



# GRYF

Manufacturer of Measuring Instruments

## Instruction and Maintenance Manual

### GRYF OXY FS 01/1000/1 B

#### Contact

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Technical parameters	
Supply voltage	24 V/DC $\pm$ 10%
Supply current	60 mA
Solenoid valves supply voltage	24 V/DC $\pm$ 10%
Solenoid valves power requirement	5W
Output signal	4 $\div$ 20 mA
Oxygen concentration range	0 $\div$ 1000 ppm
Sensitivity (resolution)	0.1 ppm
Resolution of current output	1 ppm (output 0 $\div$ 1000 ppm) 0.1 ppm (output 0 $\div$ 100 ppm)
Accuracy	$\pm$ 1 % from value, $\pm$ 0.2 ppm
Signal stabilization	30 s (READY signal)
Signal READY	24 V, max. 100mA
Measured gas flow	0.2 $\div$ 0.3 l / min
Inlet pressure	1 bar $\pm$ 0.1bar
Operating temperature	0 $^{\circ}$ C $\div$ 50 $^{\circ}$ C [32 $^{\circ}$ F $\div$ 122 $^{\circ}$ F]
Sensor Lifetime	15-21 months at concentrations <1000ppm
Dimensions	167 x 130 x 65 mm

## 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.

The analyzer must be used only with clean gases and oxygen mixtures up to 1000 ppm.

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 READY signal indicates measuring readiness. When the device is ready for measuring and the output current is valid, the READY signal value will be 24V DC.

## 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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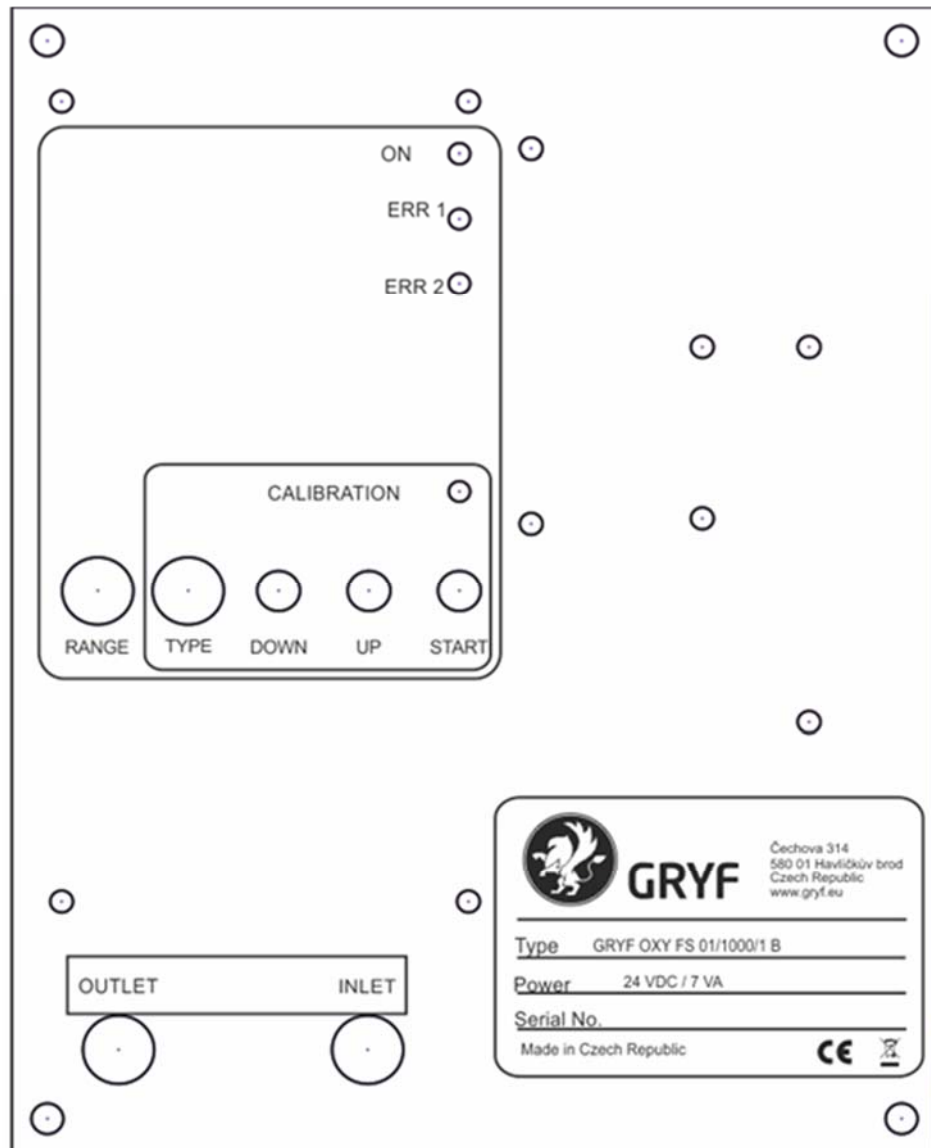
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UP

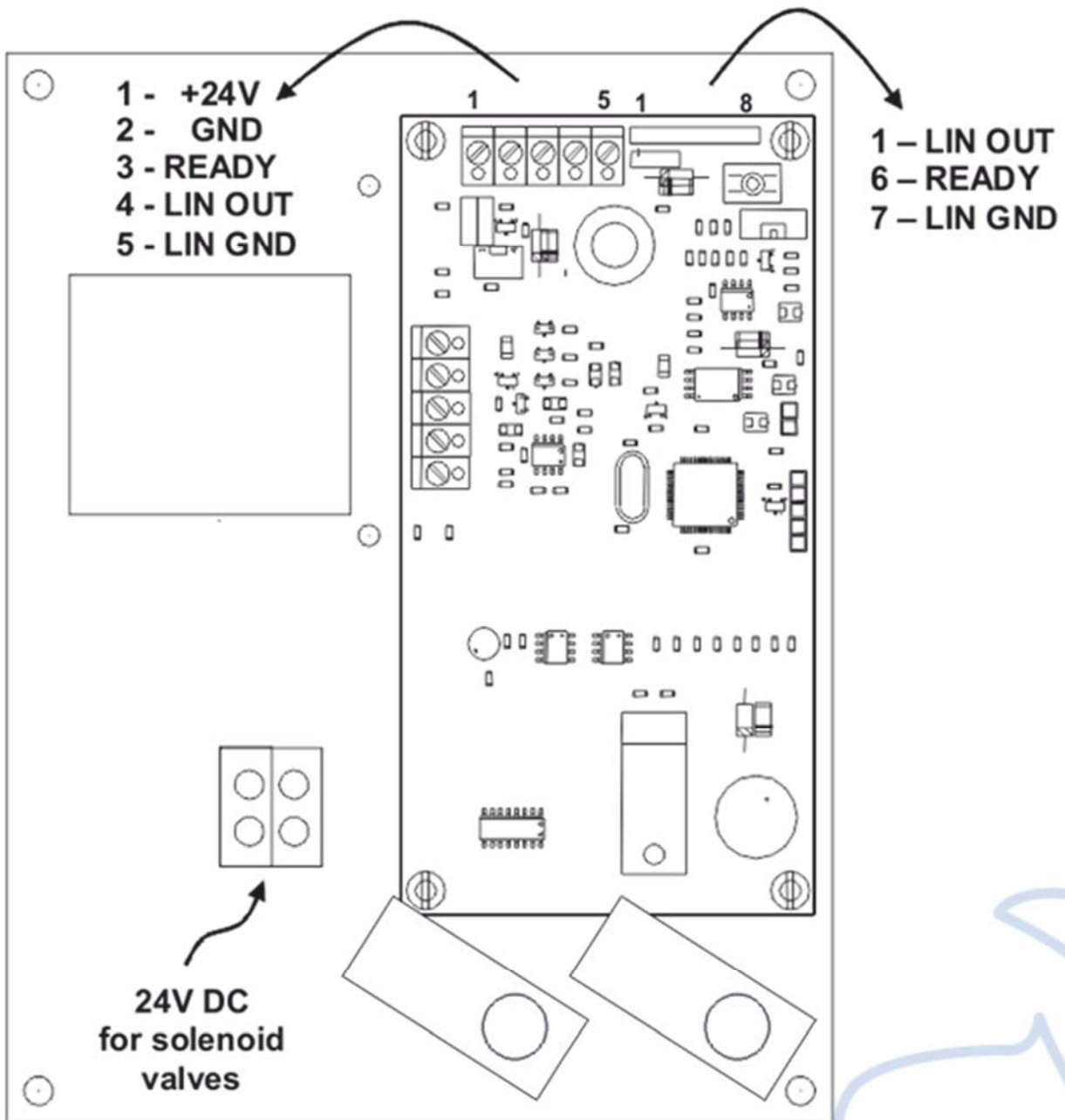


Down



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## Measurement

For measuring low oxygen concentrations, use the primary range 0-1000 ppm. A 0-5% range (position 3 and 4) and 0-25% range (position 9) are available for service functions. These ranges are however not recommended for long use because oxygen concentrations above 1000 ppm (0.1%) dramatically reduce the sensors life expectancy. Setting measuring ranges and current line ranges is performed using the (RANGE) rotary switch located on the front panel.

Measurements can be performed in four predefined measuring ranges. This corresponds to the current output signal 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% for service only	5%...20mA
4	0 - 5% for service only	2%...20mA
9	0 - 25 % for service only	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 oxygen concentrations. Calibration type is selected by the (TYPE) rotary switch located on the front panel. The selected calibration gas must then be passed into the inlet of the meter. Calibration is started by pressing the START button. 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. The calibration constants are out of range. This can be due to attendant error or sensor failure.

Editing of calibration values using the appropriate buttons (positions 6 and 7) can be done by following these steps. The small changes are made by single pressing DOWN and UP buttons. Faster changes can be achieved by pressing and holding the buttons DOWN or UP for several seconds.



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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

## 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.**

Please pay a close attention to the information below!

The input and output of the measuring chamber is equipped with a solenoid valve. The aim of these valves is to prevent accidental access of air or other gas with high oxygen concentration into the measuring chamber. This ensures long sensor life.

To allow measured gas to flow through the device, these solenoid valves must be open. A voltage of 24V DC must be supplied to the solenoid valves. If the device is not in use or if there is a risk of large concentrations of oxygen penetration into the measuring chamber, these valves must be closed. In order to do so, disconnect the 24V DC power supply from the solenoid valves.

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 - READY**
- 4 - LIN OUT**
- 5 - LIN GND**

The READY 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 - READY**
- 7 - LIN GND**

## Shipping and storage

To insure the oxygen concentration level in the measuring chamber does not exceed above 1000 ppm, the instrument is equipped with inlet and outlet solenoid valves. For transportation and storage purposes, it is necessary to keep these valves closed. Disconnect the 24V DC power supply from the solenoid valves. These valves should be opened just before the start of the measuring.

It is also essential to make sure the sensor is supplied with oxygen concentration levels below 1000 ppm as soon as possible. Higher oxygen concentrations will drastically reduce the sensors life expectancy.

This analyzer can be stored and transported in any position.



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## Note

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