



# GRYF

Manufacturer of Measuring Instruments

## Instruction and Maintenance Manual

### GRYF OXY F 0001/5/2 C

#### Contact

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Supply voltage	24 V/dc $\pm$ 10%
Supply current	60 mA
Output signal	4 $\div$ 20 mA
Oxygen concentration range	0.001 $\div$ 5.000 %
Sensitivity (resolution)	0.001 %
Lowest measurable concentration	0.001 % (10ppm)
Resolution of current output	0.002 % (output 0 $\div$ 5 %) 0.001 % (output 0 $\div$ 2 %)
Accuracy	$\pm$ 1 % from value, $\pm$ 0.001
Signal stabilization	30 sec.
Signal NO FAULT	24 V, max. 100mA
Measured gas flow	0.2 $\div$ 0.3 l / min
Inlet pressure	1 bar $\pm$ 0.1bar
Operating temperature	0 °C $\div$ 50 °C [32 °F $\div$ 122 °F]
Dimensions	167 x 130 x 65 mm
Sensor Lifetime	24 months at concentrations <2%

## Description

This analyzer is designed to detect oxygen concentration levels in gas and is also designed to be incorporated into gas concentrators. This device is to be installed in a control cabinet. For this reason, the analyzer does not have a separate box, only a front panel on which buttons, switches and lights are located. The output measurement is in a 4-20mA current output. The measured gas is fed through a tube into the measuring chamber with the sensor (the sensor and chamber are included). The inlet pressure is about 1 bar, the measuring chamber pressure is comparable to the atmospheric pressure and measured gas is then discharged into the atmosphere. The gas flow is about 0.3l/min.

Sensor is not suitable for measurements with mixtures containing H<sub>2</sub>S, CH<sub>3</sub>SH, NH<sub>3</sub>, SO<sub>2</sub>, F<sub>2</sub>, O<sub>3</sub>, high concentrations of CO<sub>2</sub> (ambient concentrations are O.K.) and other strong oxidation or aggressive gases.



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## Function

This analyzer is to be installed in a vertical position, see picture.

After turning on the power supply, the power supply indicator light (ON) will start flashing at 0.5 sec. intervals. This indicates the initiation of the sensor which lasts 5 seconds. The light will then stay lit and will turn off each time the oxygen concentration level is being measured, about 3x per second. The instrument is capable of performing precise measurements in about 30 seconds after being turned on.

The NO FAULT signal indicates measuring readiness. When the device is ready for measuring and no error is detected, the NO FAULT signal value is 24V DC (same value as the supply voltage).

## Controls:

<b>ON</b>	operation signal
<b>ERR1</b>	failure
<b>ERR2</b>	signal is 0, value is less than 0.2 ppm (for example sensor could be unplugged)
<b>CALIBRATION</b>	calibration process signalization

## Buttons:

<b>DOWN</b>	change of calibration constant
<b>UP</b>	change of calibration constant
<b>START</b>	calibration initiation and confirmation

## Rotary switches:

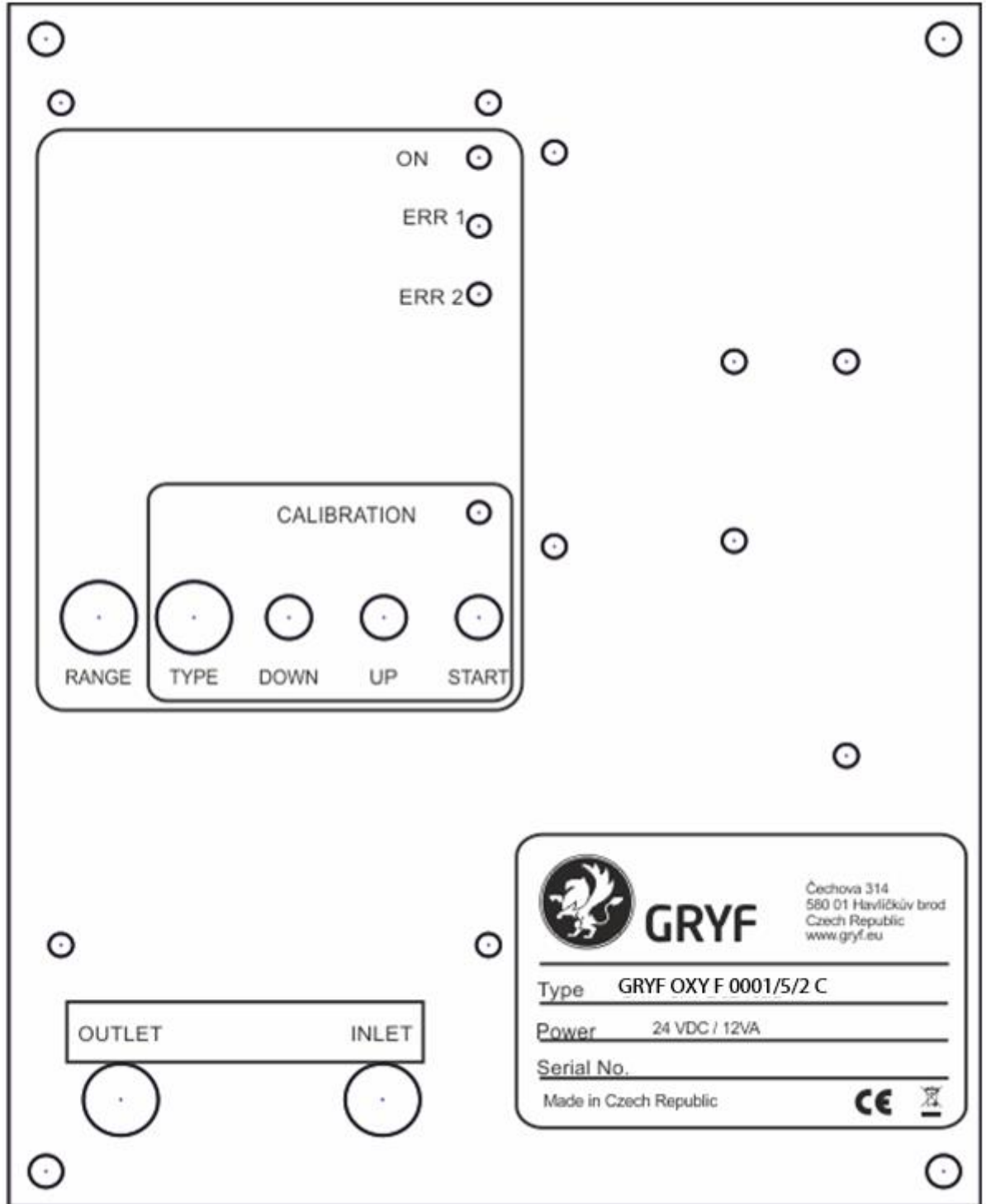
<b>RANGE</b>	change of the measuring range, test codes
<b>TYPE</b>	calibration type setting



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UP

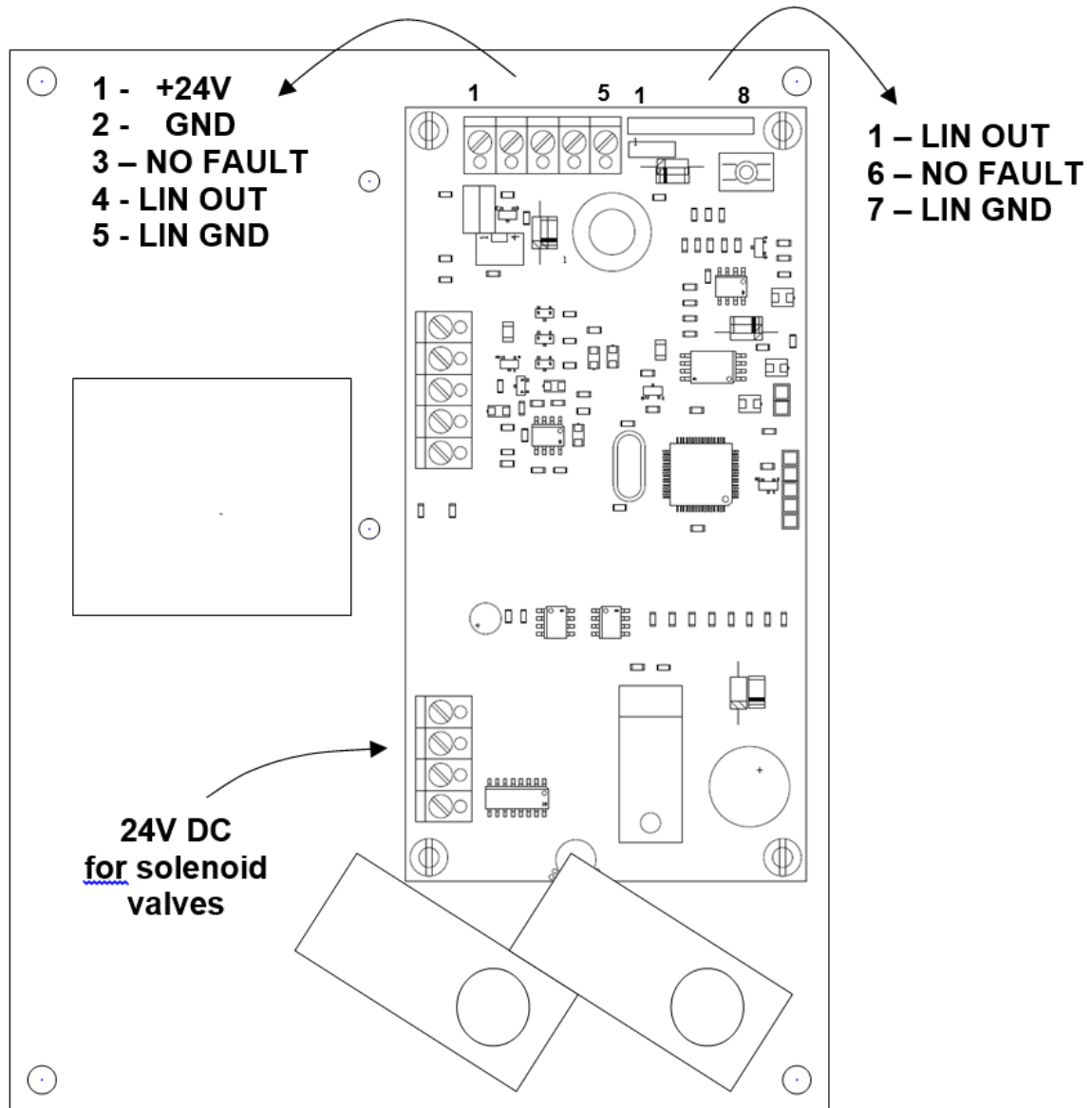


DOWN



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## Measurement

Use the basic 0-5% range (position 3 and 4) to measure oxygen concentration. It is also possible to use the 0-1000ppm range (position 1 and 2), however the sensor is not able to accurately measure oxygen concentrations lesser than 10ppm. For maintenance purposes a range of 0-25% (position 9) is available. This service range is not designed for continuous use. Setting the measurement range and output current line is performed using the RANGE rotary switch located on the front panel. This corresponds to the output current signal of 4-20 mA.

Description of the RANGE rotary switch codes:

Position	Measuring range	Output Range
1	0 - 1000 ppm	1000 ppm...20mA
2	0 - 1000 ppm	100 ppm...20mA
3	0 - 5%	5%...20mA
4	0 - 5%	2%...20mA
9	0 - 25 % for service	25 %...20mA

Test codes:

Position	Output Value
0	0mA
5	4mA
6	10mA
7	16mA
8	20mA

## Calibration

Calibration can be performed on pre-selected concentration of oxygen. The type of calibration is selected by the rotary switch (TYPE) located on the front panel. To obtain the best measuring accuracy, choose a calibration gas with oxygen concentration levels resembling the anticipated measured concentration.

Recommended calibration cycle is every 6 months.



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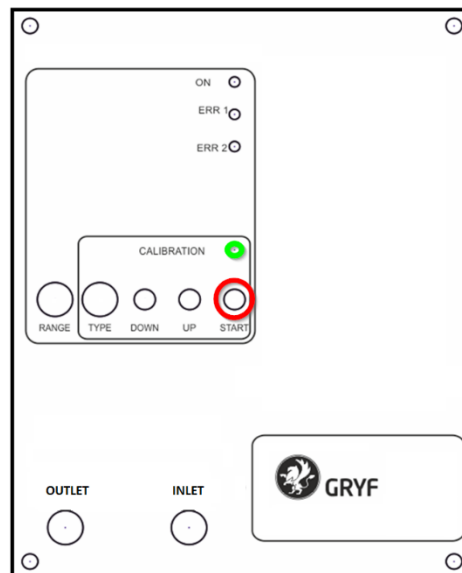
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Description of the rotary switch codes TYPE:

Position	
0	Calibration ban
1	designated for service 20.9%
2	concentration 1% -slope, only for range 5%
3	concentration 0.5% -slope, only for range 5%
4	concentration 100 ppm -slope, only for range 1000 ppm
5	concentration 10 ppm -slope, only for range 1000 ppm
6	edit slope with buttons Down, Up
7	edit zero with buttons Down, Up
8	digital filter ban

### Calibration steps for points 1, 2, 3, 4, 5:

- Use rotary switch code TYPE to match the calibration gas value.
- Let the chosen gas flow to analyser inlet. The gas inlet pressure should be 1bar.
- The gas should be flowing through the analyser chamber for at least 5 minutes\*.
- Calibration is started by pressing START. After pressing the button, the CALIBRATION indicator light will light up green.



- After the signal has stabilized, the result can be confirmed by pressing START. After pressing START, the CALIBRATION light will flash green to confirm. Should the CALIBRATION light start flashing red, the calibration has been performed incorrectly or other calibration problems occurred. The calibration constants are out of range. This can be due to attendant error or sensor failure.

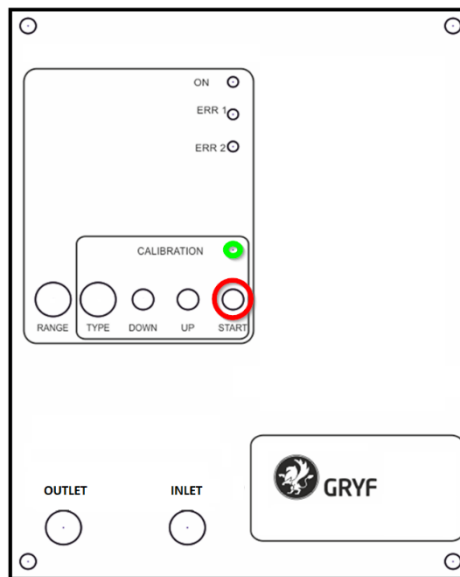


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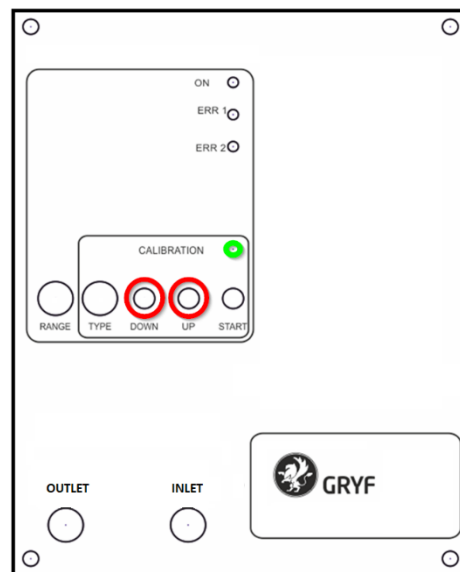
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## Calibration steps for points 6, 7:

- Use rotary switch to edit the „Slope” or „Zero”.
- Let the chosen gas flow to analyser inlet. The gas inlet pressure should be 1bar.
- The gas should be flowing through the analyser chamber for at least 5 minutes \*.
- Calibration is started by pressing START. After pressing the button, the CALIBRATION indicator light will light up green.



- By using the UP and DOWN buttons change the concentration to desired value. Faster changes can be achieved by pressing and holding the buttons DOWN or UP for several seconds.







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- F. Then confirm with the START button the result. After pressing START, the CALIBRATION light will flash green to confirm. Should the CALIBRATION light start flashing red, the calibration has been performed incorrectly or other calibration problems occurred. The calibration constants are out of range. This can be due to attendant error or sensor failure.

*\* Note - stabilization of measured value:*

*The stabilization time from high concentration to lower concentration is always longer than vice versa.*

*Example: if the concentration change is from 20% to 0.02%, the stabilization time is about 30min.*

## Analyzer installation:

This analyzer is not equipped with IP coverage and is therefore designed to be installed in a cabinet or case. This analyzer is also recommended to be installed in a vertical position, hose connection on the bottom, terminal plate for power input facing upward. Use the four holes in each corner to install the analyzer to a board or cabinet. Diameter of the holes is 4.3mm.

Connect a 4mm hose with the input gas mixture into the INLET line, located on the right side of the front panel. Output gas is diverted via a 4mm hose. The output hose is connected to the OUTLET line, located on the left side of the front panel. If the cabinet or case is well ventilated, it is not necessary to connect a hose to the OUTLET line.

**WARNING!!! The output absolute pressure cannot exceed 1.2 bar.**

Before connecting the hoses, please remove both metal plugs.

The terminal plate for the input voltage and the current loop is located in the upper part of the analyzer. While looking at the back of the analyzer, the following clips are numbered (from left):



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- 1 - +24V**
- 2 - GND**
- 3 - NO FAULT**
- 4 - LIN OUT**
- 5 - LIN GND**

The NO FAULT signal and the current loop are jointed, furthermore, they are also accessible on the 8-pin connector with a lock. The pins are also numbered from the left when looking at the back of the analyzer:

- 1 - LIN OUT**
- 6 - NO FAULT**
- 7 - LIN GND**

## Shipping and storage

To avoid accidental sensor life shortening, it is necessary to prevent ambient air from entering the measuring chamber. Therefore, the analyzer should be stored with metal plugs (seals) in the input and output lines. These plugs (seals) should only be removed before connecting the input and output hoses so that the device is connected to the measured gas as soon as possible.

This analyzer can be stored and transported in any position.



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## Note

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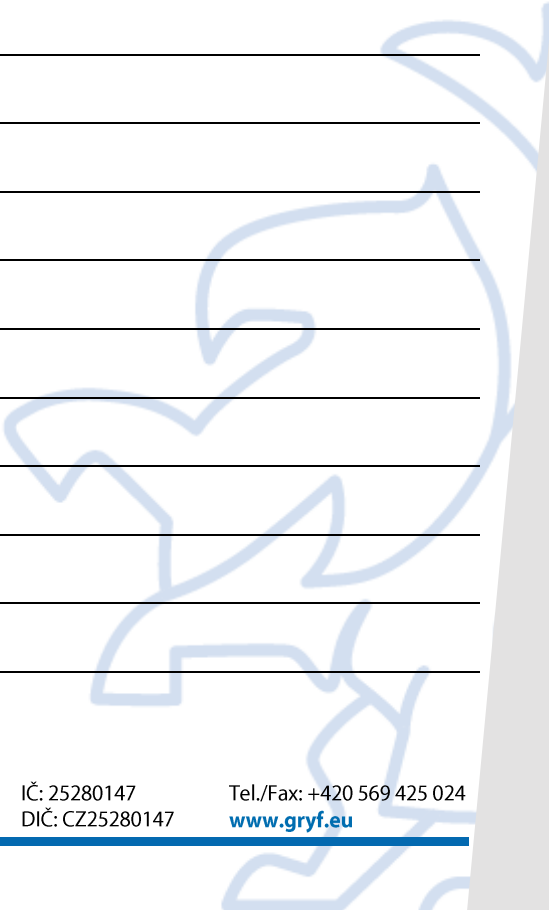
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