Micro IV

Single gas detector for toxic gases, hydrogen and oxygen

- Real-time gas concentration display
- Datalogging / event logging as standard
- Auto zero and calibration
- Optional dockingstation or data interface
- Smart sensor technology

smart
GasDetection
Technologies

Micro IV - The flexible Single-gas detector

Small, light and robust
The Single-gas detector MICRO IV is the state-of-the-art successor to MICRO III. The MICRO IV is the optimum solution for personal protection from toxic gases and vapours. It is very small and light, and a crocodile clip secures it safely on a belt or pocket. The housing is extremely shock and scratch resistant. Of course the MICRO IV is approved for use in explosion endangered areas.

Plug-in Smart sensors
The plug-in sensors are pre-calibrated and can be replaced easily. The MICRO IV recognizes the new sensor type, measuring gas, detection range, calibration curve as well as alarm threshold values. Only one minute after sensor replacement the MICRO IV is ready for operation.

Alarm thresholds
The MICRO IV provides 3 programmable alarm thresholds for toxic gases. The warning occurs when the programmed values are exceeded. For toxic gases the MICRO IV provides additional alarms for exceeded STEL or TWA values.

Audible alarm (95 dB(A))
The audible alarm of the MICRO IV is noticeable even in noisy environments. The sound frequency changes to avoid confusion with machine noise. The three alarm levels can be distinguished by different frequencies.

Visual alarm
Two extremely bright flashing LEDs indicate gas alarm. The alarm levels are distinguished by different flashing frequencies.

Event logger
The data logger saves up to 200 events. Alarm thresholds A1, A2, A3 as well as STEL and TWA are stored together with time and gas concentration. Data is stored continuously, old data is overwritten.

Infrared interface
The MICRO IV provides an infrared interface for data transfer via PC, the data interface, for quick device configuration or via dockingstation, which allows execution of the daily bump test as well as calibration / adjustment automatically in a very short time.

Advantage:
Attachable pump
For monitoring gases in manholes, sewers, rooms and containers before entering, the motorised pump can be attached easily. The high performance pump takes samples over long distances and is activated by a single button. The pump has its own, autonomous power supply and does not affect the run time of the MICRO IV.

Continuous operation up to 9 months
The MICRO IV measures and monitors gases continuously for up to 9 months using only one alkaline battery. The battery can be replaced easily. After battery replacement the MICRO IV is immediately ready for operation. The MICRO IV indicates the battery capacity; insufficient battery capacity triggers a „low-battery" alarm.

Confidence beep
When configuring the MICRO IV a confidence beep can be activated. The dockingstation allows quick and easy configuration of the MICRO IV.

Gases and detection ranges
The MICRO IV detects a wide range of toxic gases, hydrogen and oxygen by means of electrochemical sensors.

Gases and Detection ranges		
CO	Carbon monoxide	300 ppm 1000 ppm 2000 ppm
H_2S	Hydrogen sulphide	100 ppm 500 ppm
O_2	Oxygen	25 Vol.-%
C_2H_4O	Ethylene oxide	20 ppm
ClO_2	Chlorine dioxide	2 ppm
$COCl_2$	Phosgene	1 ppm
H_2	Hydrogen	2000 ppm 4 Vol.-%
HCN	Hydrogen cyanide	30 ppm 100 ppm
NH_3	Ammonia	200 ppm
NO	Nitrogen monoxide	100 ppm
PH_3	Phosphine	10 ppm
SiH_4	Silane	20 ppm
SO_2	Sulphur dioxide	10 ppm
THT	Tetrahydrothiophene	100 mg/m³
HCl	Hydrogen chloride	30 ppm
HF	Hydrogen fluoride	10 ppm
Cl_2	Chlorine	10 ppm
NO_2	Nitrogen dioxide	30 ppm
O_3	Ozone	1 ppm

Dockingstation DS220 and Data Interface DI220

Dockingstation DS220

The Dockingstation DS220 is an innovative device management system, which reduces cost and time for daily bump test and calibration remarkably. The Dockingstation DS220 for the MICRO IV was developed especially for performing daily bump tests according to EN 45544-4 including calibration and adjustment. Up to six MICRO IV can be tested and calibrated simultaneously.

Bump test

After putting the detectors into the DS220, the bump test is started automatically. All devices are tested simultaneously. Within a few minutes the bump test is completed. This gives a remarkable time saving.

The bump test checks:

- Response time
- Alarm thresholds
- Alarm test (visual and audible)
- Device and software identification
- Device failure

Adjustment

Every dockingstation is designed for calibrating six MICRO IV for the same gas. For each MICRO IV, the dockingstation indicates when adjustment is required. The interval depends on zeropoint and sensitivity drift since last adjustment and is set after calibration. The adjustment interval in the MICRO IV is automatically updated by the dockingstation. The dockingstation identifies zeropoint drift and sensitivity and stores this data together with date and time. Adjustment is started by pushing the red button and runs automatically. This saves valuable time for adjustment and documentation.

Easy handling

The dockingstation reduces the daily time required for adjustment and bump test considerably. Even just a few adjustments and bump tests every year will result in significant cost savings. The quick and easy handling and the self-explanatory traffic light indication reduce user error.

Test result

The test result is indicated for each individual slot by means of green, yellow and red LEDs.

Green = Detector ok!
Yellow = Busy
Red = Failure

Documentation

Test/adjustment does not require a PC. All data of bump tests and adjustment is stored for every device and can be read by MMC or transferred directly to a database via PC. Device management is done by PC, which also allows the MICRO IV to be programmed by means of a special configuration software.

Event logger

All relevant data is stored in the event logger:

- Time of alarm
- Alarm level (A1, A2, A3, STEL, TWA)
- Gas concentration

Data transfer

Data transfer is achieved via an interface (USB, RS485) or MMC (optional). The MMC slot is already integrated at the back of the dockingstation.

Gas supply

A built-in electrical pump supplies very slot with test or calibration gas. Flow monitoring guarantees a sufficient flow to every slot, allowing simultaneous calibration to save time. Due to its compact size the station can be installed easily. No further modules or master stations are necessary.

Data Interface DI220

The DI220 data interface forms part of a device management system. The DI220 can be used to quickly and easily configure a Micro IV instrument, and to transfer stored data from the instrument via IR communication. The DI220 is supplied with a USB connection cable suitable for any PC. It is small, portable and can be quickly and easily set up in the smallest workspace. Instrument handling is greatly simplified, also bump and/or calibration performed quickly to ensure safe operation of the instrument.

Technical Data

Micro IV

Detection principle:
Electrochemical sensor

Gases:
Toxic gases, Oxygen and Hydrogen

Gas supply:
Diffusion / Pump (optional)

Temperature range:
-20°C .. +50°C

Humidity:
5 .. 99% r. h.

Pressure:
700 .. 1300 hPa

Dimensions:
47 x 88 x 25 mm (W x H x D)

Weight:
85 g

Enclosure:
ABS, 3-times metallised

Protection class:
IP54

Operational time:
up to 9 months

Power supply:
One AA battery type DURACELL PRO-CELL MN 1500 LR6 AA

ATEX-approval:
ATEX ⓔ II 2G EEx ib IIC T4/T3
$-20°C \leq Ta \leq +45°C/+55°C$

EC-type examination certificate:
DMT 99 ATEX E 044

Alarms:
3 threshold alarms, battery alarm, STEL, TWA

Visual:
2 LEDs, 360° visible

Audible:
95 dB(A) (30cm)

Data logger:
- Saves up to 128 events with gas concentration
- Event No. 129 overwrites oldest event
- Stored data can be downloaded to a PC with date and time

Accessories:
Attachable motorised pump

ATEX-approval pump:
ATEX ⓔ II 2G EEx ib IIC T4/T3
$-20°C \leq Ta \leq +45°C/+55°C$

EC-type examination certificate:
DMT 03 ATEX E 072 X

Gases and Detection ranges		
CO	Carbon monoxide	300 ppm 1000 ppm 2000 ppm
H_2S	Hydrogen sulphide	100 ppm 500 ppm
O_2	Oxygen	25 Vol.-%
C_2H_4O	Ethylene oxide	20 ppm
ClO_2	Chlorine dioxide	2 ppm
$COCl_2$	Phosgene	1 ppm
H_2	Hydrogen	2000 ppm 4 Vol.-%
HCN	Hydrogen cyanide	30 ppm 100 ppm
NH_3	Ammonia	200 ppm
NO	Nitrogen monoxide	100 ppm
PH_3	Phosphine	10 ppm
SiH_4	Silane	20 ppm
SO_2	Sulphur dioxide	10 ppm
THT	Tetrahydrothiophene	100 mg/m³
HCl	Hydrogen chloride	30 ppm
HF	Hydrogen fluoride	10 ppm
Cl_2	Chlorine	10 ppm
NO_2	Nitrogen dioxide	30 ppm
O_3	Ozone	1 ppm

Technical Data

DS220 and DI220 for Micro IV

Type:
Dockingstation DS220

Slots:
6

Power supply:
12 V DC

Dimensions:
400 x 65 x 200 mm (W x H x D)

Weight:
1.9 kg

Material:
ABS

Gas supply:
Built-in pump 30 l/h

Gas disposition:
Solenoid valve

Gas adapter:
1 gas outlet for every slot

Interface:
COM Interface RS485 for PC resp. dockingstation connections

Slot for MMC-Card

Indication of test result:
by means of coloured LEDs (red / yellow / green)

Operating elements:
Button red / green

EMC:
according to EN 50270

Type:
Data Interface DI220

Slots:
1

Dimensions:
95 x 92 x 55 mm (W x H x D)

Weight:
0.3 kg

Material:
Plastic

Gas supply:
by pressure of the gas tank
0.5 l/min

Power supply:
via USB-interface

Software:
delivered on CD
for data read-out and for the configuration and calibration of a MICRO IV

Indication of test results:
only by means using the software

MicroIV Brochure English
All information in this brochure is subject to technical change without notice in the interest of progress. MicroIV/GB/04-2009. Printed in Germany

Technical specifications:
Micro IV

Measuring principle	Electrochemical (EC): for toxic gases and oxygen
Measuring ranges	sensor dependent
Response time	sensor dependent
Expected average life of the sensor	sensor dependent
Measuring gas supply	diffusion
Display	illuminated LC display
Alerting	visual and audible warning 3 instantaneous concentration alarms and 2 exposition alarms
Zero point and sensitivity adjustment	with calibration adapter at a flow rate of 0.5...0.6 l/min
Power supply	1x Mignon 1,5V Type: DURACELL PROCELL MN1500 LR6 AA or INDUSTRIAL BY DURACELL ID1500 AA (LR6)
Operating time	6 months, shorter depending on alarm frequency
Climatic conditions	
for operation:	-20...+55(45)°C | 5...95%r.h. | 80...120kPa
for storage:	-25...+55°C | 10...95%r.h. | 70...130kPa (recommended 0...+30°C)
Housing	
Material:	Polycarbonate, metalised
Dimensions:	47 x 88 x 25 mm (W x H x D)
Weight min.:	61 g - Model without display, without keypad, with CO sensor
Weight max.:	85,6 g - Model with display, with keypad, with O_2 sensor
Protection class:	IP54
Approvals / Tests	
Markings and ignition protection types:	⟨Ex⟩ II 2G Ex ib IIC T4 bzw. T3 Gb -20°C≤Ta≤+45°C bzw.+55°C only when used with DURACELL PROCELL MN1500 LR6 AA or INDUSTRIAL BY DURACELL ID1500 AA (LR6) When using the pump the detector unit is subject to the temperature classification for the MICRO IV.
EU Type Examination Certificate:	DMT 99 ATEX E 044
Electromagnetic compability:	DIN EN 50270:2006 Interference emission: Type class I Interference immunity: Type class II
Production supervision:	CE 0158 (by notified body – DEKRA EXAM)

smart GasDetection Technologies