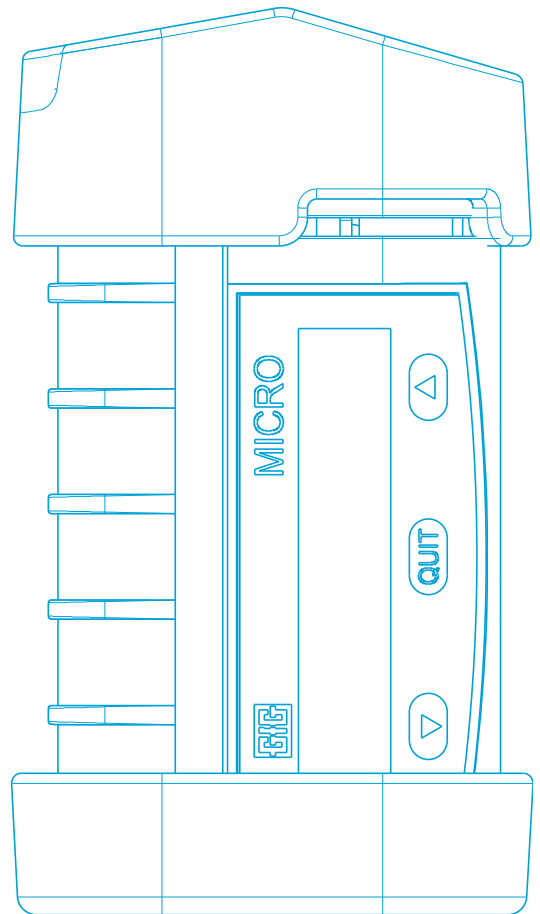
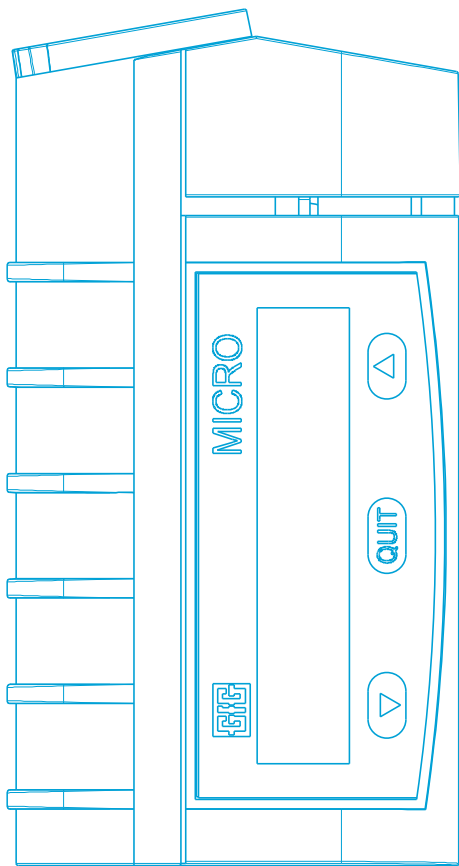


Operation Manual

MICRO IV



Translation of the operation manual
180-000.53_OM_MICRO_IV_EN
Version 16 of July 12, 2024

Measurable safety with GfG instruments

Congratulations!

You have chosen one of GfG's precise measuring instruments.
A great choice!

Reliability, safety, ideal performance and efficiency are what distinguishes our devices.

They conform to national and international guidelines.

This operation manual will aid you in learning how to use your new device quickly and safely.

Please familiarize yourself with our operation instructions before turning on the device!

If you have any further questions, do not hesitate to contact one of our specialists.

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Introduction

For your Safety

This operation manual informs you about the intended use of the product in accordance with §3 of the German Law of technical working equipment. Its purpose is the prevention of dangers. It must be read and adhered to by every person using, maintaining, servicing and controlling the device. This product can only fulfill its intended purpose if it is used, maintained, serviced and controlled in accordance with GfG - Gesellschaft für Gerätebau's instructions. Using the product contrary to these instructions will void the warranty given by GfG. Anyone making changes to the settings in the service menu must be qualified and trained.

The battery's charging status, alarm triggers and the device's operation status have to be checked before each use.

A function test **must** be performed each day the device is used. A calibration and, if necessary, adjustment must be performed at least once every four months.


The above does not change the information on warranty and liability stated in GfG's general Terms and Conditions of Purchase and Delivery.

Area of application and purpose

The MICRO IV is used for personal protection in atmospheric conditions. It is a portable detector for personal protection against gas dangers. The device continuously measures the ambient air using diffusion and will use a visual and acoustic alarm signal to warn its wearer in case of gas dangers.

The Micro IV is approved for use in potentially explosive areas and is certified with an EC Type Examination according to the 2014/34/EU guideline by DEKRA EXAM GmbH:

DMT 99 ATEX E 044

Label:  II 2G Ex ib IIC T4 or T3 Gb $-20^{\circ}\text{C} \leq T_a \leq +45^{\circ}\text{C}$ or $+55^{\circ}\text{C}$.

General description

The MICRO IV is a very small 1-gas detection and alarm device. Depending on its model, it is used to monitor toxic gases, hydrogen or oxygen. The Micro IV records short-term exposure limit (STEL) and time-weighted average (TWA) values. The event memory records any triggered alarms, including information on which alarm it was (A1, A2, A3, STEL, TWA) and the current gas concentration at that time. This data can be transferred to a PC or the docking station using an infrared interface.

Measurement method

Electrochemical sensors (EC) are used to measure toxic gases and oxygen.

Electrochemical sensor (EC)

Electrochemical sensors contain an electrolyte, a working electrode (anode), a counter electrode (cathode) and, depending in the type of sensor, a reference electrode. The setting of the type of measured gas is done by specific electrodes in combination with a suitable electrolyte. An electrical signal proportional to the concentration of harmful matter is generated when the measured gas is converted at the interface between the electrolyte and the electrode. GfG sensors work with capillary diffusion barrier technology. This method and an additional temperature control minimize the influence of deviations in atmospheric pressure and temperature.

Device design



Operating instructions

Measuring mode

"Measuring mode" includes functions which are essential to operating the MICRO IV gas detector.

Starting the device

The MICRO IV has to be turned on before you enter a potentially dangerous area. This is the only way to ensure that gas related accidents are prevented. The device can be started either by inserting a battery or briefly pressing the ▲ button.

The MICRO IV will then first check whether a valid sensor is plugged in. If there is not, one of the LEDs will flash and the screen will display **SENS.ERR.** This error notification will remain until a valid sensor is plugged in.

A test of the device is then performed. Both LEDs are going to briefly light up and the buzzer will sound for approximately 1 second. A segment test of the display (activation of all segments) is also performed and the battery capacity is displayed (see Battery capacity test). The required adjustment time of the sensor is indicated by a countdown on the display (only on first start-up).

The device will switch to measuring mode after the self-test has been completed successfully. The measured gas and its concentration are then shown on the LC display:

Display **0.0 PPM** alternating with **0.0 CO**


In measuring mode, a visual or acoustic ready signal is activated at regular intervals to signal the user that the device is in operation. This signal can be adjusted (see chapter Ready signal).


Display backlight


Briefly pressing any key will turn on the display backlight for approx. 5 seconds.

Maximum, minimum, STEL and TWA values

The MICRO IV has a memory for peak and average values.

When you press , the oxygen sensor's minimum memory value or the TOX sensor's maximum memory will be displayed.

On the TOX version, pressing  again will let you switch to the STEL and TWA values.

On OX sensors, the minimum value is displayed first. Pressing the  button again will then let you switch to the maximum value.


If no button is pressed, the device will switch back to normal display mode after five seconds.

While the peak and average value are displayed, the displayed value can be deleted by pressing **QUIT**.

Turning off the device or taking out the batteries will delete the saved value as well.

Turning the device off

The MICRO IV's power consumption is extremely low. Depending on the number of alarms and display configuration, one battery can last for up to six months of constant use.

Turning the device off	Press the  button for approx. 5 seconds
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Alarms

A visual and acoustic alarm is activated as soon as the measured gas concentration exceeds one of the thresholds. **The MICRO IV has multiple alarm thresholds:**










Devices for:	Designation	Alarm thresholds
Oxygen	AL1	first alarm, concentration falling below↓
	AL2	second alarm, concentration falling below↓
	AL3	third alarm, concentration exceeding↑
Toxic gases	AL1	first alarm, concentration exceeding↑
	AL2	second alarm, concentration exceeding↑
	AL3	third alarm, concentration exceeding↑
	STEL	Short-term exposure limit, concentration exceeding↑
	TWA	Time-weighted average, concentration exceeding↑

AL1, AL2 and AL3 are current value alarms. The STEL and TWA alarms are exposition alarms. These can be adjusted in the configuration program.

For the STEL value, an average is calculated for a time span of 15 minutes. The STEL alarm is non-latching. It will usually turn off automatically as soon as the values fall back below the STEL threshold. For the TWA value, an average is calculated for a time span of eight hours (one work day). The TWA alarm cannot be reset. It will only turn off when the device is turned off.

Alarm indications

The alarms are indicated by visual and acoustic alarm signals, using different frequencies of flashing light or sounds.

Alarm	acoustic and visual alarm	Alarm signal	Priority
AL1	low frequency of sound and flashing lights	2 x  2 x  ...	low 
AL2, STEL	medium frequency of sound and flashing lights	4 x  4 x  ...	medium 
AL3, TWA	high frequency of sounds and flashing lights	8 x  8 x  ...	high 

The measured gas and alarm threshold are displayed on the LCD screen, e.g.

Display	27.5 AL2	alternating with	27.5 H2S
---------	-----------------	------------------	-----------------

Particularities when measuring oxygen

Acid gases such as CO₂ and SO₂ are easily absorbed by the electrolyte of the oxygen sensor. This leads to an increased oxygen signal of approx. 0.3% of the measured value per 1 vol % CO₂. The oxygen sensor is not suitable for consistent use in concentrations above 25 vol % CO₂. Using a gas with a molecular weight which

does not equal the one of nitrogen as a carrier gas will also lead to deviations in the displayed value. There are no cross sensitivities of toxic gases in the TLV concentration range.



Battery type:

The MICRO IV is powered by a 1.5V Mignon alkaline battery. This battery will last for up to six months of constant use. The operating time can however be decreased by frequent alarms, by the display on models which have one, or by the ready signal being active. This battery may only be sourced from the device's manufacturer, GfG. The device is internally monitoring whether the batteries used are fulfilling the standards of EC type examinations. The following types of batteries are permitted:

DURACELL PROCELL MN1500 LR6 AA or INDUSTRIAL BY DURACELL ID1500 AA (LR6) or DURACELL PROCELL PC1500 LR6 AA or Energizer EN91 Industrial AA LR6.

Battery alarm

The MICRO IV constantly monitors the battery's voltage and will sound an alarm if the measured value falls below the minimum voltage. It corresponds to approx. 5% of the battery capacity. The MICRO IV indicates battery alarms using an acoustic alarm.

Acoustic Battery alarm	Alarm signal
high sound frequency (two cycles each)	2 x  , 6 sec. pause, 2 x.  . . .

The screen will also display the battery capacity using "XX bAT", e.g.

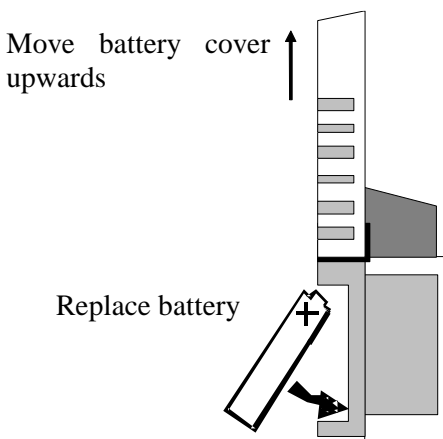


The remaining capacity will be enough to last for another 15 minutes of measuring operation after the first battery alarm. You should replace it as quickly as possible to ensure further measuring mode operation. If the battery voltage is so low that the device cannot function flawlessly anymore, it will automatically turn off. **OFF** will then be displayed. This will be displayed until the battery is drained completely or you have replaced it.

Replacing the battery (only outside of Ex zones)

Note:

The "DURACELL PROCELL MN1500 LR6 AA", "INDUSTRIAL BY DURACELL ID1500 AA (LR6)", "DURACELL PROCELL PC1500 LR6 AA and Energizer EN91 Industrial AA LR6 batteries may only be replaced or installed outside of Ex zones. Make sure that the polarity is correct when inserting the battery (the positive pole should be inserted first). After you have inserted the battery, the device will perform a self-test, testing the visual and acoustic alarm.




To replace the battery, first push the battery cover upwards. The battery can then be removed from the device and replaced by a new one.

Caution:

- Only use suitable battery types when using the device in Ex zones!
- Make sure the polarity is correct when inserting a new battery!
- Insert battery with the + pole first!

Battery capacity is displayed

The remaining battery capacity can be displayed by briefly pressing the  button

The capacity is displayed on the LED screen: e.g. **90 bAT** = 90% battery capacity



Additionally, a device test (identical to the one upon starting the device) will be performed.

Time and Date

Pressing the ▼ button for approximately 3 seconds will display the time. Briefly pressing it again while the time is being displayed will display the date. Both are displayed according to national standards. Time and date of the device are set automatically by the docking station or the configuration adapter. Removing the battery will reset the time to 0:00 am, 01 January, 1980.

Service Mode

Service mode contains options for checks and settings regarding the ready signal and sensor adjustment (ZPT, CAL). You can set them using the keypad.

Service Mode - Activation


Activating the service menu	First, press and hold the QUIT button. Then press the ▼ button and hold both buttons down for 3 seconds.
------------------------------------	-----------------------------------------------------------------------------------------------------------------

Display

SERVICE

In the service menu, access the individual menu items by briefly pressing the ▼ button. The following menu items are available:

Buttons	Display	Information
QUIT ▼		Hold both buttons down for 3 seconds
▼	SERVICE	Service mode active.
▼	bBEEP	
▼	AUTO ZPT	
▼	AUTO CAL	
▼	EXIT	Leave service mode by pressing QUIT
▼		Back to the first option



The corresponding menu item is highlighted on the display. Select menu items using the **QUIT** button. You can leave the service menu by selecting the EXIT menu item. It will also quit automatically if no buttons are pressed for 15 seconds.

Ready signal - BEEP

In default setting, an alternating display of the type of gas and its unit signal the user that detector is in measuring mode. You can also activate an additional acoustic or visual ready signal to remind the user that the gas detector is on in regular intervals. The ready signal interval is one minute. The ready signal can also be turned off again.

Buttons	Display	Information
QUIT ▼		Hold both buttons down for 3 seconds
	SERVICE	Service mode active.
▼		
	bBEEP	
QUIT		Choose ready signal
	bBEEP OFF	No ready signal Select with QUIT button
▼		
	bBEEP OPT	LED ready signal Select with QUIT button
▼		
	bBEEP ACH	Ready signal buzzer loud Select with QUIT button
▼		
	bBEEP ACL	Ready signal buzzer quiet Select with QUIT button
▼		Back to the first option

Zero point adjustment of the sensor – AUTO ZPT

A "zero point adjustment" sets the MICRO IV to a zero value you determined. For the TOX measuring ranges (e.g. CO or H₂S), you can use clean ambient air. The sensor is adjusted until the display shows 0 ppm. For oxygen, you need to use 100 vol % nitrogen for this setting.

During the zero point adjustment, the current measured value and the gas unit are displayed in alternation with **ZPT**. If an error is detected during the adjustment process, the device will instead display **ERROR**. Possible reasons include a defective sensor or an inserted gas concentration being outside the valid tolerance. In these cases, please contact the GfG service staff. This error message can be acknowledged by pressing **QUIT**. The MICRO IV will switch back to measuring mode after it has been adjusted successfully.

Buttons	Display	Information
QUIT ▼		Hold both buttons down for 3 seconds
	SERVICE	Service mode active.
▼		
	bBEEP	
▼		
	AUTO ZPT	
QUIT		Selecting the zero point adjustment.
	0 ZPT	Displaying the target value.
	e.g.: 1 CO or 1 H ₂ S	Displaying the actual value. This change stays active until the sensor has been adjusted or the error has been found.
		When the sensor has been calibrated successfully, the device will automatically switch back to measuring mode.
	ZPT ERR	An error occurred during zero point adjustment.
QUIT		Acknowledge error. Reboot measuring mode.

Sensitivity adjustment of the sensor – AUTO CAL

The sensitivity adjustment sets the MICRO IV to a gas-specific target value. On toxic gas sensors, you will have to perform a zero point adjustment before the sensitivity adjustment. You will need an appropriate test gas to perform the sensitivity adjustment.

Test gases:

Test gases are for toxic gases, e.g. carbon monoxide (CO), hydrogen sulfide (H₂S) etc.

For oxygen, you can use clean ambient air instead.

A list of all test gases can be found in the inspection protocol.

Adjustment process:



Attach the calibration adapter to the MICRO IV's diffusion opening. To prevent adjustment errors caused by absorption of measured gas, the MICRO IV has to be supplied with test gas for at least 3 minutes. The flow rate should be 0.5 to 0.6 l/min. The test gas target value is displayed ahead of starting the process and can be changed using the ▼ and ▲ buttons. Pressing the **QUIT** button will then start the adjustment.

Buttons	Display	Information
QUIT ▼		Hold both buttons down for approx. 3 seconds
▼	SERVICE	Service mode active.
▼	bEEP	
▼	AUTO ZPT	
▼	AUTO CAL	
QUIT		Selecting the sensitivity adjustment.
	CAL 200	Displaying the target value for adjustment.
▼, ▲		Decreasing or increasing the target value.
QUIT		Starting the sensor adjustment with the target value.
	200 CAL	Displaying the target value.
	e.g.: 199 CO or 50 H ₂ S	Displaying the actual value. This change is active until the sensor has been adjusted or an error has been detected.
		When the sensor has been calibrated successfully, the device will automatically switch back to measuring mode.
	CAL ERR	An error occurred during the sensor alignment.
QUIT		Acknowledge error. Restart measuring mode.

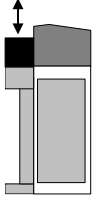
The statements regarding displays during the zero point adjustment also apply to the sensitivity adjustment. The MICRO IV will switch back to measuring mode after the sensitivity adjustment has been successful.

Please note:

The processes described here for adjusting the device with test gas or ambient air can be considerably simplified and automated by using the docking station.

Sensor replacement

Sensors may only be replaced outside the Ex zone.



Before a sensor is replaced (by a professional only!), the battery must be removed in the way described above. The battery cover must be removed from the housing completely. The sensor can then be pulled upwards to remove it and be replaced by a new sensor. To put the device back together, follow the steps above in reverse order.

Settings via the configuration program

The optional configuration program and an adapter can be used to adjust the following MICRO IV settings on a pc:

- Alarm thresholds (exceeding or falling below, saving)
- Locking and unlocking alarms
- Locking of the sensor adjustment with fresh air and test gas
- Memory capacity of the incident memory from 0 to 1024 incidents
- Interval duration of the data logger from 30 to 300 seconds
- Reading out the event logger and saving data to a pc
- Reading out the data logger and saving the data to a pc; Calibration gas concentration
- Time interval of the ready signal (6 to 90 seconds)
- different signal settings, e.g.: keyboard feedback or ready signal (off, quiet, loud)

Data memory

The MICRO IV is equipped with an event logger and a data logger. The event logger will save up to 128 events and the corresponding concentrations. When event 129 occurs, the oldest event is overwritten. The data logger can store up to 8685 measured values. This corresponds to 6 days of uninterrupted logging time at 60 second intervals. The data logger is also designed as a ring storage. The saved data, including the date and time, can be downloaded using a pc and the installed software.

Annex

Care

You should perform a quick visual check of the MICRO IV after each use. Contaminations of the devices housing can be removed with a damp cloth. Do not use solvents or cleaning agents!

Maintenance and repair

Maintenance includes upkeep, inspections and repairs of the gas detection system. A function test should be performed at least once a year. It includes:

- Charging status of the battery
- Zero gas and standard test gas display, adjustment (if necessary)
- Triggering the alarms with e.g. alarm test gas
- Adjustment time

Checks must be carried out by trained specialists. The results must be confirmed in writing. Every maintenance of the MICRO IV must be in accordance with the manufacturer's instructions. All spare parts used in repairs must be original GfG parts.

Maintenance and inspection

Maintenance and inspections encompass all measures that ensure the MICRO IV is working correctly. They also include regular checks and adjustments of the sensitivity and the zero point. You must also check the functionality of the device.

A test should be performed before starting any safety-relevant measurements. This test includes the following checks:

- Charging status of the battery
- Zero gas and test gas display
- Triggering the alarm signal

Accessories

Designation	Item No.
Rubber device protection	1318214
Leather bag	1318206
Calibration adapter incl. magnet	1318202
Configuration software with adapter cable for pc	on request

Spare parts

	Designation			Item No.
1.	Alkaline battery 1,5 V AA			1318201
2.	Battery cover			1318315
			Type of sensor	
3.	Ammonia sensor	0 to 200 ppm	NH ₃	MK393-5 on request
4.	Ammonia sensor	0 to 500 ppm	NH ₃	MK399-5 on request
5.	Ammonia sensor	0 to 1000 ppm	NH ₃	MK399-6 on request
6.	Ammonia sensor	0 to 200 ppm	NH ₃	MK453-5 1318279
7.	Ammonia sensor	0 to 1000 ppm	NH ₃	MK454-5 1318280
8.	Chlorine sensor	0 to 10 ppm	Cl ₂	MK390-5 1318246
9.	Chlorine dioxide sensor	0 to 2 ppm	ClO ₂ (CLO)	MK391-5 1318247
10.	Hydrogen chloride sensor	0 to 30 ppm	HCl	MK392-5 1318249
11.	Hydrogen cyanide sensor	0 to 50 ppm	HCN	MK409-5 1318255
12.	Ethylene oxide sensor	0 to 20 ppm	C ₂ H ₄ O (ETO)	MK379-5 discontinued
13.	Ethylene oxide sensor	0 to 20 ppm	C ₂ H ₄ O (ETO)	MK452-5 1318241
14.	Hydrogen fluoride	0 to 10 ppm	HF	MK412-5 1318265
15.	Hydrogen fluoride	0 to 10 ppm	HF	MK412-6 1318271
16.	Hydrogen fluoride	0 to 10 ppm	HF	MK475-5 1319126
17.	Carbon monoxide sensor	0 to 300 ppm	CO (decreased H ₂ cross-sensitivity)	MK369-5 on request
18.	Carbon monoxide sensor	0 to 500 ppm	CO (decreased H ₂ cross-sensitivity)	MK369-6 on request
19.	Carbon monoxide sensor	0 to 500 ppm	CO	MK443-5 1318275
20.	Carbon monoxide sensor	0 to 2000 ppm	CO	MK443-6 1318276
21.	Ozone sensor	0 to 1 ppm	O ₃	MK411-5 1318257
22.	Phosgene sensor	0 to 2 ppm	COCl ₂ (PGN)	MK349-5 1318248
23.	Phosphine sensor	0 to 10 ppm	PH ₃	MK353-5 1318242
24.	Oxygen sensor	0 to 25 vol %	O ₂ (2-year sensor)	MK383-5 1318266
25.	Sulfur dioxide sensor	0 to 10 ppm	SO ₂	MK440-5 1318269
26.	Sulfur dioxide sensor	0 to 50 ppm	SO ₂	MK440-6 1318270
27.	Hydrogen sulfide sensor	0 to 100 ppm	H ₂ S	MK445-5 1318277
28.	Hydrogen sulfide sensor	0 to 500 ppm	H ₂ S	MK445-6 1318278
29.	Silane sensor	0 to 40 ppm	SiH ₄ (SIL)	MK439-5 1319262
30.	Nitrogen dioxide sensor	0 to 30 ppm	NO ₂	MK348-5 1318238
31.	Nitrogen monoxide sensor	0 to 100 ppm	NO	MK347-5 1318244
32.	Hydrogen sensor	0 to 2000ppm	H ₂	MK396-5 1318250
33.	Hydrogen sensor	0 to 1 vol %	H ₂	MK402-5 1318258
34.	Hydrogen sensor	0 to 4 vol %	H ₂	MK403-5 1318259
35.	Hydrogen sensor	0 to 1 vol %	H ₂	MK407-5 1319131

All spare parts and accessories should be stored at ambient temperatures between 0 and 30 °C. They should not be stored for more than five years. A shorter storage time of ½ year applies to batteries and sensors. The expected service life of oxygen sensors is reduced when they are stored.

Information on the environmentally safe disposal of used parts



According to GfG's general terms and conditions, the customer assumes responsibility for the environmentally safe disposal of the device or any device components (such as replaced sensors). In Germany, this is regulated by §§11, 12 ElektroG. On request, GfG in Dortmund can also handle the proper disposal.

Sensor specifications

MK347-5 Electrochemical sensor for nitric oxide NO	
Measuring range:	0 to 100ppm
Tolerance range / resolution:	±3(2.0)ppm / 1(0.5)ppm
Adjustment time:	t ₉₀ <30 sec
Pressure 80 to 120kPa:	max. ±1ppm or ±7 % of the displayed value (ref.: 100kPa)
Humidity 15% to 90% RH:	max. ±1ppm or ±7 % of the displayed value (ref.: 50 % RH)
Temperature -20 to +50°C:	max. ±2ppm or ±7% of the displayed value (ref.: 20°C)
Cross sensitivities:	NO ₂ : <30%, H ₂ S: ≈10%, CO: 0%, SO ₂ : 0% (*1)
Expected operating life:	2 to 3 years
Adjustment time:	three minutes to one day, depending on amount of time it was turned off
MK348-5 Electrochemical sensor for nitrogen dioxide NO₂	
Measuring range:	0 to 30 ppm
Tolerance range / resolution:	±0.6ppm / 0.2ppm
Adjustment time:	t ₉₀ <30 sec
Pressure 80 to 120kPa:	max. ±0.3ppm or ±5% of the displayed value (ref.: 100kPa)
Humidity 15% to 90% RH:	max. ±0.3ppm or ±5% of the displayed value (ref.: 50% RH)
Temperature -20 to +50°C:	max. ±0.3 ppm or ±5 % of the displayed value (ref. to 20°C)
Cross sensitivities:	Cl ₂ ≈100%; H ₂ S≈-8%; CO: 0%; NO: 0%; SO ₂ : 0%; (*1)
Expected operating life:	3 years
MK349-5 Electrochemical sensor for phosgene COCl₂ (CLO)	
Measuring range:	0 to 2 ppm
Tolerance range / resolution:	±0.02ppm / 0.01ppm
Adjustment time:	t ₉₀ <150 sec
Pressure 80 to 120kPa:	max. ±0.02ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 95% RH:	max. ±0.02ppm or ±10 % of the displayed value (ref.: 50 % RH)
Temperature -20 to +40°C:	max. ±0.02ppm or ±10 % of the displayed value (ref.: 20 °C)
Cross sensitivities:	ClO ₂ : -300%; HCl: 250%; AsH ₃ : 90%; Cl ₂ : 40%; NO ₂ : -10%; O ₃ : 10%; (*1)
Expected operating life:	1 to 1.5 years
MK353-5 Electrochemical sensor for phosphine PH₃	
Measuring range:	0 to 10 ppm
Tolerance range / resolution:	±0.05 ppm / 0.05 ppm
Adjustment time:	t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ±0.05ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 15% to 90% RH:	max. ±0.05ppm or ±10 % of the displayed value (ref.: 50 % RH)
Temperature -20 to +50°C:	max. ±0.05ppm or ±10% of the displayed value (ref.: 20°C)
Cross sensitivities:	SiH ₄ 90%; GeH ₄ : 90%; AsH ₃ : 65%; B ₂ H ₆ : 35%; SO ₂ : 20%; CO: 0.5%; H ₂ : 0.1%; (*1)
Expected operating life:	2 to 3 years
MK369-5 /-6 Electrochemical sensor for carbon monoxide CO	
Measuring range:	0 to 300ppm / 500ppm
Tolerance range:	±3 ppm
Resolution:	1 ppm
Adjustment time:	t ₅₀ <20sec t ₉₀ <50sec
Pressure 80 to 120kPa:	max. ±3ppm or ±10 % of the displayed value (ref.: 100kPa)
Humidity 15% to 90% RH:	max. ±3ppm or ±10 % of the displayed value (ref. to 50 % RH)
Temperature -20 to +50°C:	max. ±3ppm or ±15 % of the displayed value (ref. to 20 °C)
Cross sensitivities:	H ₂ : <10%, NO: <9%, H ₂ S: 0%, SO ₂ : 0% (*1)
Expected operating life:	2..3 years
MK379-5 Electrochemical sensor for ethylene oxide C₂H₄O (ETO)	
Measuring range:	0 to 20 ppm
Tolerance range / resolution:	±0.3ppm / 0.1ppm
Adjustment time:	t ₉₀ <120 sec
Pressure 80 to 120kPa:	max. ±1ppm or ±15% of the displayed value (ref.: 100kPa)
Humidity 15% to 90% RH:	max. ±2ppm or ±15 % of the displayed value (ref.: 50 % RH)
Temperature 0 to +30°C:	max. ±1ppm or ±15% of the displayed value (ref.: 20°C)
-20 to +50°C:	max. ±2ppm or ±20% of the displayed value (ref.: 20°C)
Cross sensitivities:	CO≈40%; CH ₄ O≈150%; C ₂ H ₂ ≈125%; CH ₂ O≈120%; CH ₄ S≈100%; C ₂ H ₄ ≈80%; C ₂ H ₆ O≈55%; C ₄ H ₁₀ O≈40%; C ₇ H ₈ ≈20%; MEK≈10%; and others (*1)
Expected operating life:	2..3 years
Adjustment time:	Four minutes to seven days - depending on the amount of time it was switched off.
MK452-5 Electrochemical sensor for ethylene oxide C₂H₄O (ETO)	
Measuring range:	0 to 20 ppm
Tolerance range / resolution:	±0.3ppm / 0.1ppm
Adjustment time:	t ₉₀ <120 sec
Pressure 80 to 120kPa:	max. ±1ppm or ±15% of the displayed value (ref.: 100kPa)
Humidity 15% to 90% RH:	max. ±2ppm or ±15 % of the displayed value (ref.: 50 % RH)
Temperature 0 to +30°C:	max. ±1ppm or ±15% of the displayed value (ref.: 20°C)
-20 to +50°C:	max. ±2ppm or ±20% of the displayed value (ref.: 20°C)
Cross sensitivities:	CO≈40%; CH ₄ O≈150%; C ₂ H ₂ ≈125%; CH ₂ O≈120%; CH ₄ S≈100%; C ₂ H ₄ ≈80%; C ₂ H ₆ O≈55%; C ₄ H ₁₀ O≈40%; C ₇ H ₈ ≈20%; MEK≈10%; and others (*1)
MK391-5 Electrochemical sensor for chlorine dioxide ClO₂ (CLO)	
Measuring range:	0 to 2 ppm
Tolerance range / resolution:	±0.03ppm / 0.01ppm
Adjustment time:	t ₉₀ <120 sec
Pressure 80 to 120kPa:	max. ±0.05ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 95%RH:	max. ±0.05ppm or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±0.05ppm or ±10% of the displayed value (ref.: 20°C)
Cross sensitivities:	Cl ₂ ≈60%; O ₃ : -280%; H ₂ S: -25%; H ₂ : 0%; CO: 0%; (*1)
Expected operating life:	1 to 2 years

*1: Indicated gas values for the supplied concentration within PEL range

MK392-5 Electrochemical sensor for hydrogen chloride HCl	
Measuring range:	0 to 30 ppm
Tolerance range / resolution:	±0.4ppm / 0.2ppm
Adjustment time:	t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ±1ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 95%RH:	max. ±1ppm or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±1ppm or ±10% of the displayed value (ref.: 20°C)
Cross sensitivities:	AsH ₃ : 350%; PH ₃ : 300%; H ₂ S: 65%; NO: 45%; SO ₂ : 40%; HCN: 35%; Cl ₂ : 6%; NO ₂ : 3%; NH ₃ : 0.1%; CO: 0%; CO ₂ :0%; H ₂ : 0%; (*1)
Expected operating life:	2 to 3 years
MK393-5 Electrochemical sensor for ammonia NH₃	
Measuring range:	0 to 200ppm
Tolerance range / resolution:	±3ppm / 1ppm
Adjustment time:	t ₉₀ <60 sec
Pressure 80 to 120kPa:	max. ±1ppm or ±10% of the displayed value (ref. 100kPa)
Humidity 10% to 95%RH:	max. ±1ppm or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±1ppm or ±15% of the displayed value (ref.: 20°C)
Cross sensitivities:	H ₂ S: 10%; CO: 0%; CO ₂ : 0%; H ₂ : 0%; (*1)
Expected operating life:	2 to 3 years
MK396-5 Electrochemical sensor for hydrogen H₂ (*2)	
Measuring range:	0...2000ppm
Tolerance range / resolution:	±50ppm / 2ppm
Adjustment time:	t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ± 5ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 15% to 90%RH:	max. ± 5ppm or ±10% of the displayed value (ref. 50%RH)
Temperature -20 to +50°C:	max. ±10ppm or ±20% of the displayed value (ref.: 20°C)
Cross sensitivities:	C ₂ H ₄ ≈80%; NO≈35%; HCN≈30%; CO<20%; H ₂ S<20%; NO ₂ =SO ₂ =Cl ₂ =HCl=0%; (*1)
Expected operating life:	2 to 3 years
MK399-5 /-6 Electrochemical sensor for ammonia NH₃	
Measuring range:	0 to 500ppm / 1000ppm
Tolerance range:	±10ppm
Resolution:	5ppm
Adjustment time:	t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ± 5ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 95%RH:	max. ± 5ppm or ±10% of the displayed value (ref. 50%RH)
Temperature -20 to +50°C:	max. ±10ppm or ±20% of the displayed value (ref.: 20°C)
Cross sensitivities:	NO ₂ ≈65%, H ₂ S≈60%, Cl ₂ ≈20%, SO ₂ ≈-10%, CO=NO=H ₂ =0% (*1)
Expected operating life:	2 to 3 years
MK402-5 Electrochemical sensor for hydrogen H₂ (*2)	
Measuring range:	0 to 1 vol %
Tolerance range / resolution:	±0.02 vol % / 0.01 vol %
Adjustment time:	t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ±0.01 vol % or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 90%RH:	max. ±0.01 vol % or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±0.02 vol % or ±20% of the displayed value (ref.: 20°C)
Cross sensitivities:	NO ₂ : -400%; CO: 150%; H ₂ S: 20%; C ₂ H ₄ : yes; NH ₃ =CO ₂ =Cl ₂ =SO ₂ =HCN=0%; (*1)
Expected operating life:	2 to 3 years
MK403-5 Electrochemical sensor for hydrogen H₂ (*2)	
Measuring range:	0 to 4 vol %
Tolerance range / resolution:	±0.05 vol % / 0.01 vol %
Adjustment time:	t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ±0.01 vol % or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 90%RH:	max. ±0.01 vol % or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±0.02 vol % or ±25% of the displayed value (ref.: 20°C)
Cross sensitivities:	H ₂ S: 220%; C ₂ H ₄ : yes; CO: 0%; (*1)
Expected operating life:	2 to 3 years
MK407-5 Electrochemical sensor for hydrogen H₂ (*2)	
Measuring range:	0 to 1 vol %
Tolerance range / resolution:	±0.02 vol % / 0.01 vol %
Adjustment time:	t ₉₀ <40 sec
Pressure 80 to 120kPa:	max. ±0.01 vol % or ±10% of the displayed value (ref.: 100kPa)
Humidity 15% to 90%RH:	max. ±0.01 vol % or ±10% of the displayed value (ref.: 50%r.F.)
Temperature-20(-30) to +50°C:	max. ±0.02 vol % or ±10%(±20%) of the displayed value (ref.: 20°C)
Cross sensitivities:	H ₂ S: 220%; C ₂ H ₄ : yes; CO: 0%; (*1)
Expected operating life:	2 to 3 years
MK409-5 Electrochemical sensor for hydrogen cyanide HCN	
Measuring range:	0 to 50ppm
Tolerance range / resolution:	±1.5ppm / 0.5ppm
Adjustment time:	t ₉₀ <60 sec
Pressure 80 to 120kPa:	max. ±0.5 ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 95%RH:	max. ±0.5 ppm or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±0.5 ppm or ±15% of the displayed value (ref.: 20°C)
Cross sensitivities:	NO ₂ ≈-70%, NO≈-5%, H ₂ S≈0 to 200% (depending on filter saturation); CO=CO ₂ =H ₂ =0% (*1)
Expected operating life:	2 years
MK411-5 Electrochemical sensor for ozone O₃	
Measuring range:	0 to 1ppm
Tolerance range / resolution:	±0.02 ppm / 0.01ppm
Adjustment time:	t ₉₀ < 90 sec
Pressure 80 to 120 kPa:	max. ±0.03 ppm or ±10% of the displayed value (ref.: 100 kPa)
Humidity 15 to 90 % RH:	max. ±0.03 ppm or ±10% of the displayed value (ref.: 50 % RH)
Temperature -20 to +40 °C:	max. ±0.03 ppm or ±15% of the displayed value (ref.: 20 °C)
Cross sensitivities:	Cl ₂ ≈120%; ClO ₂ ≈100%; H ₂ S≈-20%(*2); NO ₂ ≈50%; SO ₂ ≈-5%; CO=C ₃ H ₈ O=H ₂ =0%; (*1)
Expected operating life:	2 years

*1: Indicated gas values for the supplied concentration within PEL range

MK412-5 /-6 Electrochemical sensor for Hydrogen fluoride HF	
Measuring range:	0 to 10 ppm
Resolution:	0.1ppm / 0.5ppm on MK412-6
Tolerance range:	±0.3ppm / ±0.5ppm on MK412-6
Adjustment time:	t ₅₀ <40 sec t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ±0.2ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 80% RH:	max. ±0.2ppm or ±10 % of the displayed value (ref.: 50 % RH)
Temperature -20 to +40°C:	max. ±0.2ppm or ±10 % of the displayed value (ref.: 20 °C)
Cross sensitivities:	HCl: 66%; Cl ₂ : 40%; CO=CO ₂ =NO ₂ =H ₂ S=H ₂ =0% (*1)
Expected operating life:	1 to 2 years
MK439-5 Electrochemical sensor for silane SiH₄ (SIL)	
Measuring range:	0 to 40 ppm
Tolerance range / resolution:	±0.2ppm / 0.1ppm
Adjustment time:	t ₉₀ <60 sec
Pressure 80 to 120kPa:	max. ±0.1ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 95%RH:	max. ±0.2ppm or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±0.3ppm or ±10 % of the displayed value (ref. to 20 °C)
Cross sensitivities:	PH ₃ : 175%; B ₂ H ₆ : 135%; AsH ₃ :125%; H ₂ S: 45%; SO ₂ : 40%; H ₂ Se:25%; NO ₂ : 23%; Cl ₂ : 12%; HCN: 6%; HCl:5%; CO=H ₂ =HF=0% (*1)
Expected operating life:	2 to 3 years
MK440-5 /-6 Electrochemical sensor for sulfur dioxide SO₂	
Measuring range:	0 to 10ppm / 50ppm
Resolution:	0.1ppm
Tolerance range:	±0.2ppm
Adjustment time:	t ₉₀ <30 sec
Pressure 80 to 120kPa:	max. ±0.2ppm or ±5% of the displayed value (ref.: 100kPa)
Humidity 15% to 90%RH:	max. ±0.3ppm or ±3% of the measured value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±0.3ppm or ±5% of the displayed value (ref.: 20°C)
Cross sensitivities:	C ₂ H ₂ : <300%, NO ₂ : <-170%, C ₂ H ₄ : <90%, HCN: <50%, Cl ₂ : <-40%, NO: <10%, CO: <0.5%, H ₂ S: <0.5%, H ₂ : <0.5%, NH ₃ : 0% (*1)
Expected operating life:	3 years
MK443-5 /-6 Electrochemical sensor for carbon monoxide CO	
Measuring range:	0 to 500ppm / 2000ppm
Resolution:	1 ppm
Tolerance range:	±3 ppm
Adjustment time:	t ₅₀ < 10sec t ₉₀ ≤30 sec (at 20°C)
Pressure 80 to 120kPa:	max. ±3ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 15% to 90%RH:	max. ±3ppm or ±5% of the displayed value (ref.: 50%RH)
Temperature -20 to +40(50)°C:	max. ±3ppm or ±5(10)% of the displayed value (ref.: 20°C)
Cross sensitivities:	C ₂ H ₄ ≈96%, C ₂ H ₂ ≈90%, H ₂ <30% (usual.15%), NO<20%, Cl ₂ <7%, C ₂ H ₆ O<0.5%, SO ₂ =NH ₃ =H ₂ S=0% (*1)
Expected operating life:	3 years
MK445-5 /-6 Electrochemical sensor for hydrogen sulfide H₂S	
Measuring range:	0...100ppm / 500ppm
Resolution:	0.1ppm / 0.5ppm
Tolerance range:	±0.5ppm / ±1.0ppm
Adjustment time:	t ₅₀ <10sec t ₉₀ <30sec
Pressure 80 to 120kPa:	max. ±0.2ppm or ±5% of the displayed value (ref.: 100kPa)
Humidity 15% to 90%RH:	max. ±0.2ppm or ±5% of the displayed value (ref.: 50%RH at 20°C)
Temperature -20 to +40(50)°C:	max. ±0.2ppm or ±5(10)% of the displayed value (ref.: 20°C)
Cross sensitivities:	NO ₂ <10%, CO<2%, NO<1%, CO ₂ =SO ₂ =Cl ₂ =NH ₃ =C ₂ H ₄ =0%; low methanol sensitivity (*1)
Expected operating life:	3 years
MK453-5 Electrochemical sensor for ammonia NH₃	
Measuring range:	0 to 200ppm
Tolerance range / resolution:	±3ppm / 1ppm
Adjustment time:	t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ±1ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 95%RH:	max. ±1ppm or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±1(2)ppm or ±15(20)% of the displayed value (ref.: 20°C)
Cross sensitivities:	H ₂ S≈120%, NO ₂ ≈100%, SO ₂ ≈30%, CO=NO=CO ₂ =H ₂ =C ₂ H ₆ O=0% (*1)
Expected operating life:	2 to 3 years
MK454-5 Electrochemical sensor for ammonia NH₃	
Measuring range:	0 to 1000 ppm
Tolerance range / resolution:	±10ppm / 5ppm
Adjustment time:	t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ± 5ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 95%RH:	max. ± 5ppm or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +50°C:	max. ±10ppm or ±20% of the displayed value (ref. 20°C)
Cross sensitivities:	H ₂ S≈140%, NO ₂ ≈100%, SO ₂ ≈30%, CO=NO=CO ₂ =H ₂ =C ₂ H ₆ O=0% (*1)
Expected operating life:	2 to 3 years
MK475-5 Electrochemical sensor for hydrogen fluoride HF	
Measuring range:	0 to 10 ppm
Tolerance range / resolution:	0.1ppm / 0.5ppm
Adjustment time:	t ₅₀ <40 sec t ₉₀ <90 sec
Pressure 80 to 120kPa:	max. ± 0.2ppm or ±10% of the displayed value (ref.: 100kPa)
Humidity 10% to 95%RH:	max. ± 0.2ppm or ±10% of the displayed value (ref.: 50%RH)
Temperature -20 to +40°C*3:	max. ± 0.2ppm or ±10% of the displayed value (ref. 20°C)
Cross sensitivities:	Cl ₂ :160%; F ₂ :160%; C ₂ H ₄ O ₂ :100%; HCl:91%; HBr:90%; NO ₂ :80%; SO ₂ :78%; H ₂ S:-35% CO=H ₂ =NH ₃ =0% (*1)
Expected operating life:	2 to 3 years

*1: Displayed gas concentration with reference to the applied concentration in TLV range

*2: Not permitted for monitoring the lower explosion limit for primary explosion protection applications.

*3: May be exposed to up to 50°C for short periods of time (several hours per week or a few days per year). For longer exposure times, which reduce the operating life, we recommend performing an additional bump test.

Alarm thresholds - general settings and test gas table

General settings of the alarm thresholds without exposure alarm

Sample gas and measuring range	Alarm 1	Alarm 2	Alarm 3	STEL (15')	TWA (8h)	Test gas
Ammonia 200 ppm NH ₃	20	40	200	-	-	100
Ammonia 500/1000 ppm NH ₃	50	100	200	-	-	200
Chlorine 10.0 ppm Cl ₂	0.5	1.0	10.0	-	-	5.0
Chlorine dioxide 2.00 ppm ClO ₂	0.10	0.20	1.00	-	-	1.00
Hydrogen chloride 30.0 ppm HCl	5.0	10.0	30.0	-	-	10.0
Hydrogen cyanide 50.0 ppm HCN	10.0	20.0	50.0	-	-	50.0
Ethylene oxide 20.0 ppm C ₂ H ₄ O (ETO)	2.0 (*3)	4.0	20.0	-	-	20.0
Hydrogen fluoride 10.0 ppm HF	1.0	2.0	10.0	-	-	10.0
Carbon monoxide 300/500 ppm CO	30	60	300	-	-	200
Carbon monoxide 1000/2000 ppm CO	30	60	300	-	-	400
Ozone 1.00 ppm O ₃	0.10	0.20	1.00	-	-	0.70
Phosgene 2.00 ppm COCl ₂ (PGN)	0.10 (*3)	0.20 (*3)	1.00	-	-	1.00
Phosphine 10.00 ppm PH ₃	0.30 (*3)	0.40 (*3)	10.00	-	-	5.00
Oxygen 25.0 vol % O ₂	19.0 ↓	17.0 ↓	23.0 ↑	-	-	20.9
Sulfur dioxide 10.0/50.0 ppm SO ₂	1.0	2.0	10.0	-	-	10.0
Hydrogen sulfide 100.0 ppm H ₂ S	5.0	10.0	100.0	-	-	50.0
Hydrogen sulfide 500.0 ppm H ₂ S	10.0	20.0	100.0	-	-	100.0
Silane 40.0 ppm SiH ₄ (SIL)	5.0	10.0	20.0	-	-	5.0
Nitrogen dioxide 30.0 ppm NO ₂	5.0	10.0	30.0	-	-	20.0
Nitric oxide 100 ppm NO	25	50	100	-	-	50
Hydrogen 2000 ppm H ₂	1000 (*2)	1500 (*2)	2000 (*2)	-	-	1000
Hydrogen 1.00/4.00 vol % H ₂	0.20 (*2)	0.40 (*2)	0.60 (*2)	-	-	1.00

*2: Not permitted for monitoring the lower explosion limit for primary explosion protection applications.

*3: Satisfactory measurements of exposure limit values cannot be guaranteed with the available sensor technology.

Technical specifications

Type designation:	MICRO IV
Measuring principle:	electrochemical sensor (EC)
Measuring ranges:	see section "sensor specifications" or "spare parts"
Adjustment time t_{90}:	see section "sensor specifications"
Expected operating life:	see section "sensor specifications"
Environmental influences:	see section "sensor specifications"
Display:	backlit LC display
Alarm:	visual and acoustic signal 3 current value alarms and, if necessary, 2 exposure value alarms see section "Standard settings of the alarm thresholds"
Sample gas feed:	diffusion
Zero point / calibration:	with calibration adapter at a flow rate of 0.5 to 0.6 l/min
Environmental conditions:	for operation: -20 to +55(45)°C / 5 to 95%RH / 80 to 120kPa see also: section "sensor specification" for storage: -25 to +55°C / 10 to 95%RH / 70 to 130kPa (0 to +30 °C recommended)
Power supply:	1 Mignon 1.5 V, type: DURACELL PROCELL MN1500 LR6 AA or INDUSTRIAL ^{BY} DURACELL ID1500 AA (LR6) or DURACELL PROCELL PC1500 LR6 AA or Energizer EN91 Industrial AA LR6 Service life: 6 months, reduced depending on the number of alarms.
Housing	Housing material: Polycarbonate, metallized Dimensions: 47 x 88 x 25 mm (WxHxD) Weight: min. 61 g - device without display, without keyboard, with CO sensor max. 85.6 g - device with display, with keyboard, with O ₂ sensor Protection class: IP54
Examinations and Certifications	Electromagnetic Compatibility: DIN EN 50270:2006 Type class 1 and type class 2 SIL parameters and Ignition protection type: only when using DURACELL PROCELL MN1500 LR6 AA or INDUSTRIAL ^{BY} DURACELL ID1500 AA (LR6) or DURACELL PROCELL PC1500 LR6 AA or Energizer EN91 Industrial AA LR6 II 2G Ex ib IIC T4 or T3 Gb -20°C ≤ T _a ≤ +45°C or +55°C For simultaneous use with the aspiration pump (see add-ons), the MICRO IV's temperature class applies to the device. EC Type Examination Certificate: DMT 99 ATEX E 044 Production monitoring: CE 0158 (by appointed inspection body – DEKRA EXAM)

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Firmware version 2.29

180-000.53_OM_MICROIV.doc As of: July 12, 2024

Subject to change

EU Declaration of Conformity GfG Gesellschaft für Gerätebau mbH

MICRO IV

G221

G222

G223

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GfG Gesellschaft für Gerätebau mbH develops produces and sells gas sensors and gas warning devices which are subject to a **quality management system** as per DIN EN ISO 9001. Subject to supervision by means of a **quality system**, surveilled by the notified body, DEKRA Testing and Certification GmbH (0158), is the production of electrical apparatus of instrumentation Group I and II, categories M1, M2, 1G and 2G for gas sensors, gas detectors, gas warning systems in types of protection flameproof enclosures, increased safety, encapsulation and intrinsic safety, as well as their measuring function.

The portable detector **MICRO IV** complies with directive **2014/34/EU** (ATEX) for devices and protective systems for proper use in potentially explosive atmospheres, directive **2014/30/EU** for electromagnetic compatibility and with directive **2011/65/EU** (RoHS) on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

**For electrical explosion protection
Labelling**

DMT 99 ATEX E 044 X
Ⓢ II 2G Ex ib IIC T4/T3 Gb

The directive 2014/34/EU is complied considering the following standards:

- General requirements EN 60079-0 : 2018
- Intrinsic safety "i" EN 60079-11 : 2007

Certified by the notified body with ID number 0158 (DEKRA Testing and Certification GmbH, Dinnendahlstraße 9, D-44809 Bochum).

The directive 2014/30/EU is complied considering the following standard:


- Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen EN 50270 : 2015
- Emitted interference Type class 1
- Interference immunity Type class 2

The EMC test laboratory EM TEST GmbH at Kamen has tested and certified the electromagnetic compatibility.

The directive 2011/65/EU is complied considering the following standard:

- Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances EN 50581 : 2012

Dortmund, 04 August 2021


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B. Siebrecht
QMB

ATEX EU-Kenn: 2.25/Siebrecht