

# CSB - Compact Sensor Board

Electronic Sensor Board for oxygen sensors by SENSORE Electronic

## Main Features

- Compatible with O<sub>2</sub>-Sensor-types SO-zz-xxx
- Supply voltage 12Vdc
- Output signal 0-5V or 4-20mA according to O<sub>2</sub>-concentration
- Also available as calibrated package (sensor + electronic)
- Fixed heater voltage intended for ambient temperatures 0-40°C

## Characteristic Data

### Sensor Compatibility

Compatible with sensors: SO-zz-xxx (see sensor data sheet)  
 TO-8 standard types can be mounted directly on the PCB  
 Other types can be connected via 6-pol. interface  
 Based on the selected sensor type, the sensor board will be delivered with a fixed configuration for sensor and heater voltage

### Supply

Supply voltage: 12V ± 1V  
 Typical current consumption: 200mA

### Measuring range

Depending on selected sensor type

### Output characteristic:

Standard:  $V_{out}(O_2) = 0-5V$   
 Or alternative:  $I_{out}(O_2) = 4-20mA$  (maximal resistive load: 100Ω)  
 Linearization of the sensor characteristic is not provided:

$$V_{out}(O_2) = -k_U \cdot \ln\left(1 - \frac{[O_2]}{100\%}\right) \quad \text{or} \quad I_{out}(O_2) = 4mA - k_I \cdot \ln\left(1 - \frac{[O_2]}{100\%}\right)$$

[O<sub>2</sub>]                      Oxygen concentration in Vol.-%  
 k<sub>U</sub>, k<sub>I</sub>                    specific sensor type constant

Standard coefficients:

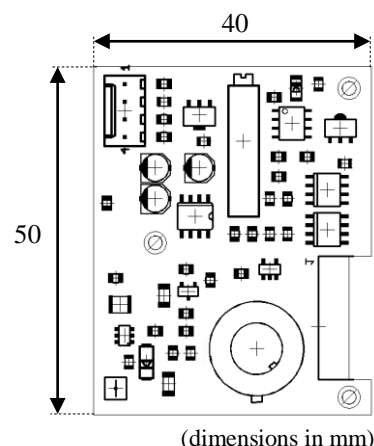
sensor type	max. O <sub>2</sub> [Vol.-%]	k <sub>U</sub> [V]	k <sub>I</sub> [mA]
SO-zz-010	1	497,50	1591,99
SO-zz-020	2	247,49	791,97
SO-zz-050	5	97,48	311,93
SO-zz-250	25	17,38	55,62

### Calibration

Single point calibration via potentiometer  
 It is also possible to purchase an already calibrated system (electronic + sensor)

### Accuracy

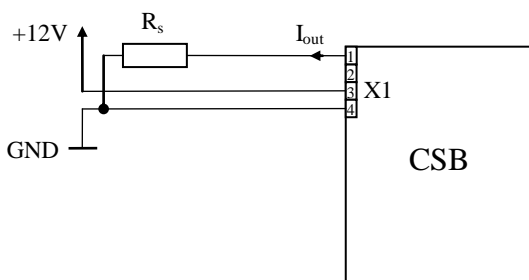
1% of measuring range @ T<sub>ambient</sub> = 25°C ± 10°C (assuming a calibration at 25°C)



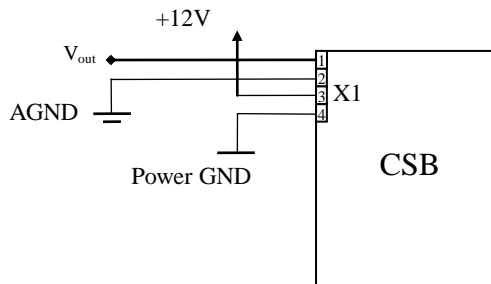
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## 4pol interface X1

Power supply (12V) and Signal out  
 Compatible connector: JST EHR-4  
 Pin Assignment: depending on output type (0-5V or 4-20mA)



**Figure 1 4-20mA current interface**



**Figure 2 0-5V voltage interface**

AGND and Power-GND are connected on the CSB, other configurations upon request.

## 6pol interface X2

Optional external sensor connection  
 Compatible Connector: Lumberg 3521 06  
 Pin Assignment:  
 1 (black) S-  
 2 (red) S+  
 3 (blue) H+  
 4 (blue) HS+  
 5 (white) HS-  
 6 (white) H-

## Response time (t90)

<20 sec. (depends on sensor type)

## Warm up time

Approx. 2 min.

## Maximum ambient temperatures

$T_{\text{ambient}} = 0 \dots 40^{\circ}\text{C}$  for sensor directly mounted on the CSB

Higher sensor ambient temperatures might be possible if a connection via 6-pol interface is used. Such applications can be evaluated upon request.

## Product key

CSB-xxx-yyy-zzzz

Heater voltage:	xxx/100 [V]	(e.g. 370 => 3,7V)
Sensor voltage:	yyy/100 [V]	(e.g. 085 => 0,85V)
configuration:	zzzz:	V000 ...0-5V voltage interface A000 ...4-20mA current interface