

GW 601

Gas Warning Device for Chlorine Gas, Chlorine Dioxide and Ozone



EN

02

Operating Manual

Read this operating manual before set-up!
To be retained for future reference.

Table of Contents

1. General and Safety Instructions	3
1.1 General.....	3
1.2 Identification of safety instructions in this operating manual	3
1.3 Personnel qualifications and training	3
1.4 Important safety instructions	3
1.5 Hazards due to failure to follow safety instructions	4
1.6 Safety-conscious working	4
1.7 Safety instructions for the operating company/operator	4
1.8 Safety instructions for inspection, maintenance and installation work.....	4
1.9 Unauthorised modification and production of spare parts	4
2. Before start-up	5
2.1 Use for intended purpose	5
2.3 Scope of delivery	5
2.3 Steps to start-up	5
2.4 Part numbers	5
3. Functional range	6
3.1 GW 601 gas warning system	6
3.2 Transmitter.....	6
3.3 Power supply backup system (accessory).....	6
4. Dimensioned drawings	7
5. Technical data	8
6. Assembly and Installation	11
6.1 GWZ 601 gas warning system.....	11
6.2 Transmitter.....	12
6.3 Wiring diagrams	12
6.4 Drill template.....	14
7. Operation	15
7.1 Function keys	15
8. Configuration	16
9. Operation	18
10. Relay	19
10.1 Action in the event of an alarm or fault.....	19
10.2 Configuration.....	19
11 Analogue Output and Interface	20
11.1 Analogue output	20
11.2 Interface	20
12. Maintenance	21
12.1 Replacing the sensor	21
12.2 Calibrating the sensor	22
12.3 Sensor functional testing with test gas application	22
12.4 Replacing the fuse.....	22
12.5 Power supply backup system (accessory).....	22
12.6 Disposal.....	22
13. Troubleshooting	23
14. Spare parts	24
Device revision	24
Index	25
Warranty claim	26
CE declaration of conformity	27

1. General and Safety Instructions

1.1 General

This operating manual contains basic instructions to be followed during installation, operation and maintenance. It is therefore essential that the Operating Manual be read by the installation technician before installing and commissioning the pump/system, as well as by the relevant operating personnel/operating company of the unit. The Operating Manual must remain accessible at the dosing pump/system for reference at all times. Besides the general safety instructions in this "Safety" section, the special safety instructions in the other sections are also to be followed.

1.2 Identification of safety instructions in this operating manual

This Operation & Maintenance Manual contains vital information which may endanger people and the unit if they are disregarded. These statements are identified by the following symbols:

WARNING!

Refers to a potentially hazardous situation. Failure to follow this instruction may lead to death or extremely serious injuries.



CAUTION!

Refers to a potentially hazardous situation. Failure to follow this instruction may lead to minor injuries or damage to property.

ATTENTION! or NOTICE!

Failure to comply with this safety instruction may result in damage to the device and endanger its operation.

IMPORTANT!

This indicates additional information that makes work easier and ensures trouble-free operation.



Notices attached directly to the unit, such as wire references, must be observed and kept in a fully legible condition.

1.3 Personnel qualifications and training

The personnel employed for operation, maintenance, inspection, and installation must be suitably qualified for this work. The responsibilities, areas of competence and personnel supervision must be clearly defined by the operating company. Personnel who do not have the required know-how must be duly trained and instructed. If necessary, this can also be done by the manufacturer/supplier on behalf of the operating company. In addition, the operating company must also ensure that the relevant personnel are fully familiar with and have understood the contents of the operating manual.

1.4 Important safety instructions

Basic safety precautions should always be followed when installing and using this electrical equipment. These precautions include the following:

READ AND FOLLOW ALL INSTRUCTIONS!

WARNING!

To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.



WARNING!

Risk of electric shock. Connect the device only to a SCHUKO socket outlet protected by a ground fault circuit interrupter (GFCI). Contact a qualified electrician if you cannot verify that the connector is protected by a GFCI.

Do not bury the cable. Locate cord to minimize abuse from lawn mowers, hedge trimmers, and other equipment.



WARNING!

To reduce the risk of electric shock, replace the cable immediately if damaged.

WARNING!

To reduce the risk of electric shock, do not use an extension cable to connect the device to the power supply; use an appropriately located outlet socket.

KEEP THESE INSTRUCTIONS IN A SAFE PLACE!

1.5 Hazards due to failure to follow safety instructions

Failure to follow the safety instructions may endanger not only persons, but also the environment and the device. Failure to follow the safety instructions may invalidate any damage claims.

The following hazards in particular may result:

- Failure of major unit and system functions.
- Danger to persons due to electrical, mechanical and chemical effects.

1.6 Safety-conscious working

The safety instructions contained in this operating manual must be observed. The operating company is responsible for ensuring compliance with local safety regulations. Disturbances susceptible of impairing safety are to be eliminated immediately!

1.7 Safety instructions for the operating company/operator

A safe and ecologically beneficial disposal of process materials as well as replacement parts must be ensured. (Legal requirements must be observed).

Risks from electric current must be excluded (for further details, refer to the VDE¹ regulations and the regulations of the local public utilities).

1) Association of German Electrotechnical Engineers

1.8 Safety instructions for inspection, maintenance and installation work

The operating company must ensure that all maintenance, inspection and installation work is carried out by authorised and duly qualified personnel, who have read and understood this operating manual.

Before carrying out installation and maintenance works, always make sure that the unit is disconnected from power supply. It must be secured against reconnection during the works! Only then may additional modules be mounted or removed and connections made. Non-compliance can result in damage to the unit and invalidate the warranty. All safety and protective equipment must be reattached and activated immediately after the work has been completed.

1.9 Unauthorised modification and production of spare parts

Modifications and conversions require prior consultation with the manufacturer. Genuine spare parts and accessories authorised by the manufacturer ensure greater safety. No liability can be accepted for any damage resulting from the use of non-Lutz-Jesco parts.

Use only the manufacturer's spare parts and sensors. Otherwise the warranty is invalidated.

2. Before start-up

2.1 Use for intended purpose

The device is intended for the following purpose only: monitoring and displaying combustible and/or toxic gases as well as oxygen. Operating safety is guaranteed only if the device is used for its intended purpose. Use for any other purpose is not permitted and will invalidate any liability under the warranty. The operating conditions described in section 5 "Technical Data" must be observed!

2.3 Scope of delivery

IMPORTANT!

Carefully unpack the product and any accompanying accessories, so that no small parts are left inside the packaging. Compare the delivery content with the delivery note immediately. If there are any discrepancies, determine the cause.

The scope of delivery includes:

- GW 601 gas warning system
- Transmitter, including sensor
- 5 m cable
- Operating Manual

2.3 Steps to start-up

- Reading the operating manual
- Assembly and installation (section 6)
- Test (section 12)

2.4 Part numbers

Part no.	Description
23600201	GW 601 gas warning device for chlorine gas
23600211	GW 601 gas warning device for chlorine dioxide 0 ...1 ppm
23600212	GW 601 gas warning device for chlorine dioxide, 0 ...2 ppm
23600221	GW 601 gas warning device for ozone, 0...1 ppm
23600222	GW 601 gas warning device for ozone, 0...2 ppm



3. Functional range

The gas warning device is a stationary measuring, control and warning device that is in continuous operation and is used to measure toxic gases. It consists of several components that act as a single unit. It is both reliable and easy to assemble and maintain.

The gas warning device is part of the safety system for gas conducting systems and can be used with the following gases:

Transmitter	Measuring gas
CM 601	Chlorine gas (Cl ₂)
DM 601	Chlorine dioxide (ClO ₂)
OM 601	Ozone (O ₃)

Table 3.1: Measuring gas, other gases on request

Chlorine gas application

The CM 601 transmitter is installed in the chlorine gas room; at a freely accessible location approx. 30 cm above the floor. Chlorine gas is heavier than air and descends when it escapes. The sensor detects escaped chlorine gas. The electronic system of the CM 601 transmitter records the sensor signal and converts it into an impressed current of 4 ... 20 mA which is transmitted to the GWZ 601 gas warning system. The 4 ... 20 mA signal is evaluated in the gas warning system GWZ 601 and displayed as chlorine content in the air. If the alarm thresholds set have been exceeded, alarm conditions are displayed or relays switched to notify the relevant persons.

3.1 GW 601 gas warning system

The GW 601 gas warning system is the central control unit and is installed where it can be accessed by operators. It allows measurements to be checked and alarm thresholds set.

The gas warning system receives the 4 ... 20 mA signal from the transmitter and evaluates it. The digital display shows the gas content of the air in the monitored room.

The gas warning system can be configured without the transmitter being attached.

3.2 Transmitter

The transmitter consist of

- a sensor block (sensor and sensor guard)
- an evaluation and amplification electronic system (sensor board)

It has a robust and corrosion-proof housing for industrial applications.

The sensor is an electronic measuring cell that works according to the electro-chemical principle. The sensor block in the transmitter is easy to replace.

The transmitter allows for monitoring, calibration and adjustment. The sensor board converts the sensor signal into a 4 ... 20 mA analog signal. The connecting cable supplies power to the sensor circuit board and transmission of the measurements.

3.3 Power supply backup system (accessory)

The backup system is a uninterruptible power supply (battery) that feeds the gas warning device system in the event of a power failure. This supply will keep the device working for approximately 10 hours.

4. Dimensioned drawings

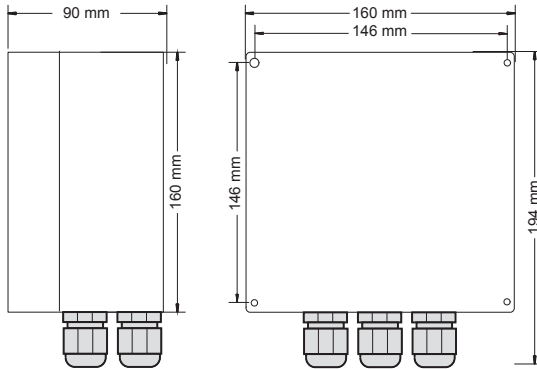


Fig. 4.1: GWZ 601 gas warning system

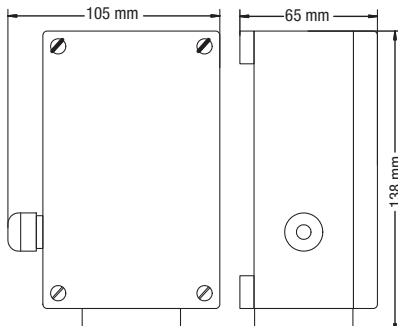


Fig. 4.2: Transmitter

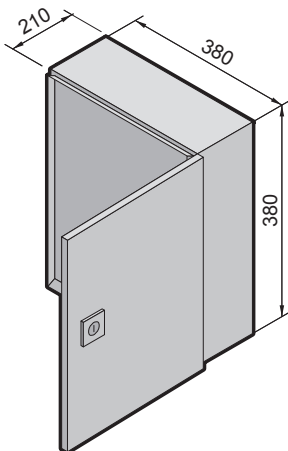


Fig. 4.3: Power supply backup system (accessory)

5. Technical data

GWZ 601 gas warning system			
Voltage supply	230 V AC, 50 Hz		
Power consumption	max. 18 W		
Fuse	F 160 mA, 5 x 20 mm		
Display	LCD display <ul style="list-style-type: none"> • 4 x 20 characters, lit • Displays measurements, messages and alarms • Bar chart to display measuring gas concentration • Menu language German and English LED <ul style="list-style-type: none"> • Red for alarm 1 • Red for alarm 2 • Green for operation • Orange for fault 		
Controls	Keypad with 4 keys		
Relay	4 changeover contacts, 250 V AC, 5 A, potential-free, programmable self-locking Max. 550 VA ohmic resistive load (with RC protective circuit, suppression element) <ul style="list-style-type: none"> • Alarm 1 • Alarm 2 • Failure • Horn 		
Analogue output	4 ... 20 mA, max. working resistance 500 Ω Corresponds to the measuring signal from the transmitter provided it lies within the 1.5 ... 22.5 mA range.		
No. of transmitters	Max. 1		
Alarm thresholds	2 limits, pre-configured, freely adjustable		
	Chlorine (Cl ₂)	Chlorine dioxide (ClO ₂)	Ozone (O ₃)
Limit 1	2 ppm	0.2 ppm	0.2 ppm
Limit 2	10 ppm	1 ppm	1 ppm
Digital input	-		
Interface	RS 232 / RS 485		
Signal generator	Internal horn		
Auxiliary functions	<ul style="list-style-type: none"> • Alarm blocking in service mode 		
Dimensions (W x H x D)	160 x 194 x 90 mm		
Installation	Wall assembly		
Housing material	ABS		
Protection class	IP 54		
Weight	~ 1.0 kg		
Cable entry point	PG connections 1x M20 x 1.5 (cable diameter 7 ... 13 mm) 5x M16 x 1.5 (cable diameter 5 ... 10 mm)		
Connections	Screw-type terminals for cables up to maximum 1.5 mm ²		
Ambient temperature	-10 ... +40 °C		
Storage temperature	-25 ... +60 °C		
Atmospheric moisture	15 ... 90 % rH, non-condensing		

Transmitter			
Measuring gas	Chlorine (Cl ₂)	Chlorine dioxide (ClO ₂)	Ozone (O ₃)
Measuring range	0 ... 10 ppm	0 ... 1 ppm or 0 ... 2 ppm	0 ... 1 ppm or 0 ... 2 ppm
Measuring principle	Electro-chemical cell. Two or more electrodes arranged in an electrolyte. An electro-chemical reaction takes place at the electrode. It generates an electrical current which is proportional to the concentration in the measuring gas.		
Power-up phase	60 s constant current of 0.8 mA		
Reaction time	approx. 30 s		
Stabilisation time	60 min (90%), 24 h (99%)		
Supply voltage	24 ± 6 V DC		
Power consumption	40 mA / 1 W		
Measuring signal	4 ... 20 mA, linear, max. working resistance 500 Ω 4 mA = zero point, 20 mA = measuring range limit		
Dimensions (H x W x D)	126 x 82 x 60 mm		
Housing material	Cast aluminium (painted) / PTFE, high frequency shielded		
Protection class	IP 54 (except for gas inlet)		
Weight	approx. 0.5 kg		
Cable entry point	M16 x 1.5 (Cable diameter 5 ... 9 mm)		
Cable	3-wire, 0.8 mm ² , shielded, core resistance 18 Ω, max. 1000 m		
Ambient temperature	-10 ... +45 °C		
Storage temperature	-20 ... +45 °C		
Atmospheric moisture	15 ... 90 % rH, non-condensing		
Air pressure	900 ... 1100 hPa		
Service life	2 years, depending on the operating conditions		
Self-monitoring	If an error is detected during the automatic checks, the output current is set to 1.1 mA. The yellow LED indicates a fault on the GWZ 601 gas warning system.		

IMPORTANT!

Avoid prolonged operation in dry atmospheres. Permanent exposure to H₂S will damage the sensor.



Power supply backup system (accessory)	
Override time	Max. 10 h
Changeover time	2 ... 6 ms
Power supply	220 / 230 / 240 V AC, 50/60 Hz
Mains output supply	230 V AC $\pm 10\%$, 50/60 ± 1 Hz
Output rated current	2.2 A
Protection	<ul style="list-style-type: none"> • Overload • Full discharge • Short circuit • Overtemperature
Charge time	8 h
Battery	12 V DC, 7 Ah, maintenance-free, 3 ... 5 years service life
Interface	USB, RS 232
Ambient temperature	0 ... 45 °C
Storage temperature	0 ... 45 °C
Atmospheric moisture	0 ... 90 % rH, non-condensing
Housing	Steel sheet, powder-coated, lockable
Dimensions (W x H x D)	380 x 380 x 210 mm
Protection class	IP 66
Weight	approx. 18 kg

6. Assembly and Installation

ATTENTION!

Electrical connections must only be performed by specialist personnel in accordance with relevant installation requirements.



ATTENTION!

Make sure the device is de-energised when working on it. The power supply must only be switched on after assembly and electrical connections have been completed.

IMPORTANT!

Note the power supply specified on the rating plate.



IMPORTANT!

Where possible, a continuous cable from sensor to the measuring input should be used. An extension of the cable by plugs or terminal sockets increases the risk of faults caused by contamination, humidity or excessive transition resistances.

ATTENTION!

Input, output and control lines and cables must always be kept separate. In particular, they must be routed away from power circuit lines!



NOTE!

All cables must be routed to protect them from mechanical damage. Strain relief must be provided near the cable entry point.

Stray interference will falsify the measurement. Power supply and measuring lines at close proximity should only cross at a 90° angle. The permissible length of the measuring cables must be adhered to with regard to the sensor used. When measuring ensure that the (plug) connections are clean and dry and that the lines do not become brittle due to sharp buckling. The shielded cables normally used for such measuring lines must be of the quality specified.

6.1 GWZ 601 gas warning system

The electrical installation for the gas warning device must contain a separating device (e.g. an automatic circuit breaker) to ensure reliable separation from the power supply.

The device is designed for a fixed installation connected to a power supply of 230 V /AC. The device corresponds to protection class I in accordance with EN 60335 and must be connected to a protective earth conductor (PE).

When connecting to the relays, note that inductive loads must be de-jammed. If this is not possible, the strip relay contact on the device terminal must be protected by an RC protective circuit / suppression element. For DC voltage the relays or contactor coil must be de-jammed with a freewheeling diode.

RC protective circuit / suppression element			
	Current	Capacitor C	Resistor R
	< 60 mA	10 nF 260 V	390 Ohm 2 Watt
	< 70 mA	47 nF 260 V	22 Ohm 2 Watt
	< 150 mA	100 nF 260 V	47 Ohm 2 Watt
	< 1 A	220 nF 260 V	47 Ohm 2 Watt

ATTENTION!

The assembly location must be selected so that the device is not subject to any mechanical load or chemical exposure in any way.

When assembling make sure there is clear access to the device.

6.2 Transmitter

- A transmitter can be connected to the GWZ 601 gas warning system.
- The transmitter is connected via a shielded 3-wire cable.
- All input and output wires and cables must be shielded. The shielding must be applied on one side only.
- The glass inlet of the sensor must be kept clear of dust and contamination.
- Wall assembly is with the sensor opening facing down, close to the ground (approx. 30 cm high) with two screws (max. Ø 4 mm) and only with the cover open.
- During assembly make sure that the transmitter is accessible for maintenance work.
- Keep a minimum distance of 10 cm between the sensor opening and other fixtures.

The cables pass through the PG connections into the housing interior. The cable entry point consists of the flange which screws into and is sealed in the basic housing, the clamp/seal assembly and the threaded sleeve. Insert the cable in turn through the threaded sleeve, clamp/seal assembly and the flange. Make sure the clamp/seal assembly is correctly installed. Fasten the cable by screwing the threaded sleeve tightly.

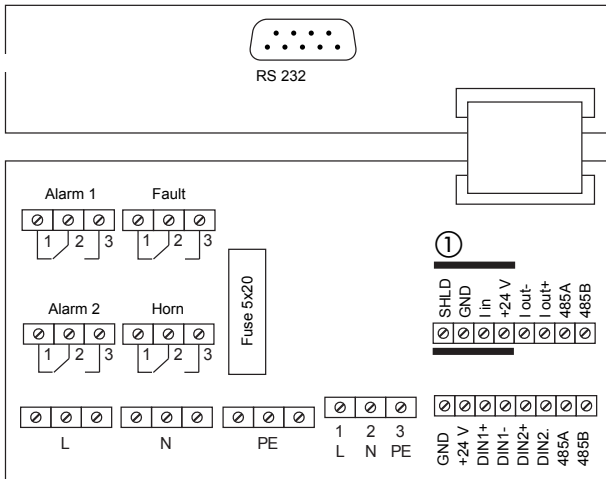
NOTE!

The cable shielding must not be introduced into the transmitter. The grounding terminal in the housing should not be occupied.

All transmitter terminals are plug-in terminals. Remove the connectors before routing the cables to avoid mechanical damage. Do not plug them back in until you have completed the assembly.

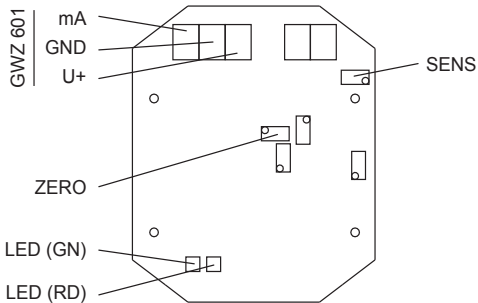


6.3 Wiring diagrams



Terminal	Connection		Note
Alarm 1	Relay 1		Relay outputs
Alarm 2	Relay 2		
Fault	Relay 3 for fault		
Horn	Relay 4 for signal generator		
L / N / PE	230 V AC		Power supply
Fuse	Fuse		
SHLD	Shielding		① Connection to transmitter
GND	Ground		
I in	Input	4 ... 20 mA	
+24V	Output	24 V DC	
I out -	-		4 ... 20 mA output
I out +	+		
485A	A (-)		RS 485 interface
485B	B (+)		

Fig. 6.1: GWZ 601 gas warning system wiring diagram, ① Connection to transmitter

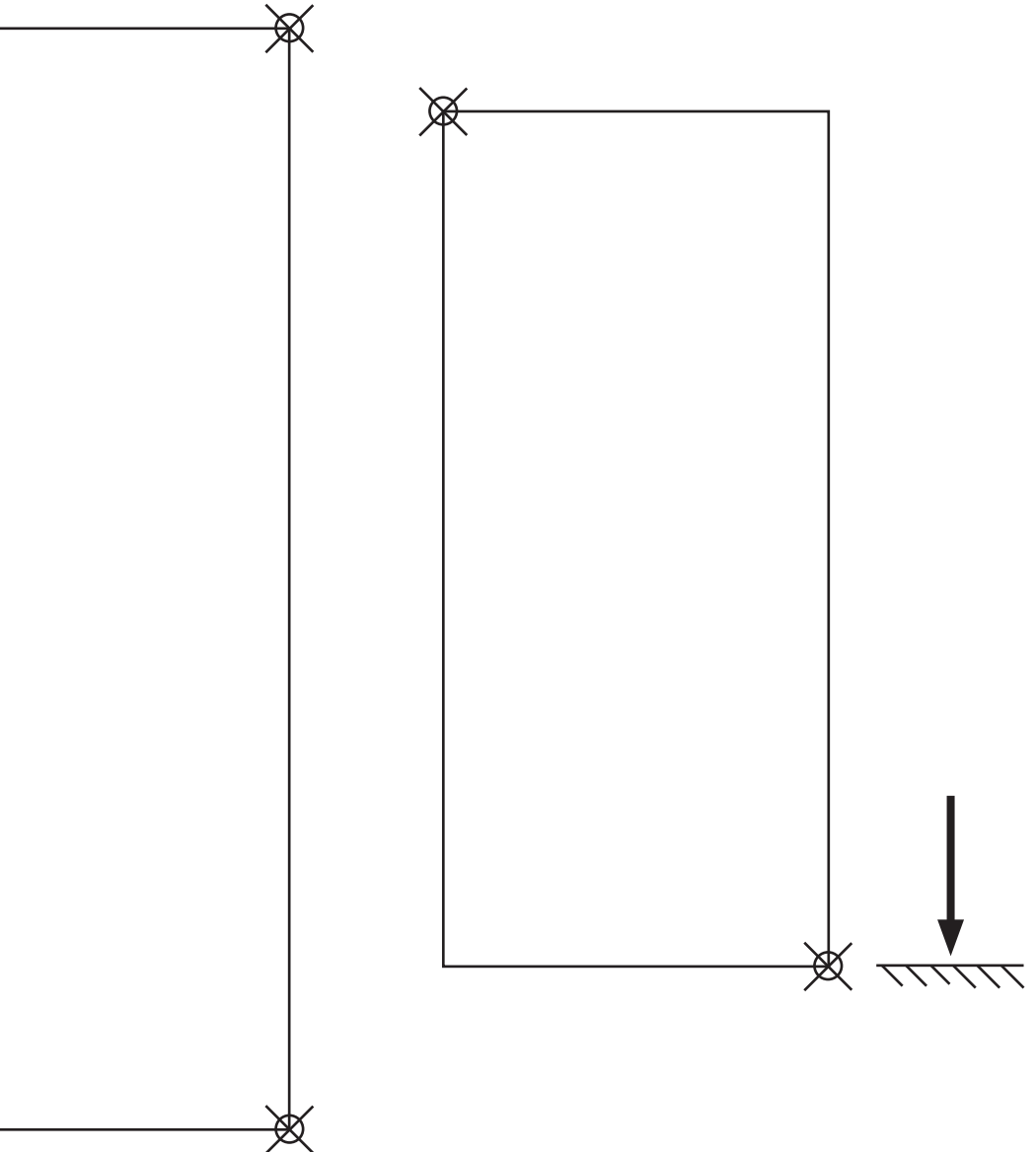


Terminal	Function	Connection	Note
mA	Output	4 ... 20 mA	Connection to GWZ 601 gas warning system
GND	Ground		
U+	Input	24 V DC	
SENS	Calibration potentiometer, see chapter 12.1		
ZERO			
LED (GN)	Fault analysis LED, see chapter 13		
LED (RD)			

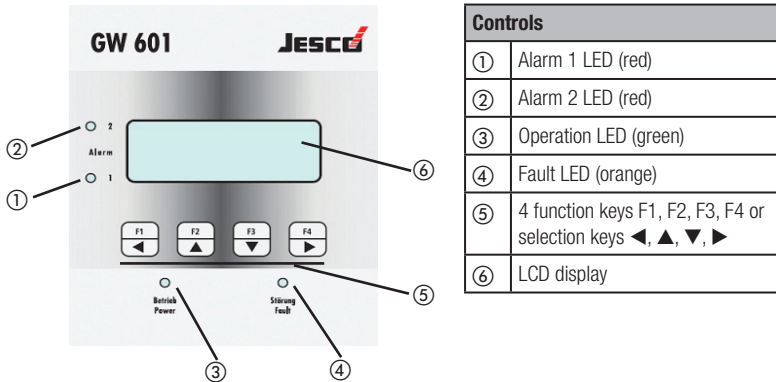
Fig. 6.2: Transmitter wiring diagram

6.4 Drill template

	Width x height
GWZ 601 gas warning system	146 x 146 mm
Transmitter	52 x 113 ... 116 mm



7. Operation



The selection keys have a repeat function which allows you to automatically repeat the key function when held down for a long period. The functions of F1 to F4 differ depending on the operating mode. They are shown in the bottom line of the graphic display.

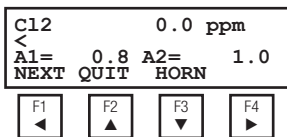


Fig. 7.2: GWZ 601 display, standard

- 1st row: Measuring gas or size, current measurement with unit.
- 2nd row: Bar chart presentation of the measurement, 0 to 100%.
- 3rd row: Threshold settings for alarms 1 and 2.
- 4th row: Assignment of the function keys F1 to F4.

7.1 Function keys

Key	Normal mode	Activation / service mode
F1	Jump to menu (NEXT)	
F2	Acknowledge alarms	▲ and ▼, modify figures / scroll through selection
F3	Not used	
F4		Confirm entry

8. Configuration

IMPORTANT!

Measurement processing continues unchanged during configuration.

The configuration menu runs in a continuous loop. Press function key F1 repeatedly until the desired menu is displayed.

All settings can be viewed but not changed in normal mode. Settings can only be changed in activation / service mode. This can only be achieved by entering a password / key combination.

The changes are only activated once the menu has been exited. If you exit the menu without pressing F4 (SAVE), the most recent settings remain intact.

If no input is made for more than 10 minutes, the GWZ 601 reacts differently, depending on the operating mode:

- Normal mode: Changes to standard display
- Activation: Changes to standard display and normal mode.
- Service mode: No change.

The GWZ 601 gas warning system contains all the parameter settings needed to adapt the device to the requirements of the application.

IMPORTANT!

In order to make changes, the system must be activated by entering a password / key combination.

Menu	Selection	Function
Password	— (Normal mode)	Normal mode: automatic, F1 (NEXT) key for next menu. Release: Press F3 and F4 simultaneously for approx. 5 seconds. Keep pressing this key combination for approximately five seconds to disable activation.
	OK (Activation)	
	GB D	After activation, press F2 to switch between German (D) and English (GB). GB: German is active, change to English with F2 D: English is active, change to German with F2
Service	OFF ON	In service mode alarm and fault messages are blocked, the relay outputs are inhibited and the operation LED flashes.
Gas	List of gases	Select measuring gas
Dimension	ppm, vol.-%,% UEG, pH, degree	Unit for the measuring range. The unit chosen will be displayed during normal operating mode.
Decimal point	0 0.0	Shown with or without a decimal point for measurement display, measuring range limit and alarm limits.
Range	10.0	Sets the measuring range limit between 0 ... 30000
Alarm 1, alarm 2	0 to the measuring range limit	Sets the two alarm thresholds and the direction of the overrun to trigger the alarm. The alarm threshold limits are arranged in ascending order. The alarms are triggered when the limit is exceeded.
Quit A1, Quit A2	ON OFF	Indicates whether the alarm and the corresponding relay are self-locking (ON) or non-locking (OFF). A non-locking alarm goes out when the alarm condition no longer applies (check the alarm hysteresis). A self-locking alarm must always be reset via manual acknowledgement, by using the F2 (QUIT) function key.

Horn	A1 A2	<p>Indicates whether the horn relay (and the integrated signal generator linked to it) has been assigned to alarm 1 or alarm 2. Both alarms are deactivated for a "---" setting. The horn relay can be acknowledged with the F3 (HORN) function key even if the alarm condition is still present.</p> <p>ATTENTION! <i>The horn relay should only be used for external acoustic signal generators.</i></p> <p>NOTE! <i>The horn is triggered again if the alarm threshold is again exceeded after a subsequent interruption (new event alarm). This also applies if a self-locking alarm has not been acknowledged in the meantime.</i></p>
Relay mode A1, A2, F, H	Closed, Opened	<p>Indicates whether the alarm, fault or relay drops out or applies when the trigger condition is met.</p> <p>Opened: The relay is applied during measuring mode and drops out when the alarm limit is exceeded.</p> <p>Closed: The relay has dropped out during measuring mode and closes when the alarm limit is exceeded.</p> <p>NOTE! <i>For the "Opened" setting an interruption in the power supply to the warning device has the same effect as triggering an alarm or a message.</i></p>
Hyst.	0% to 10%	<p>Sets the alarm hysteresis as a percentage of the value of the corresponding alarm threshold. A non-locking alarm only goes out if it is below the alarm threshold by less than the value of the hysteresis or 2% of the measuring range limit. The larger value applies. This prevents the alarm from being repeatedly triggered as a result of minor measurement fluctuations around the alarm limit.</p>
NPC	0 to 5%	<p>A near point of convergence can be set. The range of values \pm NPC over the measuring range limit is displayed as zero. The adjacent range of up to \pm 2 NPC from the measuring range limit will show a flowing convergence to a linear steady state characteristic. Default setting: 0%, i.e. deactivated.</p> <p>ACTUAL: The current, unconverted value of the transmitter output current at the input of the gas warning system is displayed.</p>
<p>ATTENTION! <i>The following adjustment to the GWZ 601 gas warning system without a transmitter must only be performed by trained personnel.</i></p>		
Zero	<p>Zero point position. No correction is made for a value of 4,000 mA.</p> <p>ACTUAL: The measurement corrected around ZERO and possibly GAIN is displayed.</p>	
Gain	<p>Amplification correction value. No correction is made for a value of 1,000.</p> <p>ACTUAL VALUE: The corrected measurement around ZERO and possibly GAIN is displayed.</p>	
<p>Adjustment takes place in two stages:</p> <ol style="list-style-type: none"> 1. If no gas is supplied the zero point is initially changed until the ACTUAL VALUE shown in the display is 0. Note that negative values are represented by "< 0". If the adjustment is correct, the preceding "<" disappears and precisely "0" is displayed. 2. Subsequently, when a test gas is supplied, GAIN is adjusted until the actual value shown in the display corresponds to the setpoint. 		

9. Operation

GW 601 gas warning system operating conditions.

Power-up phase

The connected transmitter can issue undefined values to the gas warning device system GWZ 601 immediately after the system has started up. This situation can lead to false alarms. All alarm messages are therefore blocked for 120 seconds after the system has been switched on, or after the power supply has been interrupted.

The LEDs begin to flash as soon as power is supplied. The time remaining until normal operation is resumed is indicated by a decrementing counter. The entire memory is completely tested. This test is subsequently repeated at regular intervals in measuring mode.

After this 120 seconds the green "Operating/Power" LED is continuously lit and the GWZ 601 gas warning system enters data logging mode.

Data logging

Automatic data logging is indicated by the continuously lit green "Operation/Power" LED. Signals from the transmitter are now recorded by the GWZ 601 gas warning system.

Service mode

In service mode, alarm and fault signals are blocked. Service mode is indicated by the flashing operation LED. Service mode can be activated in the configuration menu.

In service mode activation is permanently enabled.

Alarm

Two alarm thresholds can be set, limit 1 and limit 2. If the thresholds are exceeded the red alarm 1 or alarm 2 LEDs light up respectively.

If there is a fault on the GWZ 601 or the transmitter, the yellow LED lights up.

		Power-up phase	Data logging	Service mode	Alarm
Alarm LED					
Alarm 1, 2	Red	Flashing	Off		On *)
Fault	Yellow				On **)
Operation/ Power	Green		On	Flashing	On
Display					
Measurement	No display	Current measurement			
Bar display					
A1, A2 limits		Current settings			
Relay					
Alarms 1 and 2	No relay switched	Not activated		No relay switched	Activated *)
Fault		Activated			Not activated **)
Horn		Not activated			Activated *)
Integrated signal generator					

*) LEDs and relays switch according to the limit exceeded

***) LEDs and relay switch if there is a fault with the GWZ 601 gas warning system or transmitter.

10. Relay

Four relays are used to control external devices or forward information.

- Two limits / alarm thresholds can be set up.
- "Alarm 1" relay is switched when limit 1 is reached. This is not self-locking and returns when the level falls below limit 1 again.
- "Alarm 2" and "Horn" relays are switched when limit 2 is reached. They are self-locking and do not return when the level falls below limit 2 again.
- The "Fault" relay switches if there is a fault with the GWZ 601 gas warning system or transmitter.

The limits are pre-set depending on the model, see table 8.1. Adjustments can be made in the Alarm 1 / Alarm 2 menu.

Limit	Chlorine gas	Chlorine dioxide	Ozone
1	2 ppm	0.2 ppm	0.2 ppm
2	10 ppm	1 ppm	1 ppm

Tab. 10.1: Preset limits for each measuring gas

Relay	Limit	Delay time	Self-locking	Acknowledgement	Use
Alarm 1	1	No delay	No	Can be manually acknowledged immediately	Optical signal generator
Alarm 2	2		Yes	Can only be acknowledged manually when the level falls below limit 2.	Sprinkler with acknowledgement via door contact.
Horn				Can be manually acknowledged immediately	Acoustic signal generator

Tab. 10.2: GW 702 measurement amplifier relays

Example

If "Alarm 2" relay activates the sprinkler, and a door contact is connected to the digital input, then in event of an alarm the sprinkler will be switched off as soon as the maintenance personnel enter the room. If level 2 is still exceeded when the door is closed, the "Alarm 2" relay switches again.

10.1 Action in the event of an alarm or fault

Limit 1

When limit 1 is exceeded there is a minimum gas concentration. Appropriate action must be taken immediately.

CAUTION!

Repair work must only be started when the concentration has dropped below limit 1.



Limit 2

When limit 1 is exceeded the endangered area and surrounding rooms must be cleared. The actions listed in the health and safety regulations and chlorine alarm plans must be taken.

10.2 Configuration

Effective direction

The relays in the GWZ 601 gas warning system can work according to two different principles. They can be adjusted in the Relay Mode menu.

Operating current principle

The relay is activated when the tripping value is exceeded, i.e. the relay coils apply when the tripping value is exceeded. If there is no power supply, exceeding the tripping value has no effect.

Delivery status for "Alarm 1", "Alarm 2" and "Horn" relays.

Standby current principle

The relay applies when there is no fault in the system. This relay returns to its original position (zero position) when the tripping value is exceeded. Zero power supply therefore operates in the same way as exceeding the tripping value.

Delivery status for Fault relay.

11 Analogue Output and Interface

11.1 Analogue output

You can read the measurements from the transmitter as a 4 ... 20 mA signal via the analogue output. The analogue output corresponds to the measuring signal from the transmitter provided it lies within the 1.5 ... 22.5 mA range.

11.2 Interface

The devices can be optionally fitted with RS 485 and RS 232 interfaces. These are for service purposes only.

12. Maintenance

Maintenance by a competent person is essential for testing and maintaining the functionality of the system. Maintenance involves inspection, calibration and adjustment as well as a function test of the entire gas measuring system.

ATTENTION!

Regular inspection and functional testing must be carried out on the supplied GW 601 measuring, monitoring and warning system at maximum 6-monthly intervals. National regulations or local standards may also apply.



Proper maintenance is the responsibility of the system's operating company. The results of the maintenance work should be documented if this is not already required by the prevailing regulations.

IMPORTANT!

Prior to carrying out the functional test ensure that steps have been taken to prevent accidental triggering and forwarding of alarms.



Check the alarm relays regularly to ensure that in the event of a fault both the device's indicators and the recording of the higher-level controller (PLC etc.) are working.

Maintenance includes:

- Inspection and if necessary adjustment of the transmitters
- Operational check of the switching steps for alarm activation. Test gas with a concentration above alarm limit 2 must be applied to the sensors.
- Activation of "alarm" and "operational fault" messages on GWZ 601 gas warning system
- Operational check of the relay contacts
- Operational check of the optical and acoustic warning devices

12.1 Replacing the sensor

The sensor block of the transmitter is subject to ageing and wear and tear, the extent of which depends largely on the conditions at the place of application. For this reason the sensor block as a wear part is not covered under warranty. The service life of a sensor block is approximately two years. After this time all sensor blocks in operation should be replaced.

Each transmitter is factory-adjusted prior to delivery. The status recorded in the test is documented in the test protocol. On receipt of the serial number the manufacturer provides pre-calibrated replacement sensor blocks.

The maintenance-friendly design of the transmitters enables the sensor block to be replaced easily.

- Disconnect the transmitter from the power supply (U+) and ground (GND).
- Open the housing lid
- Remove the ribbon connector attaching the sensor block to the electronic system.
- Loosen the three screw connections attaching the sensor cap, base housing and the sensor.
- Replace the sensor.
- Reassemble the transmitter.
- Restore the power supply after closing the housing.

Adjusting the 4 ... 20 mA signal

The GW 601 is normally operated with transmitters that have a 4 ... 20 mA output with a linear steady state characteristic, i.e. an input current of 4 mA is interpreted as a zero point, and an input current of 20 mA as the measuring range limit. Between these values the conversion is based linearly according to the following formula: $\text{Measurement} = ((\text{Measured current} - 4 \text{ mA}) \times \text{measuring range limit}) / 16 \text{ mA}$

IMPORTANT!

Adjusting to the settings are normally made on the transmitter itself and not on the GWZ 601 gas warning system.



If the readings are not 0.00 ppm after the sensor has been replaced, adjust the transmitter. This will ensure that the transmitter produces a 4 mA signal when the air to be measured does not contain measuring gas. The potentiometers used for adjustment are located on the sensor board in the housing (see Fig. 13.1 in section 13). The zero point setting potentiometer is labelled "Zero", while the sensitivity setting potentiometer is labelled "Sens". The other potentiometers are factory-set and sealed. They must not be adjusted.



IMPORTANT!

Adjustment of the zero point is always performed first before setting the sensitivity is set while applying the test gas. If this is performed vice versa, the transmitter's sensitivity will be adversely affected.

We recommend checking the zero point again after adjustment. This will ensure that the transmitter does not remain accidentally in an alarm mode after calibration and adjustment.

If adjustment cannot be made on the transmitter, it can be done on the GWZ 601 gas warning system. To do this, when the signal has been detected the incoming current is converted first with an offset and an amplification factor. Only then is the measurement formed and assessed. The necessary adjustments can be made in the ZERO and GAIN menus.

The setting range is limited so that adjustments can be restricted to a tolerance range that is acceptable for measuring. More extensive adjustments require working directly on the corresponding transmitter.

12.2 Calibrating the sensor



ATTENTION!

The transmitter is factory-calibrated. Any unqualified changes made to the settings will deactivate operation.

The GW 601 gas warning device is factory-calibrated prior to delivery. If calibration is required, it must only be performed by authorised specialist personnel. Calibration is performed with test gas directly on the transmitter.

12.3 Sensor functional testing with test gas application

- To test the zero point ambient air is used (free of measuring gas, without flammable substances), otherwise synthetic air.
- Only certified test gases may be used within their shelf life.
- The actual concentration must be known to 2% relative to the bottle value.
- The test gas concentration is in the middle of the measuring range or slightly above the maximum alarm threshold, at any rate below the measuring range limit.
- Test duration: 0.5 to 1.0 l/min via calibration adapter for at least 2 minutes
- Further information: DIN EN 45544-4, BG Chemical information BGI 836 (bulletin T021). In addition there are national regulations for determining maintenance intervals.

12.4 Replacing the fuse

The devices are equipped with an internal fuse that can be replaced if required. To replace the fuse, unscrew and lift up the front of the device. The fuse is located next to the "Horn" relay.



WARNING!

Ensure that the device is de-energised before opening it.

12.5 Power supply backup system (accessory)

The backup system battery is maintenance-free.

12.6 Disposal

The equipment was manufactured in accordance with the ROHS guideline and the waste electrical equipment legislation. The manufacturer will take care of disposal if the equipment is returned free of charge. It should not be disposed of as domestic waste!

13. Troubleshooting

WARNING!

If the GWZ 601 gas warning system indicates a fault that the operating company cannot rectify immediately, appropriate measures must be taken and the maintenance service department notified. Apply warning notices and notify personnel about the situation until the fault is rectified.



GWZ 601 gas warning system

LEDs on GWZ 601	Possible reason	Action
"Operation" off	Power supply disconnected	Check the power supply
"Fault" on	Connecting cable disconnected	Check the connecting cable

Transmitter

Current output ($I_{out} \pm 0.1 \text{ mA}$)	Possible reason	LED green (GN) *)	LED red (RD) *)	Action
0 mA	Connecting cable disconnected	Off	Off	<ul style="list-style-type: none"> • Check electric connection • Repair connecting cable
	Power failure			<ul style="list-style-type: none"> • Check power supply • Repair connecting cable
0.8 mA	Power-up phase	On	Flashing	The condition is automatically rectified after the power-up phase.
1.1 mA	Hardware error		On	Check hardware and repair if necessary.
up to 22 mA	Measuring mode		-	
> 22 mA	Connecting cable short-circuit		Off	<ul style="list-style-type: none"> • Check electric connection • Repair connecting cable

*) see Fig. 13.1

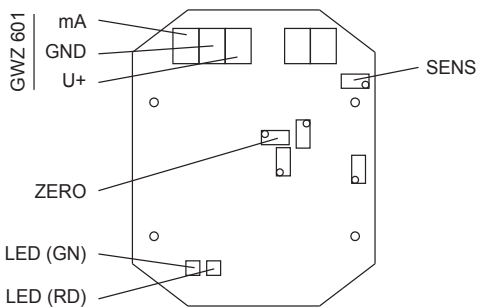


Fig. 13.1: Transmitter board

	Function	
SENS	Potentiometer	Calibration of 4 ... 20 mA signal sensitivity
ZERO		Calibration of 4 ... 20 mA signal zero point
LED (GN)	LED	Green
LED (RD)		Red

IMPORTANT!

The 4 ... 20 mA current output of the transmitter is also available for diagnostic purposes. A current measuring instrument must be looped into the 4 ... 20 mA line to observe the current output.



14. Spare parts

Part no.	Description
78390	GWZ 601 gas warning system
78391	CM 601 transmitter, incl. sensor block for chlorine gas
78393	DM 601 transmitter, including sensor block for chlorine dioxide, 0 ... 1 ppm
78388	DM 601 transmitter, including sensor block for chlorine dioxide, 0 ... 2 ppm
78395	OM 601 transmitter, including sensor block for ozone, 0 ... 1 ppm
78387	OM 601 transmitter, including sensor block for ozone, 0 ... 2 ppm
78017	Connecting cable between gas warning system and transmitter (sold by the metre)
Accessories	
23600131	Power supply backup system
78009	External horn
77214	Strobe
77215	Flashing light
Wearing parts	
78392	Sensor block for CM 601, chlorine gas
78394	DM 601 sensor block, chlorine dioxide, 0 ... 1 ppm
On request	DM 601 sensor block, chlorine dioxide, 0 ... 2 ppm
78396	OM 601 sensor block, ozone, 0 ... 1 ppm
On request	OM 601 sensor block, ozone, 0 ... 2 ppm

Device revision

This operating manual applies to the following devices:

Device type:	Revision status
GW 601	09/2000

It contains all the technical information required for installation, set-up and maintenance. Should you have any questions or require further information regarding this operating manual, please contact the manufacturer or their official national representative.

Index

A

Acknowledgement	19
Adjustment	21
Alarm	18
Alarm procedure	19
Analog output	20

C

Calibration	22
Configuration	16
Controls	15

D

Data logging	18
Delay	19
Dimensioned drawing	7
Display	15
Disposal	22
Drill template	14

E

Example	19
---------------	----

F

Functional range	6
Function keys	15
Fuse	8, ^>22

G

Gas warning system	6
--------------------------	---

I

Installation	11
Installation location	12
Interface	20

L

Limit	19
-------------	----

M

Maintenance	21
Measuring gas	6
Measuring principle	9
Measuring range	9

O

Operating state	18
Operation	15, ^>18

P

Part numbers	5
Password	16
Personnel qualification	3
Power-up phase	18
Power consumption	8
Power supply	8
Power supply backup system	6
Protective circuit	11

R

Relay	19
RC protective circuit	11
Relay mode	17
Replacing the sensor	21

S

Safety instructions	3
Scope of delivery	5
Self-locking	19
Service	16
Service mode	18
Spare parts	24
Start-up	5
Suppression element	11

T

Technical data	8
Transmitter	6
Troubleshooting	23

U

Use for intended purpose	5
--------------------------------	---

W

Warranty claim	26
Wiring diagram	12

Warranty claim

Please copy and enclose with the device!

If the device fails during the warranty period, please clean it and return, accompanied by the completed warranty claim form.

Sender

Company:..... Telephone: Date:

Address:.....

Contact person:

Manufacturer order No.: Date of delivery:

Device type:..... Serial number:.....

Nominal delivery rate/Nominal pressure:.....

Description of fault:

.....

.....

Type of fault:

1. Mechanical fault

Premature wear

Wearing parts

Breakage/other damage

Corrosion

Damage in transit

2. Electrical fault

Connections, connectors or cables loose

Operating controls (e.g. switches / push-buttons)

Electronics

3. Leaks

Connections

Dosing head

4. No or inadequate operation

Diaphragm defective

Other

Operating conditions of the device

Location/description of installation:

Accessories used if any:

.....

.....

Commissioning (date):.....

Running time (approx. operating hours):

Please indicate the specific features of the installation and enclose a simple sketch showing materials, diameters, lengths and heights.

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Der Unterzeichnete Lutz-Jesco GmbH, Am Bostelberge 19, 30900 Wedemark, bestätigt, dass die nachfolgend bezeichneten Geräte in der von uns in Verkehr gebrachten Ausführung die Anforderungen der harmonisierten EU-Richtlinien, EU-Sicherheitsstandards und produktspezifischen Standards erfüllen. Bei einer nicht mit uns abgestimmten Änderung der Geräte verliert diese Erklärung ihre Gültigkeit.

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Bezeichnung des Gerätes:	Gaswarngerät
Description of the unit:	Gaswarning device
Désignation du matériel:	Decteur de fuite de chlore gazeux
Descripción de la mercancía:	Detector de Gaz cloro
Omschrijving van het apparaat:	Gas-waarschuwingsapparaat
A termék megnevezése:	Gáz figyelmeztető készülék
Designação do aparelho:	

Typ / Type / Tipo / Típusjelölés:	EU-Richtlinie / EU directives/ Directives européennes / Normativa UE / EU-richtlijnen / Vonatkozó EG-irányelvek / Directrizes da UE	Harmonisierte Normen / harmonized standards / Normes harmonisées / Estándares acordemente / Toegepaste nomeringen / Hatályos normák / Normas harmonizadas
GW 601		
GW 404		
GW 504	2006/95/EG	EN 50081-1 : 01.92
GW 702	2004/108/EG	EN 50081-2 : 08.93



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