WB1

WB1 is a microprocessor-based controller designed to process signal from Bosch LSU4.9 wideband lambda sensor.

The controller converts current signals from the lambda sensor to analogue voltage signal within approx. 0-5 V range. There are slight differences regarding the range between individual controller types. For ordinary work with the controller the range of 0-5 V is sufficient. Calibration curve can be used for precise configuration. The calibration curve for each individual controller is marked on the label - sticker placed on the controller's body. The controller also regulates the heating of lambda sensor according to the sensor manufacturer's specifications.

The device is encapsulated in a plastic box. The sensor connection is using original connector 1J0973713, and shall not be substituted. The power supply and output connection is using faston connector 4x6.3 mm. Counterpart of this connector is supplied.

Controller Parameters

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Supply voltage	12 – 15 V
Power input	Maximum 13 W
Output voltage	0-5 V for λ 0.68 – 1.224 (gasoline AFR 10 – 18)
Output current maximum	10 mA
Output voltage slew rate	20 ms
Dimensions	

Functional Description

When supply voltage is connected, the converter immediately sets the output voltage to value corresponding to λ=1 (14.705 AFR gasoline) that is about 2.5 V. This value is maintained on the output until the sensor is properly warmed up and calibrated. This process usually takes 30-40 seconds. Afterwards the output circuit is redirected to the actual measured value. Constant temperature of 780 °C is kept on lambda sensor chip in normal operating conditions.

The power supply wires are red (+12 V) and dark blue (power ground). Output wires are orange (signal) and light blue (signal ground). The power ground and signal ground wires shall not be confused. The input circuit of the follow-up display device should have an input resistance min. 10 kOhm.

Label with the calibration diagram that specifies the range of the output voltage curve is stuck to the controller's body.

Example of calibration curve (sticker on the controller)
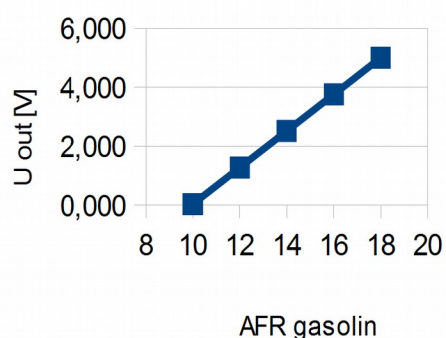
λ	AFR gasolin	Voltage[V]	Voltage[mV]
0,6800	10	0,033	33
0,8160	12	1,275	1275
0,9521	14	2,517	2517
1,0881	16	3,758	3758
1,2241	18	5,000	5000

Lambda sensor installation

Lambda sensor has to be located (in the exhaust pipe) in a way to prevent water from condensing inside the measuring part. For this reason minimum gradient specified by the manufacturer is 10 ° from the horizontal axis - see the image below. It is advisable to place the controller in a dry place with a temperature of up to 60 °C. The controller does not require any special maintenance.
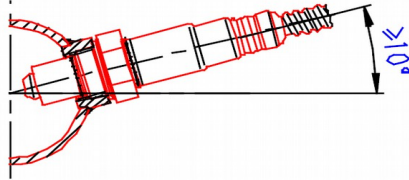
Sample connection of the controller to Ignijet units.

Wide band converter
AFR 10 = 0,00V
AFR 18 = 5,00V