## FEATURES

- **Control circuit boards for all XYA series oxygen sensors**

- **Oxygen partial pressure range 1...250 mbar or 1...1000 mbar (0...25 % or 0...100% oxygen)**

- **Functional testing and calibration in ambient air**

- **Linear 0...10 V or 4...20 mA output of measured oxygen content**

- **High accuracy**

- **Low power consumption**
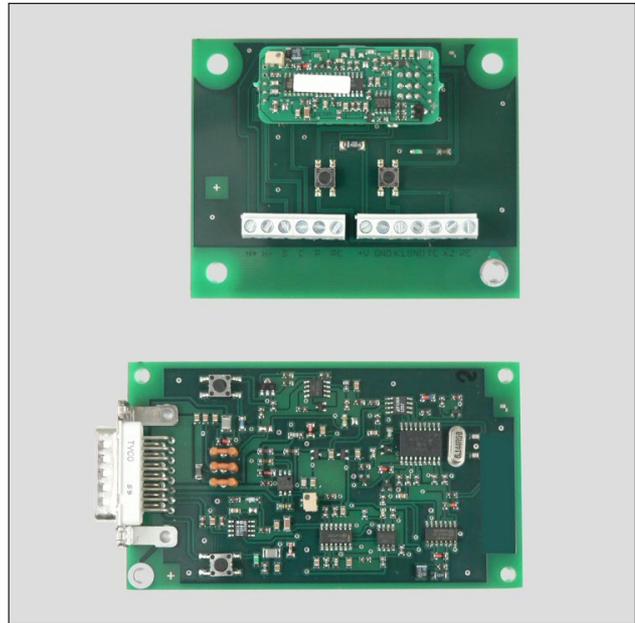
SPECIFICATIONS

Maximum ratings

Supply voltage	24 V_{DC} ±20 %
Heater supply voltage	4.35 ±0.1 V_{DC} (1.85 A)
Stand by	2.0 V_{DC}

Power consumption (interface)

ZBXYA...M...	250 mW
ZBXYA...D...	500 mW

Temperature limits

Storage	-10...50 °C
Operating	-10...60 °C

PERFORMANCE CHARACTERISTICS

Characteristics		Min.	Typ.	Max.	Unit
Measuring ranges (oxygen partial pressure)	ZBXYA025...	1		250	mbar
	ZBXYA100...	1		1000	
Accuracy				2	%FS
Resolution				0.04	V

OUTLINE DRAWING & ELECTRICAL CONNECTION

ZBXYA...D...

Dimensions:
80 x 100 mm,
Ø 6.5 mm mounting holes

Connector:
Screw connector block

SENSORTECHNICS

www.sensortechnics.com
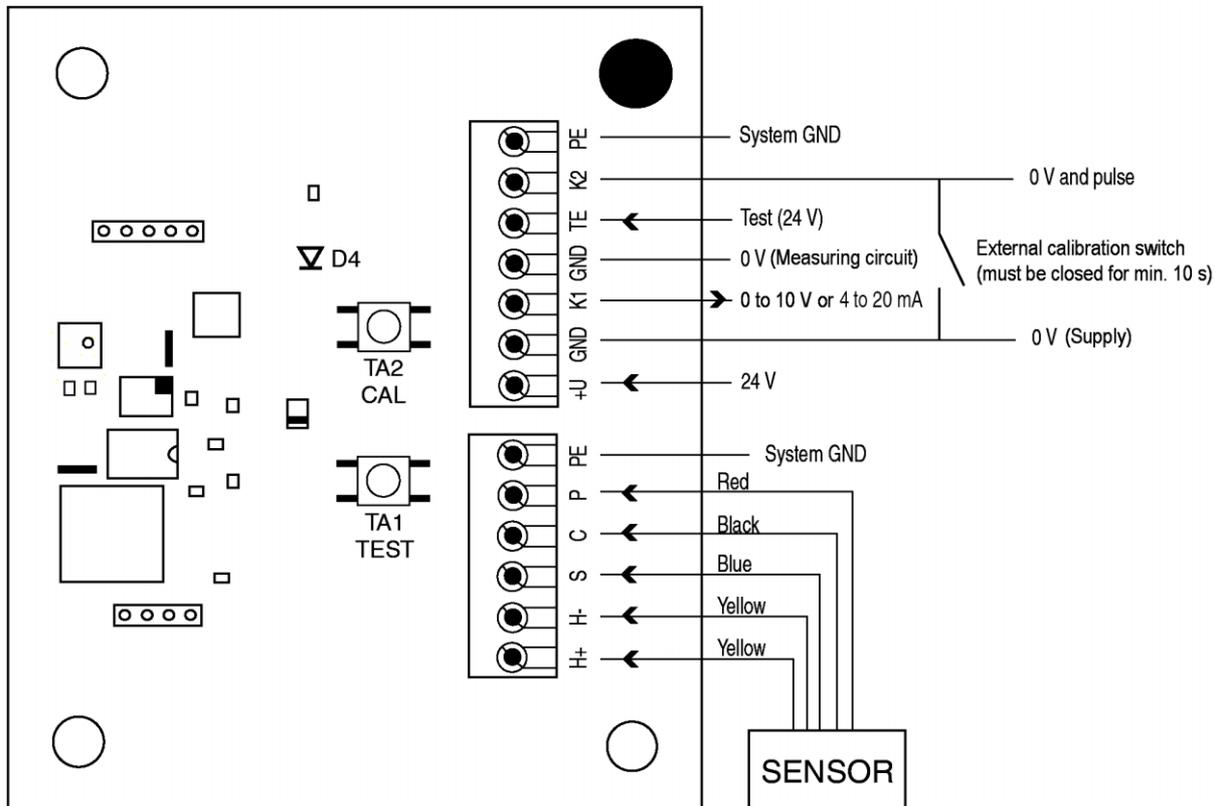
OUTLINE DRAWING & ELECTRICAL CONNECTION (cont.)

Operating and Calibration Notes for ZBXYA...D

Heater adjustment:

1. Check the sensor heater settings: Using a volt meter measure the voltage across H+ and H-. The heater voltage should be 4.35 ±0.1 V_{DC}. If using long cables (>1m) measure this voltage as close to the sensor as possible.
2. If the heater voltage needs to be altered then follow the next steps.
3. With the power off, remove the daughter board, and expose the heater voltage setting pot.
4. Apply power to the board.
5. Using a volt meter measure the heater voltage across H+ and H- and adjust the pot until the voltage is 4.35 ±0.1 V_{DC}.
6. Switch the power off and re-assemble the daughter board.

Auto-calibration of the sensor and board (only available for ZBXYA025D...):

Note: Auto-calibration assumes that the sensor is in a normal atmosphere (1013 mbar pressure, 20.95 % O_2 and typical humidity levels giving an O_2 concentration of 20.7 %. The board adjusts its output to 20.7 %/25 % of full-scale.
1. Ensure the sensor is in ambient air (typically 20.7 % O_2). Remove or purge application environment.
2. Switch the power on and leave for 10 Minutes and allow to stabilise.
3. The green LED should be blinking, this indicates normal operation.
4. Voltage output devices: Measure the voltage at the K1 output and the 0 V (measuring circuit) terminal.
   The reading should be approx. 8.28 V.
   Current output devices: Measure the current at K1 output terminal through an external load resistor (typ. 200 Ω).
   The reading should be approx. 17.25 mA.
5. If the reading is not correct then press and hold the calibration button for a minimum of 10 s until the reading is correct. This may also be achieved using an external calibration switch (Normally Open) placed across GND (0 V Supply) and K2 (see outline drawing).
6. Once released the green LED should start blinking again to indicate normal operation.
7. The system is now calibrated. (Please note that system calibration is lost on power loss and steps 1-8 must be repeated).
8. Note that the auto-calibration will only work if the output is within 20 % of the correct target value. If this is not the case, the PCB will not attempt to calibrate and will indicate this by setting the green LED constantly on (until removal of power). If this occurs it may be necessary to manually calibrate the system as described below.

Manual calibration of the sensor and board:

Manual calibration may be performed at any known O_2 content including normal air.
1. Ensure the sensor is in an atmosphere with known O_2 content (see table for calibration values).
2. Switch the power on and leave for 10 Minutes and allow to stabilise.
3. The green LED should be blinking, this indicates normal operation.
4. Voltage output devices: Measure the voltage at the K1 output and the 0 V (measuring circuit) terminal.
   Current output devices: Measure the current at K1 output terminal through an external load resistor (typ. 200 Ω).
5. If the reading is not correct then adjust the calibration setting pot until the desired output is produced. Turn the pot clockwise to decrease the output value and counter-clock-wise to increase it. Because it takes some time for the output signal to stabilise following an adjustment, make small calibration changes and allow to settle for 30 seconds each time. See table for calibration values.
6. If the board is calibrated manually it will retain its calibration after the power is switched off.

| O_2 concentration in normal atmosphere (1013 mbar pressure)	Calibration values			
	ZBXYA025...0	ZBXYA100...0	ZBXYA025...4	ZBXYA100...4
20.7 %	8.28 V_{DC}	2.07 V_{DC}	17.25 mA	7.34 mA
90 %	-	9.0 V	-	18.4 mA
25 %	10.0 V_{DC}	-	20 mA	-
5 %	2.0 V_{DC}	0.5 V_{DC}	7.2 mA	4.8 mA

Board Test:

1. The green LED should be blinking to indicate normal operation.
2. If the Test button is pressed a 20 % drop in the reading indicates normal operation.

SENSORTECHNICS   **www.sensortechnics.com**

OUTLINE DRAWING & ELECTRICAL CONNECTION (cont.)

ZBXYA...M...

Dimensions:
63 x 108 mm,
Ø 4 mm mounting holes

Connector:
15 pin male D connector
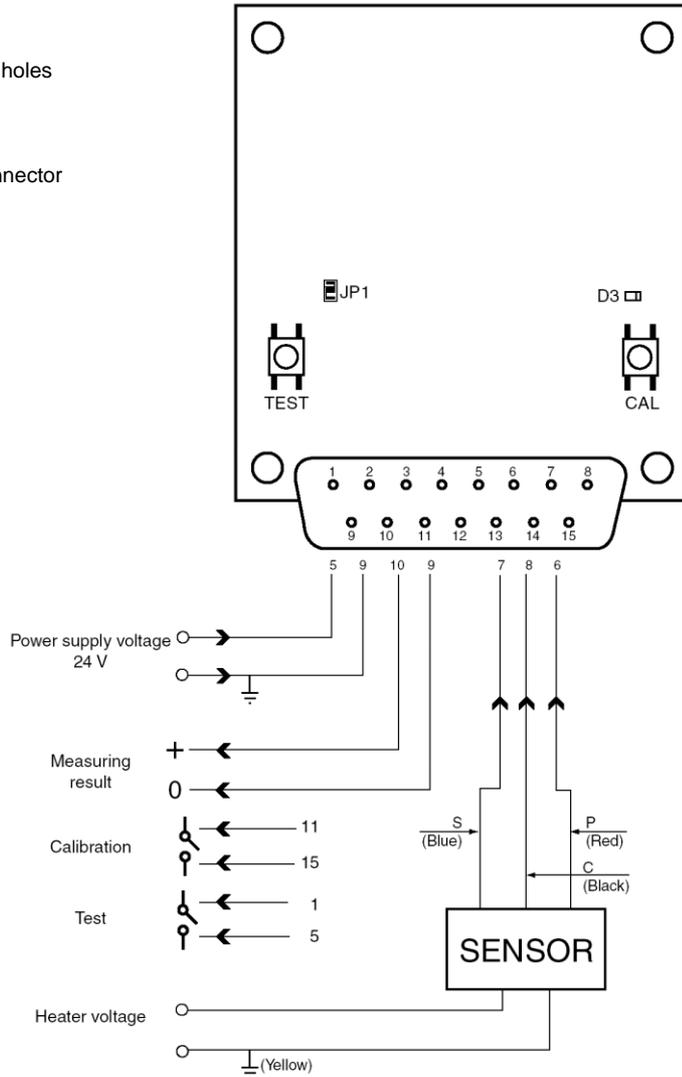
Operating and Calibration Notes for ZBXYA...M

1. Reset of the ZBXYA...M interface board is possible by putting the power off/on.
2. A proper operation of a connected sensor and electronic circuit can be tested with the test switch or with an external signal. After switching the test function the output signal should indicate a 20% lower value.
3. LED indication: proper sensor operation is indicated by blinking of LED D3.
4. Calibration: sensor and circuit can be calibrated in normal air. After a loss of power the ZBXYA...M circuit stores the calibration value.

SENSORTECHNICS

www.sensortechnics.com

ORDERING INFORMATION

	Series		Measuring range	Type		Type	
Options	ZBXYA	025:	1...250 mbar (oxygen partial pressure)	M:	requires external power supply for sensor heating element	0:	0...10 V
		100:	1...1000 mbar (oxygen partial pressure)	D:	includes power supply for sensor heating element	4:	4...20 mA

Example:	ZBXYA	025		D		0

> **Note:** Custom specific options are widely available!
> Please contact your nearest Sensortechnics sales office for further information.

SENSORTECHNICS

www.sensortechnics.com