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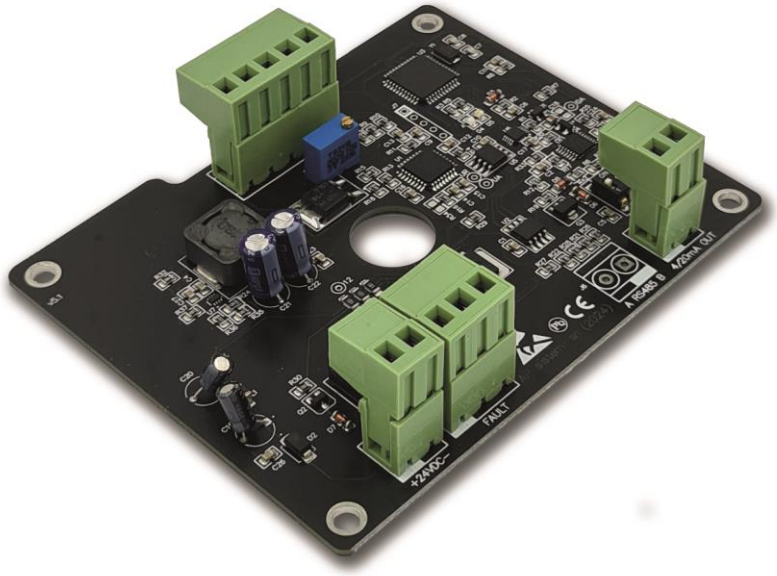
Management and interface board **ZO2SCHEDA04** for Lambda Bosch LSU 4.9 e 5.2

INSTRUCTIONS MANUAL
ISTR_M_ZO2-SCHEDA04_E_00_

Designed and manufactured exclusively for Ascon Tecnologic by AP Sistemi



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SUMMARY

1 Introduction

This user manual describes the main functionalities of the ZO2SCHEDA04 board, as well as its installation, configuration, use, and calibration.

1.1 Description

ZO2SCHEDA04 is a management and interface board for Bosch lambda probes models LSU 4.9 and 5.2.

Its main purpose is to manage the correct operation of the probe and retransmit an output signal proportional to the measured oxygen value.

In detail, the main functions performed by the board are:

- Management of the operation of the BOSCH lambda probe models LSU 4.9 and 5.2.
- Management and regulation of the heater's operating temperature.
- Indication of normal operation or anomalies.
- Retransmission of the linearized analog signal.
- Calibration in ambient air.

1.2 Use

The use of this board is extremely simple and intuitive. In particular, the board offers:

- Simple wiring with removable connectors.
- DIP Switch configuration.
- LED indication.
- Trimmer calibration in ambient air without the use of reference gas.

2 Installation and Configuration

2.1 Installation and Electrical Connections

There are four mounting holes in the corners of the board for housing inside an enclosure.
The main components remain easily accessible and readable (see figure 1).

All terminals are removable to ensure wiring convenience. The sensor cable passage is possible either through the central hole or using the groove near the 5-pin connector.

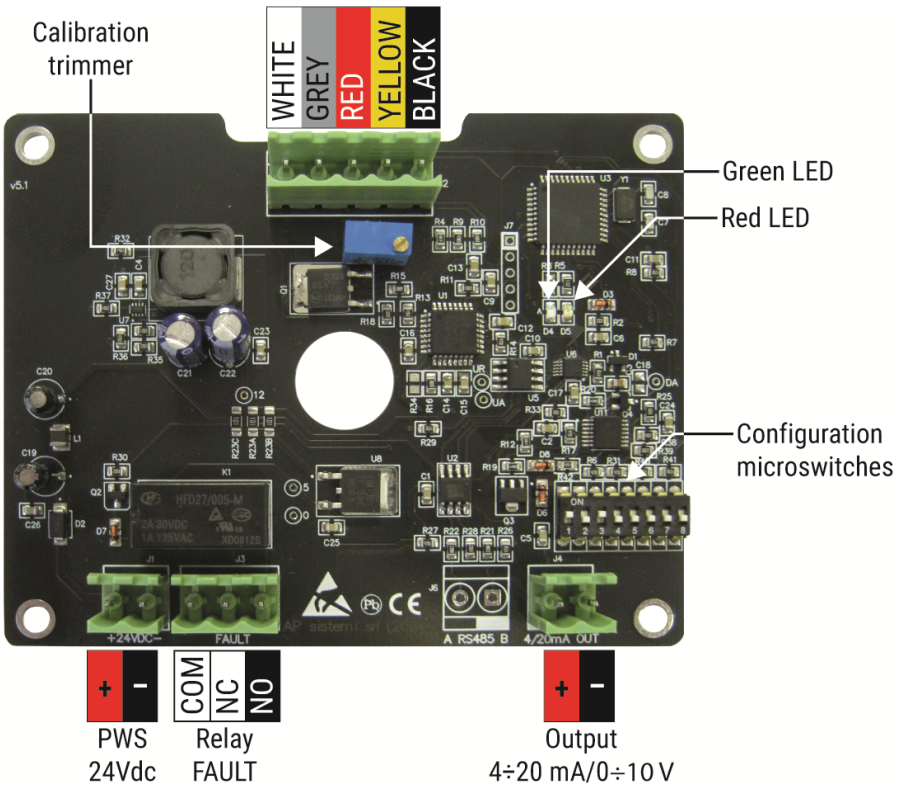


Figure 1

2.2 Board Configuration

Before board powering, configure the output type and scale range using the DIP switches as described below.

Figure 2

1	2	3	4	5	6	7	8	**Configuration Switch**
ON	OFF	ON						Output 4…20 mA
OFF	ON	OFF						Output 0…10 V
			OFF					Scale range 0…20,9 %O2
			ON					Scale range 0…25 %O2
				X	X	X	X	Not used

WARNING !!!

Verify the exact positioning of the switches to ensure the correct operation of the board and prevent anomalies and failures.

3 Operation and LED Indication

3.1 Warm-up Phase and Sensor Temperature Management

To operate correctly, the sensor must reach and maintain the correct working temperature; otherwise, the measured oxygen value will not be accurate. Therefore, upon power-up, the board manages the warm-up phase through the temperature regulation and control circuit.

Once the correct temperature is reached, it shall be maintained throughout the normal operation period. After warm-up phase, the board retransmits an analog signal proportional to the set scale range.

WARNING !!!

In the presence of anomalies and during the warm-up phase, the board switches the relay to FAULT condition and forces the output to 2mA or 0V.

3.2 Normal Operation Indication

The GREEN LED indicates the normal operation status of the board. At the end of the warm-up phase It starts flashing, typically several seconds after power-up.

- FLASHING: Indicates normal operation of the board.
- OFF: Board not powered or anomaly condition. See Red LED.

3.3 Anomaly/Warm-up indication

The RED LED indicates the anomaly/warm-up status.

- OFF: No anomaly conditions/not in the warm-up phase.
- FLASHING: Indicates a condition other than normal operation, emitting a flash as described below:

  1 FLASH: Warm-up phase or heating circuit fault.
  2 FLASHES: Oxygen below the lower reading limit set at 0.5%O2.
  3 FLASHES: Probe fault or not connected.

4 Trimmer Calibration in Ambient Air

Calibration is necessary to match the electronic board with the sensor to obtain a correct oxygen value reading.

The calibration procedure must be repeated every 12 months maximum, or whenever the sensor is replaced.

The ZO2-SCHEDA04 board allows calibration in ambient air without the use of reference gas. It can still possible to used reference gas for verification at a known value.

The procedure is as follows:

- Ensure that the board and lambda probe have been powered for at least 30 minutes.
- Connect the analog output signal to the acquisition device (display, PLC, etc.).
- Ventilate the probe to ensure only ambient air is present on the sensor.
- Adjust the calibration trimmer (see figure 1 on page 5) until the value of 20.96 %O2 is reached.

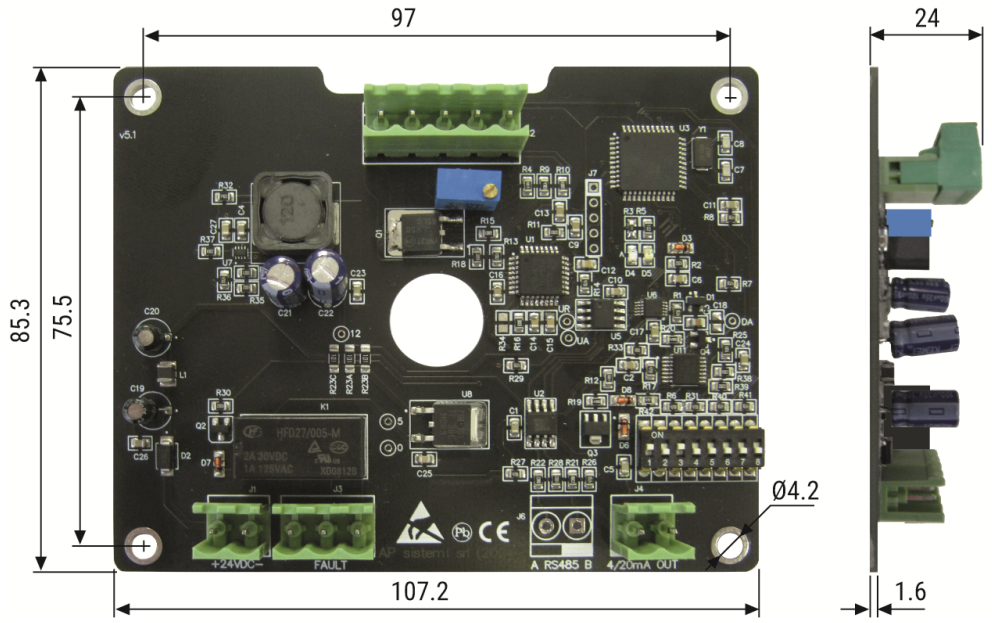
5 Technical Characteristics

Power supply	24VDC ±10%	
Max power consumption	0,8 A	
Output	4…20 mA 0…10 V	Active non-isolated output, selectable by DIP switches
O2% measurement range	0.5... 25%	
Scale range	0… 20,96% 0… 25%	Adjustable DIP switches
Accuracy	±0,5% f.s.	In the range 0,5…20.96 % O2
Response time	<50 ms	
Sensor warm-up time	<15 s	With automatic temperature control
Calibration	20.96%	In ambient air with trimmer
Operating temperature	-20°C…+55°C	
Anomaly output	SPDT relay, NC/NO	Red LED / relay switching in case of: • Warm-up time. • Oxygen value <0.5%O2 • Probe disconnected. • Probe anomaly. • Heater anomaly
Removable screw connectors		Power supply 24VDC • Output 4…20 mA / 0…10V • Fault contact • Probe wiring (5 wires)
Interface components		Red LED, green LED, and DIP switches

6 Ordering Code

CODE	DESCRIPTION
ZO2SCHEDA04	Management and interface board for Bosch lambda probe LSU 4.9 and 5.2. Version 04

7 Dimensions



WARNING!

To ensure that a fault or malfunction of the board does not create dangerous or harmful situations for people, property, or animals, it is reminded that the system must be equipped with suitable devices to ensure safety.

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