly 30 seconds to 2 minutes to warm up the sensor. Once the sensor is warmed up, engine start could create condensation in the sensor, this may cause thermal shock and damage the sensor. It is best to power off a power source that is “live” when the engine starts.

Package Contents

Tiny Wideband should include the following Items:

- 1x circuit board with soldered surface mount components
- 2x MicroMolex connectors
- 16x MicroMolex receptacles
- 1x 3d printed case and cap (optional)
- 1x OLED screen(optional)

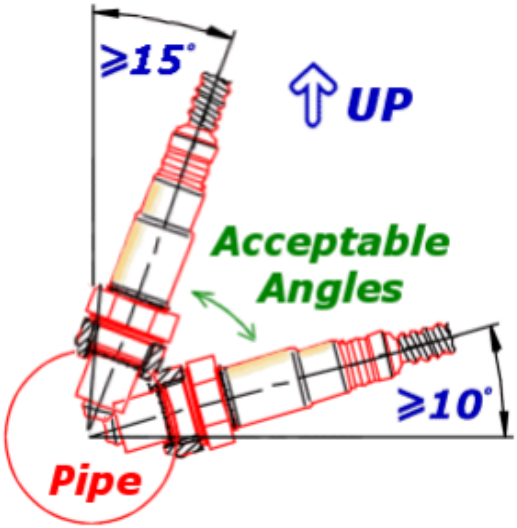
Electrical connections

U2	Color	Function
YELLOW	YELLOW	LSU YELLOW
WHITE	WHITE	LSU WHITE
GREY	GREY	LSU GREY
RED	RED	LSU RED
BLACK	BLACK	LSU BLACK
GREEN	GREEN	LSU GREEN
GND		GROUND
+5V		EXTRA +5V SUPPLY MAX 250mA
GP2		EXTERNAL GROUND ACTIVATING
CAN H		CAN bus High
CAN L		CAN bus Low
OUT		ANALOG OUTPUT 0-5V

U3		Function
12V	2X	INPUT VOLTAGE 8-18V
GND	2X	GROUND

Sensor Exhaust Installation

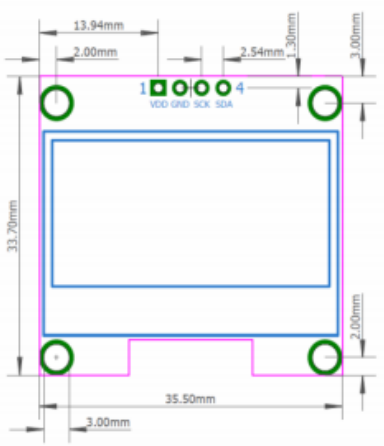
- The Lambda Sensor should be installed between the 10 o'clock and the 2 o'clock position, less than 60 degrees from vertical, this will allow gravity to remove water condensation from the sensor.
- For all Oxygen sensor installations the sensor must be installed before the catalytic converter.
- Avoid running the sensor to hot!
- Never leave an un-powered sensor in the exhaust system



O-LED Display(Optional)

1.3 and 0.96 I2C are supported without software changes.

Double check VCC&GND pins on aftermarket OLED-screens! Low budget/quality screens can cause freeze and hang up of Tiny O2 Controller!



Initial stand-by screen will show:

- Icon Sensor connection
- Icon GP2 ground status (GP2 not grounded= NO START)
- Icon Battery voltage

After succesfull start, the screen will show:

- Temperature value
- Input voltage
- Lambda value

Starting and operating

Linear output settings:

0V = Lambda 10.20 = AFR 22.50

4V = Lambda 0.650 = AFR 9.50

Starting of the controller can be done by grounding "**GP2**" (solder bridge on PCB) or external start grounding on molex connector, with customer requirements setting.

Ie:start lambda controller only after engine starts. (programmable output function within stand-alone ECU)

Not grounding of pin "**GP2**" will result in a standby controller! Blinking LED.

Operational led Status

LED	Status	Function
STS	Fading in	Heating sensor status
PWR	Solid	
STS	Blinking Slow	Operational measuring status
PWR	Solid	
STS	Blinking FlipFlop	Sensor disconnected/Error
PWR	Blinking FlipFlop	
STS	OFF	Power low
PWR	Blinking	

PCB Layout

For easy integration we'll share the layout so the controllers can be integrated in to own projects.

CAN-bus Setup

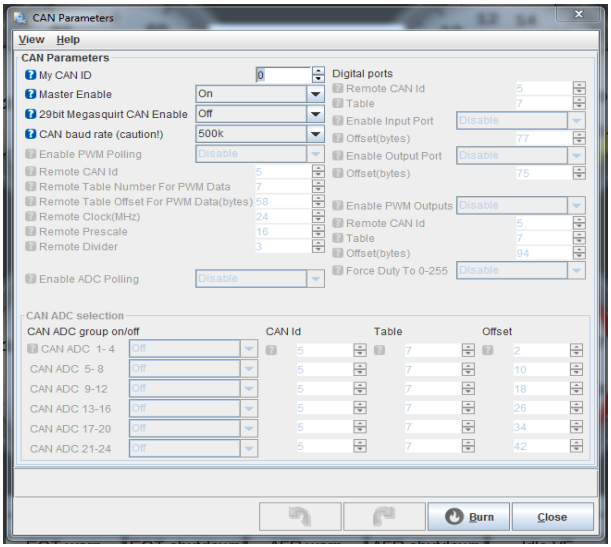
Firstly connect CAN-H & CAN-L wires/connector to your ECU.

The TinyO2 CAN-bus data:

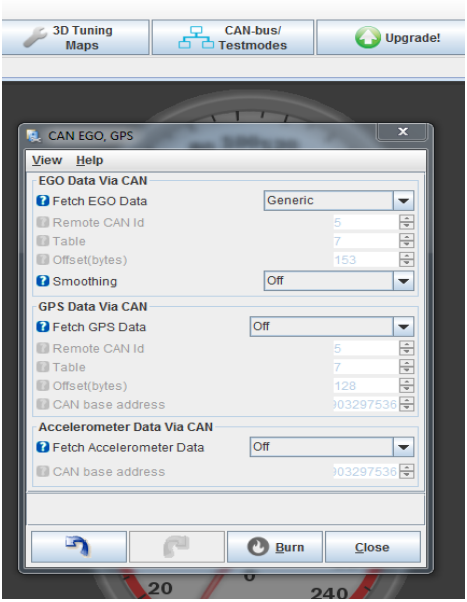
Item	Function	Detail
CAN Speed	500 Kbit	Default Speed
CAN ID	16	CAN-Bus ID
CAN DLC	8	Data length
Byte 0+1	Lambda out Megasquirt constrained	Value range 500-1023
Byte 2+3	Temperature LSU	Value in degree C°
Byte 4+5	TinyO2 statuses	0-1-2-4-5-6 0:Standby 1:Heating Cycle 2:Measering Cycle 4:Sensor Error 5:Low Power 6:GP2 not grounded
Byte 6+7	Lambda out Full Range	Offset 500 Resolution 1000 Multi 1 Dev 1

Megasquirt Setup

Activate general Canbus under CAN Parameters:

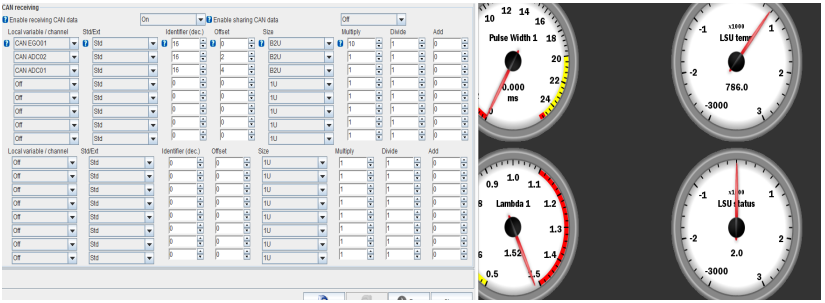


Under **CAN-Bus/Testmodes** activate EGO Data on “Generic”



Under **CAN-Bus/Testmodes → CAN Receiving:**

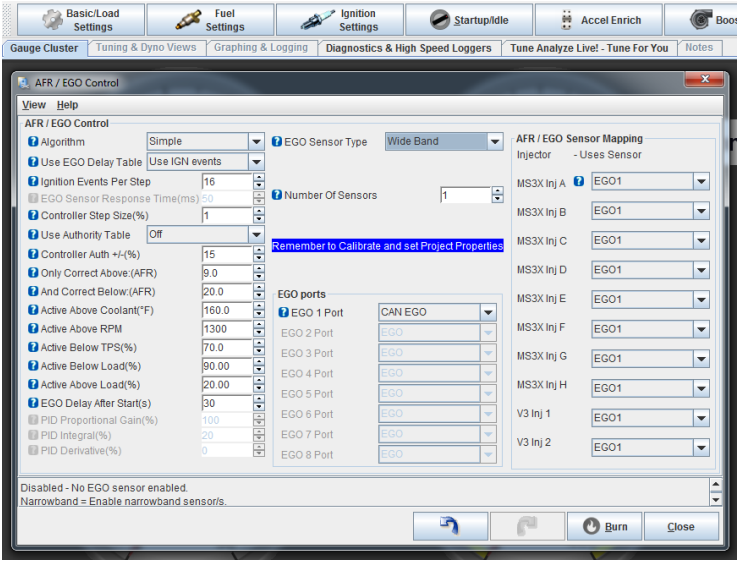
Activate 3 channels



Under **Fuel Settings → AFR/EGO control**:

EGOx Ports to CAN EGO

Additionaly activate correct sensor mapping

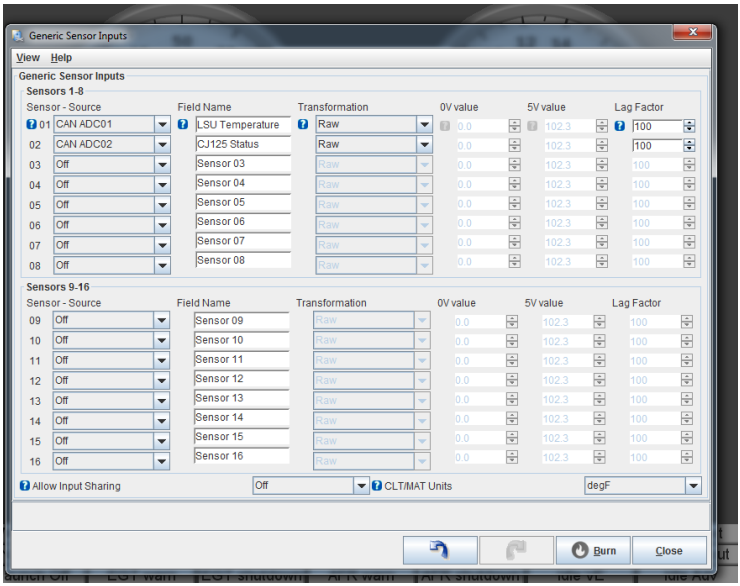


Basic CAN-bus setup is now completed and the gauge on your dashboard will now show Lambda/AFR values fetched via CAN.

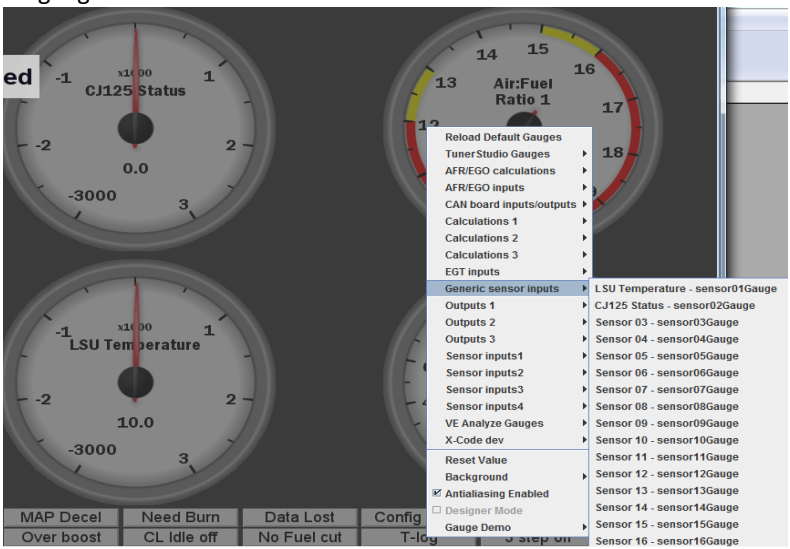
Additional CAN-bus Setup

Under **Advanced Settings → Generic Sensor inputs**

Activate 2 additional channels if you want to see real time LSU temperature and/or TinyO2 status.



Afterwards Right click on your dashboard to add the newly created gauges:



From firmware MS3 1.5.2 you can also monitor the CAN activity under port statusses.

CANbus full O2 range data

- CANid 16
- Byte 6&7
- Offset 500
- Resolution 1000
- Multi 1
- Dev 1