



BOX1

BOX INTERFACE FOR EXTERNAL SENSORS

Thank you for choosing a PZR product. The BOX1 interface is a module for reading the following sensors:

- EXHAUST GAS TEMPERATURE EGT (0 – 1000°C K Thermocouple + interface Code KEGT1)
- OIL TEMPERATURE (0 – 150°C Temperature Sensor Code TEMP1)
- TURBO (-1/3 Bar Turbo Sensor Code TURB1)
- OIL PRESSURE (0 - 10 Bar OIL Pressure Sensor Code POIL1)
- LAMBDA (10 - 20 AFR S. Lambda Narrowband Code LAMNB, S. Lambda 4.9 wideband + interface Code LAM49, we recommend using a 4.9 Lambda probe)

Furthermore, if BOX1 does not detect any OBD1 interface connected to its input, it will transmit the following signal values to the display:

- TPS Throttle Position
- T.H2O Engine Temperature (0 – 150°C Temperature Sensor Code TEMP1)
- RPM Engine Speed

Connect the IN input to the OBD1 interface, if present, using the RJ45 cable supplied with the OBD1 interface; otherwise, leave the input free.

Connect the OUT output to the TPMS1 interface (if present) or, if not present, to the display module using the RJ45 cable supplied with the BOX1 interface.

Connect the wiring of the installed sensors to the terminal block, following the following numbering:

PIN DESCRIPTION

- | PIN | DESCRIPTION |
|-----|---|
| 1 | THERMOCOUPLE INTERFACE K GND (BLACK) |
| 2 | THERMOCOUPLE INTERFACE K 3.3V (RED) |
| 3 | THERMOCOUPLE INTERFACE K SIGNAL (GREEN) |
| 4 | OIL TEMPERATURE SENSOR SIGNAL |
| 5 | TURBO SENSOR GND (BLACK) |
| 6 | TURBO SENSOR 12V (RED) |
| 7 | TURBO SENSOR SIGNAL (GREEN) |
| 8 | OIL PRESSURE SENSOR SIGNAL (CONNECT TO THE SENSOR TERMINAL MARKED 'G') |
| 9 | LAMBDA SENSOR GND (LAMBDA Wideband 4.9 = CONNECT TO THE BLACK WIRE OF THE LAMBDA INTERFACE 4.9) |
| 10 | LAMBDA SIGNAL (LAMBDA SENSOR Wideband 4.9 = GREEN WIRE OF THE LAMBDA INTERFACE 4.9 / LAMBDA SENSOR Narrowband = BLACK LAMBDA SENSOR CABLE) |
| 11 | TPS SIGNAL |
| 12 | ENGINE TEMPERATURE SENSOR SIGNAL |
| 13 | RPM SIGNAL |

K-THERMOCOUPLE TEMPERATURE SENSOR FOR EXHAUST GASES

The KEGT1 temperature sensor is used to measure the temperature of vehicle exhaust gases.

The measurement is performed using a K-type thermocouple, which provides a very fast reading response.

It comes complete with a K-type probe interface.

Technical specifications:

- Detectable temperature: 0/1000°C - 32/1832°F
- Dimensions: 39 x 5mm
- M5 thread

Important installation notes – READ CAREFULLY

- Avoid placing the sensor and its cable near electromagnetic sources such as coils, ignitions, spark plugs, etc.
- Do not overtighten the sensor to avoid damaging it.

The thermocouple must be installed on the exhaust approximately 20cm from the cylinder manifold. If the manifold is not already equipped with one, drill a 5mm hole approximately 20cm from the manifold, weld the supplied M5 nut, and then screw the thermocouple probe onto the nut.

Connect the sensor to the supplied interface and connect the interface wires (extending them as needed) to the BOX1 interface terminal block.

OIL TEMPERATURE SENSOR Code: TEMP1

The temperature sensor Code: TEMP1 is used to measure the vehicle's oil temperature.

Technical Specifications:

- Temperature range: 0 - 150°C / 32 - 302°F
- Dimensions: 42 x 14mm

- 1/8 NPT thread

Install the sensor and connect the rear threaded pole to the BOX1 interface terminal block using a 5mm eyelet.

TURBO PRESSURE SENSOR Code: TURB1

The Turbo Pressure Sensor, Code: TURB1, is used to measure the vehicle's turbo pressure.

Technical Specifications:

- Pressure range: -1 to 3 bar.
- 12V power supply
- Pressure input diameter: 4.4mm
- Supplied with 1m of 6mm tubing + 6mm tubing filter + T-fitting

OIL PRESSURE SENSOR Code: POIL1

The Oil Pressure Sensor, Code: POIL1, is used to measure the vehicle's oil pressure.

Technical characteristics:

- Pressure detectable from 0 to 10 bar.
- 1/8 NPT thread

Install the sensor and connect the rear terminal marked 'G' to the BOX1 interface terminal block using any single-core cable.

NARROWBAND LAMBDA SENSOR Code: LAMBNB

The Narrowband Lambda sensor, Code: LAMBNB is used to measure the presence of oxygen in exhaust gases and to maintain the mixture ratio (kg air/kg fuel).

Technical characteristics:

- Value detectable from 10 to 20 AFR.
- Narrowband sensor, not particularly accurate in measurement.

Install the sensor and connect the black wire (extending it as necessary) to the BOX1 interface terminal block.

WIDEBAND LAMBDA PROBE 4.9 Code: LAMB49

The 4.9 Lambda probe, Code LAMB49, is used to measure the presence of oxygen in exhaust gases and to maintain the mixture ratio (kg air/kg fuel).

Technical characteristics:

- Measureable value from 10 to 20 AFR.
- Wideband probe, particularly precise measurement.
- Supplied with interface, 0 to 5 Volt output.

Install the sensor and connect it to the supplied interface using the 6-pin connector. Connect the two WHITE and BLACK wires (extending them as necessary) to the BOX1 interface terminal block and the two RED and BLACK wires to a positive 12V keyed and grounded terminal, respectively.

ENGINE TEMPERATURE SENSOR Code: TEMP1

The temperature sensor, Code TEMP1, is used to measure the vehicle's engine temperature.

Technical specifications:

- Detectable temperature 0 - 150°C / 32 - 302°F
- Dimensions: 42 x 14mm
- 1/8 NPT thread

Install the sensor and connect the rear threaded pole to the BOX1 interface terminal block using a 5mm eyelet, and ground the sensor body using the supplied 10mm eyelet.

TPS

Connect the TPS signal from the throttle valve (0 – 5V) to BOX1.

RPM

Connect the RPM signal to the ECU's TACHO signal.

SETTING THE NUMBER OF PULSES PER CRANKSHAFT REVOLUTION

Using the 2-position DIP switch, set the levers as follows:

1 2

↓ ↓ = 1 PULSE FOR 2 CRANKSHAFT TURNS

↑ ↓ = 1 PULSE PER 1 CRANKSHAFT TURN

↓ ↑ = 2 PULSES PER 1 CRANKSHAFT TURN

↑ ↑ = 4 PULSES PER 1 CRANKSHAFT TURN

