



# Oxygen detection Dittrich GWZ



The limit monitor GWZ is a freely programmable gas alarm system, and it is equipped with a rolling display. Altogether from 2 up to a maximum of 6 gas measuring systems can be connected to one limit monitor GWZ-S2, S4 or S6. It is also possible to connect external features such as a "traffic light" indicator with sirene, NO/NC contacts are available so one can forward the alarm to their in house alarm/ monitoring system or tot a ventilation system to boost de air circulation. The unit can be used for several gasses such as O2 and CO2.

## LIMIT MONITORS GWZ-S2 AND GWZ-S4

The limit monitor GWZ-S2 (GWZ-S4) is a freely programmable gas alarm system, which is equipped with a rolling display. Altogether a maximum of 2 (4) gas measuring systems from J. Dittrich Elektronic can be connected to one limit monitor GWZ-S2 (GWZ-S4). Thus, one limit monitor can monitor different types of gases simultaneously. When the values exceed or fall below a previously defined limit value, the unit can be operated with 1 or 2 alarm thresholds. A grouping of the alarms is possible. GWZ-S2 and GWZ-S4 both have 4 output relays, 2 of which can be assigned freely (alarm relays). Two relays are fixed - one for activating the acoustic alarm and one for indicating fault conditions. GWZ-S2 is equipped with 2 input channels A and B, GWZ-S4 with 4 input channels A, B, C and D.

## PRODUCT SPECIFICATIONS

Product characteristics GWZ-S2 (GWZ-S4)
• Water-proof housing suitable for wall mounting
• Power supply voltage 230 V AC
• Up to 2 (4) gas measuring systems from J. Dittrich Elektronic can be connected
• 1 alarm horn via output relay
• Up to 2 alarm signals via relays
• Up to 2 limit values freely adjustable
• Alarm outputs: latch circuit, hysteresis or impulse
• Display of current gas concentration
• Test function for output relays
• Line-break and short-circuit monitoring of gas measuring system wiring
• 1 reset button for alarm horn and alarms
• LEDs for RUN mode, fault indication, alarm horn and the alarms of the 2 (4) input channels.
• 1 fault indication via output relay

The limit monitor complies with the EMC directive 89/336/ EWG and 92/31/EWG as well as with the low-voltage directive 73/23/EWG and 93/68/EWG.

Technical data GWZ-S2 and -S4		
<b>General</b>		
Power supply		Screw terminals
	Voltage	230 V AC
Nominal wattage	Without measuring systems	about 3 W
Ambient temperature	-10° C to +50° C	
Air pressure	900 hPa to 1.100 hPa	
Permissible humidity	15-95% relative humidity	
Housing	Plastic	Gray, wall mounting
Type of protection housing	IP 54	
Weight of housing	about 1.500 g	
Size of housing	about W166 x H105 x D160 mm	
<b>Optical display</b>		
Yellow LED Error	Fault message	
Green LED Power	Operation	
Red LED Alarm Horn	Acoustic alarm	
Red LEDs A, B, C, D	Alarm of Channel A, B, C, D	Channel C, D GWZ-S4 only
<b>Operating elements</b>		
Pushbuttons F1 and F2	Function keys	
Pushbutton Reset	Reset Alarm Horn	Reset Alarm
<b>Alphanumeric display</b>		
Measuring level	Concentration, status, fault, limit value exceeded	
Parameter level	Setting the limit values, alarm groups	
Service level	Checking the limit values, functions of the relays	



## DESIGN OF THE OXYGEN MEASURING SYSTEM

The oxygen sensor is mounted in the head of a stainless-steel probe tube, which has a diameter of approx. 30 mm and is approx. 80 mm long. The aluminium housing accommodates the electronics and is connected to the probe tube by mechanical means (see Foto).

The sensor electronics include: a signal amplifier, a control for the ionic pump with an analog part, a test part, the internal monitoring logic component, the power supply for the sensor heating element as well as for the analog and digital part, the reset and the voltage monitor as well as a bi-directional digital output and an analog output with 4-20 mA .

The output signals from the oxygen measuring system are read and further processed according to the customer's specifications in a downstream GWZ unit.



## LIMIT MONITORS GWZ-S2 AND GWZ-S4

The MF420-O-Zr oxygen measuring system measures the oxygen concentration directly in the gas mixture and consequently the oxygen partial pressure (absolute oxygen content!). The measuring process is based on dynamic reactions between two zirconium dioxide discs, which form an hermetically sealed chamber. The entire measuring range is linear. Since the measuring system monitors its own functioning during operation and reports any hardware and sensor malfunctions, it can be operated in fail-safe mode when required. A second oxygen sensor is not needed for this purpose! Calibration is carried out without reference gas in atmospheric air. The measured values are output via an analog (4-20 mA) and a digital channel, with the latter also transmitting the fault messages.

## PRODUCT SPECIFICATIONS

Technical data		
Transmitter		
Power supply		Screw terminals
	Voltage	24 V DC $\pm$ 5%
	Electric current	about 400 mA
Connections	Screw terminal 1	24 V DC $\pm$ 5%
	Screw terminal 2	0 V
	Screw terminal 3	Impulse and fault, external calibration
	Screw terminal 4	4-20 mA
	Screw terminal 5	Test (optional)
Ambient temperature	-10° C to +50° C	Sun can heat up the housing considerably!
Permissible humidity	15-95% relative humidity	non-condensing
Output	4-20 mA	max. load 500 $\Omega$
Resolution	12 bit	
Housing	Aluminium	red
Type of protection housing	IP 40	
Weight of housing	about 250 g	without probe tube
Size of housing	about L90 x W85 x H65 mm	

Technical data		
Probe tube		
Length	about 80 mm	
Diameter	about 30 mm	
Material	Stainless steel 1.4301	
Sensor		
Gas access	by diffusion	
Heating-up time	about 5 min	
Measuring range	0.1 - 25 vol.% oxygen (oxygen partial pressure)	or 0.1 - 100 vol.% oxygen upon request
Accuracy	$\pm$ 2% at 25° C	FS (full scale)
Reproducibility	$\pm$ 1%	
Reaction time	about 3 s	

The oxygen measuring system complies with the EMC directives EN 61000-6-2 and EN 61000-6-3 and thus Directives 89/336/EEC and 92/31/EEC.