Gas Detectors GW 404 and GW 504

General

The gas detectors are stationary, continuously working control devices to which sensors for the measurement of toxic gases can be connected. The devices stand out for their reliability and the low installation and maintenance work required. It is possible to connect up to 4 different sensors to the amplifiers. They can be used in industrial and private applications.

Sensor connection

The sensors are connected via a shielded two-wire line. The sensor enclosure accommodates the electrochemical sensor and the sensor PCB. The sensor receives the measured signal and the printed circuit board converts it into a 4...20mA signal. At the same time the PCB is supplied via the same line with a 24 V DC auxiliary voltage. For this reason sensors with an external power supply must not be connected. **Please make sure that every sensor is shielded when the gas detector system is installed. Only then can immunity from interference be guaranteed for the detector.**

Service life of the sensors is approx. 2 years. As a precaution, the sensor should be replaced after this period of time. Spare sensors can be ordered from JESCO against return of the "old" sensor.

Displays and signals

The gas detectors have 10 LEDs on the front panel to display the relevant operating mode and the function messages. External equipment can be activated or information passed on with four relays. The relays have zero-potential changeover contacts for a maximum load of 230V/5A (ohmic load). The relays for alarm 1 and alarm 2 can, for example, control solenoid valves of the sprinkler system. With alarm 2 the horn relay and an acoustic signalling device integrated in the side can be activated. The horn relay is intended for activating an external horn or siren. This relay can be acknowledged in the event of a gas concentration. A sensor fault can be displayed with the 'Trouble' relay. Moreover, units with an integrated measurement display are available (GW 504).

The relays in the gas detectors work according to two different principles:

1. Open-circuit current principle:
The relays for alarm 1 and alarm 2 as well as the horn relay are activated on detection of the relevant condition, i.e. the relay coil pulls up.

2. Closed-circuit current principle:
The fault alarm relay is activated in the fault-free condition, i.e. the relay coil has pulled up and drops in the event of a fault. It is therefore possible for a fault signal to be passed on by the fault alarm relay even in the event of a power supply failure to the gas detector.

Technical data - Amplifier

Mains connection		230 V AC, 50 Hz, 20 VA (max. power consumption)
Sensors		max. 4 (various sensor types available)
Power supply to sensors		24 V DC (uncontrolled) via the measuring line
Sensor connection		4 ... 20 mA
Max. current per sensor		100 mA
Displays		8 red LEDs (alarm) 1 yellow LED (fault) 1 green LED (operation)
Acoustic signaling device		85 dB(A) at 1 m
Relays		4 zero-potential changeover contacts 230 V/5 A
Housing		Polystyrene (PS), light grey (RAL 7035), anodised aluminum front panel, transparent cover (PC)
Dimensions		(H X W x D) 184 x 222 x 115 mm
Temperature range		0° C to + 55° C
Storage temperature		- 25° C to+ 60° C
Relative humidity		5% to 90%
Type of enclosure		IP 54
Interface		RS - 485 (only for service)
OPTIONS		
Digital display		red LEDs; measurement and status display
	Display area	52 x 19 mm
Relay switch box		8 relays
	Switching voltage	250 V AC, 110 V DC,
	Max. current	10 A
	Dimensions	200 x 120 x 58 (W x H x D)
	Level of protection	IP 56
Safety system	Provision of the power supply	max. 10 hours (without alarm)
	Battery type	one 12 V block 7.0 Ah
	Dimensions	500 x 500 x 300 mm (W x H x D)
	Level of protection	IP 65

Technical data - Sensors

Type of gas	Chlorine (Cl_2)	Chlorine dioxide (ClO_2)	Ozone (O_2)
Measuring principle	electrochemical cell		
Standard measuring range	0 ... 10.00 ppm	0 ... 1.00 ppm	0 ... 1.00 ppm
Other measuring ranges	0 ... 5 ppm	0 ... 20 ppm	0 ... 50 ppm
Cross-sensitivity	NO_2, O_3		
Heat-up time	approx. 24 hours (in case of power failure lasting more than 3 hours, renewed heat-up phase necessary)		
Response time (t_{90})	about 3 minutes		
Temperature range	10°C to +45°C, briefly up to +55°C		
Humidity range	20% to 99% relative air humidity		
Power supply	18.5 - 30 V DC (2-conductor technology)		
Signal output	4 ... 20 mA		
Power consumption	about 0.5 W		
Area which can be monitored by diffusion	With room monitoring about 40 m² to 60 m² (depending on local conditions)		
Service life	about 2 years; silicone, boron or phosphorous compounds like $SiCl_4$ BCl_3 or PCl_3 clog the capillary gas inlet openings!		
Installation position	Close to ground; due to the particularly poor propagation of chlorine attention must be paid to optimum positioning. Position in accessible place for maintenance purposes! Protect against splash water!(rain hood)		
Max. load	400 Ohm		
Maintenance	2 times per year recommended		
Cable length	max. 2000 m of the shielded special cable is used, 3 x 0.8 mm, Part No. 78017		
Special notes	A rain hood is provided for installation; pay attention to temperature range		
Type of enclosure	IP 54		
EMC test	EN 50081-1 (emission), EN 50082-2 (interference immunity)		

Interface RS 485

The computer interface RS 485 is provided for maintenance purposes only. Settings such as alarm thresholds and delay times can be changed via this interface. Moreover, the measurements can be retiered and inputs deactivated. Appropriate software and a handheld programming unit are available on request.

Tests

EMC Directive 89/1336/EEC:
The gas detectors have been EMC-tested acording to the basic industrial standards EN 50081-1 and 50082-2 and can be used in industry and in private households as regards the emitted interference and interference immunity.
Low-voltage Directive 3/23/EEC:
In accordance with the standard EN 61010 Part 1, Safety provisions for electric measuring, control and laboratory equipment.

Selection table

	Part No.
Amplifier GW 404 without sensor	23600106
Amplifier GW 504 without sensor	23600156

Complete units comprising:
sensor, 5 m sensor connection cable and rain hood per sensor

Detector without digital display				
	Amplifier with ...			
	1 Sensor	2 Sensors	3 Sensors	4 Sensors
GW 404 Chlorine	23600101	23600102	23600103	23600104
GW 404 Chlorine dioxide	23600111	23600112	23600113	23600114
GW 404 Ozone	23600121	23600122	23600123	23600124

Detector with digital display				
	Amplifier with ...			
	1 Sensor	2 Sensors	3 Sensors	4 Sensors
GW 504 Chlorine	23600151	23600152	23600153	23600154
GW 504 Chlorine dioxide	23600161	23600162	23600163	23600164
GW 504 Ozone	23600171	23600172	23600173	23600174

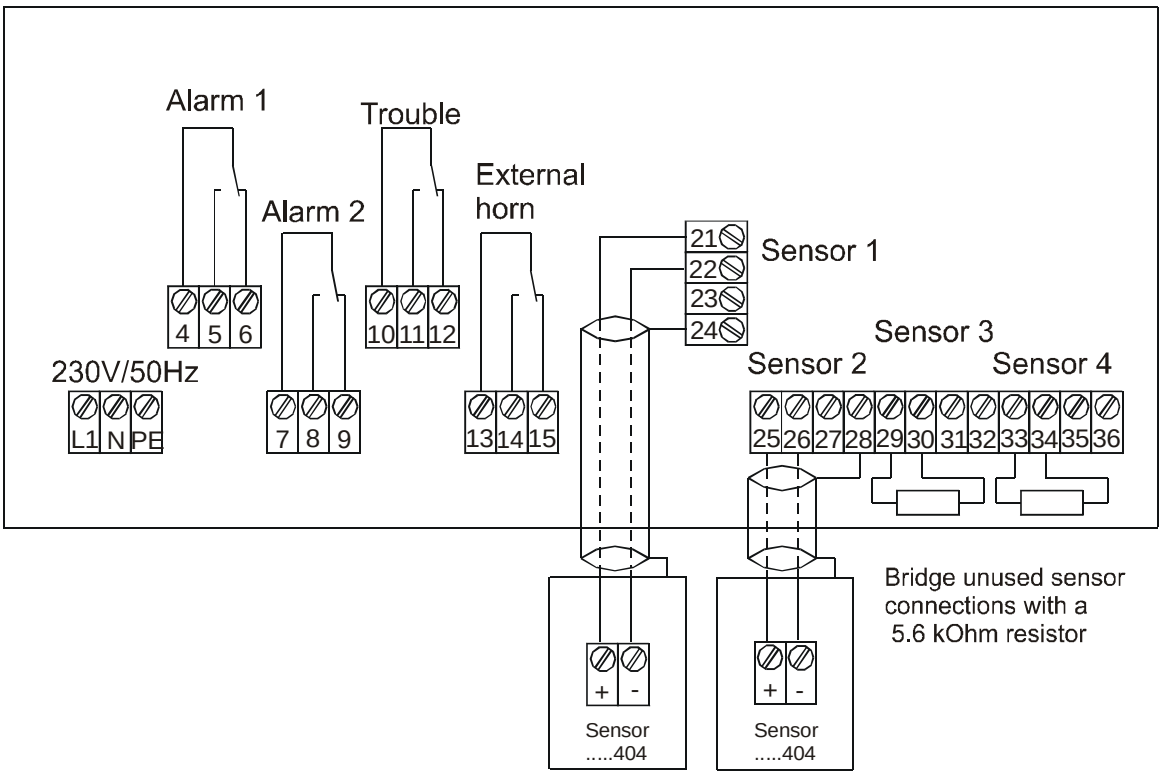
Accessories

	Part No.
Special cable for connecting the sensors	78017
Alarm horn	78009
Flashlight	77214
Rain hood	78173

Options

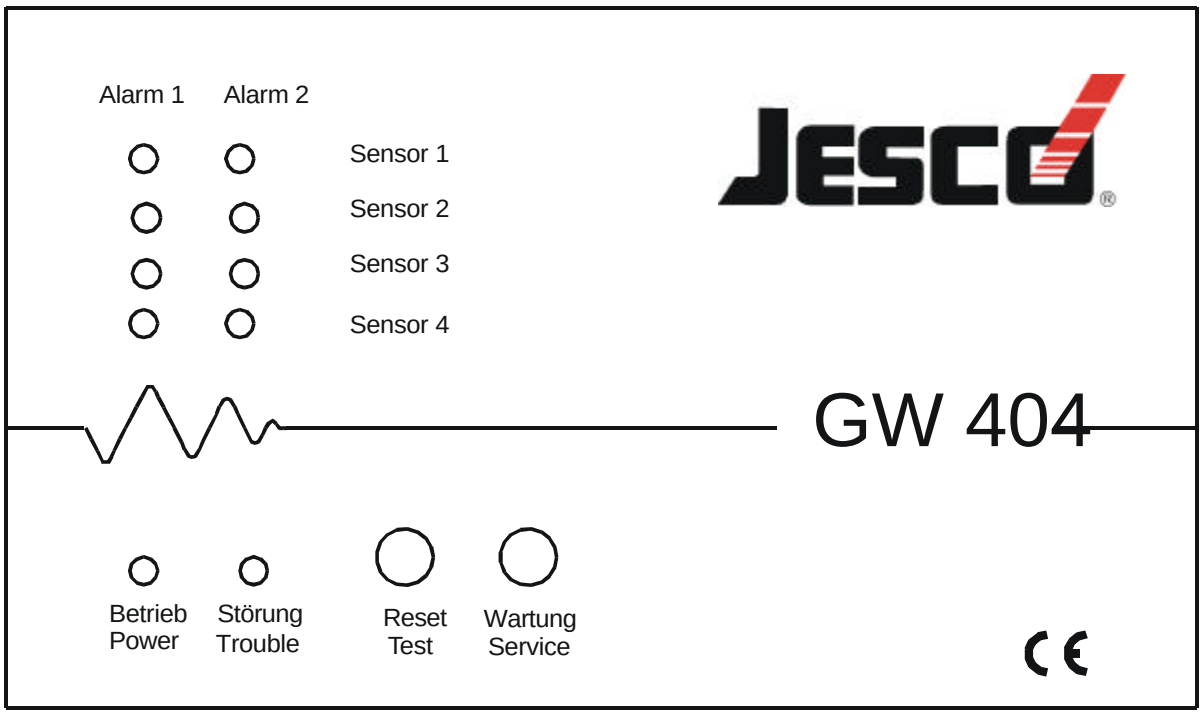
	Part No.
Safety system	23600131
Relay switch box for GW 504	23600132

13. Wiring diagram



L	Mains connection 230 V / 50 - 60 Hz	21	+24 V sensor 1
N	Neutral conductor connection	22	Signal (4 - 20 mA) sensor 1
PE	Protective conductor connection	23	free
4	Relay alarm 1	24	Shield sensor 1
5	Relay alarm 1 (make contact)	25	+24 V sensor 2
6	Relay alarm 1 (break contact)	26	Signal (4 - 20 mA) sensor 2
7	Relay alarm 2	27	free
8	Relay alarm 2 (make contact)	28	Shield sensor 2
9	Relay alarm 2 (break contact)	29	+24 V sensor 3
10	Relay fault	30	Signal (4 - 20 mA) sensor 3
11	Relay fault (make contact)	31	free
12	Relay fault (break contact)	32	Shield sensor 3
13	Relay ext. horn	33	+24 V sensor 4
14	Relay ext. horn (make contact)	34	Signal (4 - 20 mA) sensor 4
15	Relay ext. horn (break contact)	35	free
		36	Shield sensor 4

Front view GW 404



Front view GW 504