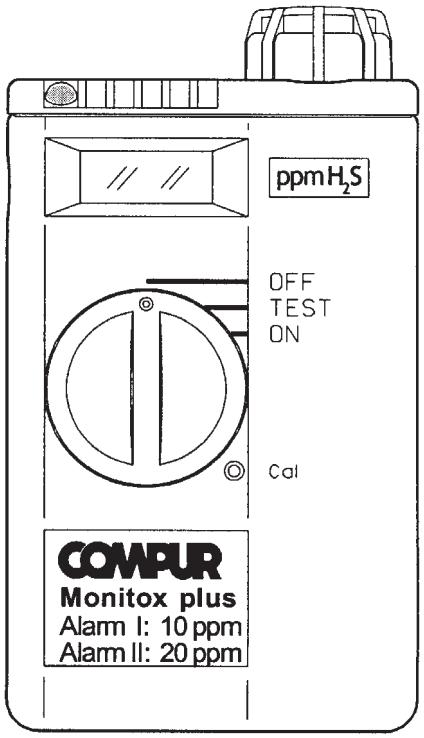
COMPUR Monitors

Operating Instructions

Compur Monitox plus



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Safety Instructions

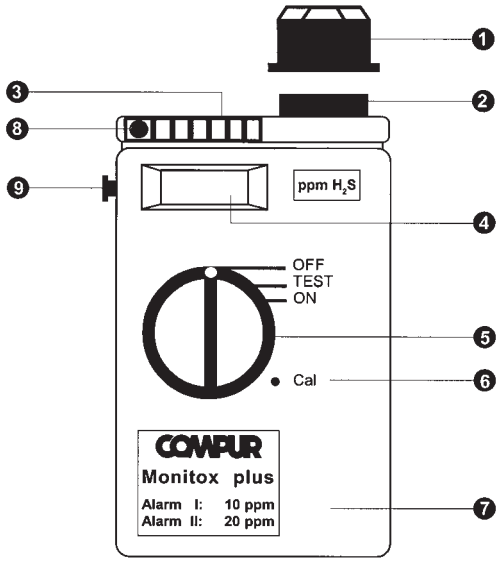
This safety equipment is an explosion-proof device certified for group II category 2. Its intended use is the measurement of toxic gases or oxygen. Designed with increased safety it is applicable in zone 1 and zone 2.

Please observe the following warning and safety guidelines:

- The equipment may only be used in the specified environmental conditions. Adverse conditions might damage the device and thus endanger the user.
- The temperature range for the device may not be exceeded.
- You may only use batteries specified in the “Technical Data” of the manufacturer.
- Please do not change the batteries in potentially explosive atmosphere.
- You may only use original equipment and spare parts.
- Please follow the instructions given in the operating manual.

Monitox plus overview

❶ **Filter cap:** Gas specific protection for the sensor
❷ **Sensor**
❸ **Buzzer**
❹ **LCD-Display:**
❺ **Switch:**
OFF: Instrument is off
TEST: Selftest
ON: Measuring mode.
❻ **Button Cal:** Operate with pin.
❼ **Lithium batteries:** In a battery pack - replaceable.
❽ **LED:** Flashing when alarm threshold is exceeded or in case of an error.
❾ **Earphone jack**



1. Product description

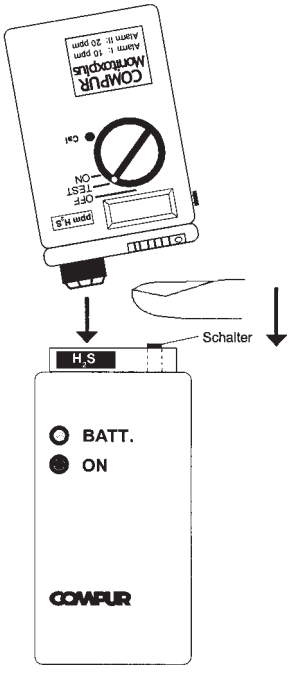
1.1 Application

- The **Compur Monitox plus** warns the user when a toxic gas is present or oxygen deficiency occurs.
- It should be worn near the breathing zone.
- The display shows the actual gas concentration in ppm, ppb or %/Vol.
- The **Compur Monitox plus** is **not** designed to monitor process gas streams or permantly high concentrations.
- Wear the instrument near the breathing zone using the clip or neck chain.
- The filter cap should be protected from dripping water and exposure to excessive dust.
- The Monitox comes with a steel clip and neck chain. A suspender and belt clip are optional.

1.2 Functional test

Move switch in **"TEST"** position：Electronics, batteries, speaker, LED and Display will be tested.

Move switch in **"ON"** position: Now you can test the Monitox using the optional gas generator. Depending on the gas generator model, the black switch pin is operated automatically or must be held down manually.
The gas generator produces a test gas for 10 seconds.
The test gas concentration is slightly above the alarm threshold. After 10 s the gas production stops automatically and the green LED of the generator goes off.
Within these 10 seconds the Monitox should give an alarm.



1.3 Earphone

For use in a loud environment the optional earphone can be connected to jack (9).

1.4 Storage

Short term: Switch in position **"OFF"**.
More than 1 month: Remove sensor and battery pack.

2. Calibration

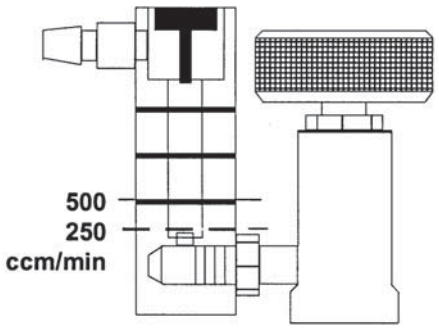
Move switch in position **"TEST".**
Press the button marked **"Cal"**, using the supplied pushpin. The display will show **"000"** flashing until the zero has been adjusted. This procedure must be done in a clean atmosphere. Now the display will alternate between "**GCAL"** and "**ICAL"**. To start a current calibration push the cal button while "ICAL" is active, to start a gas calibration push it when "GCAL" is active.

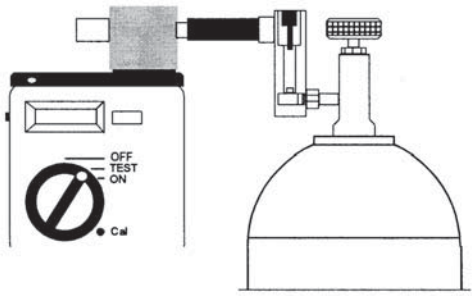
2.1 Gas calibration

- Place Monitox plus gas adapter (part # 569747) securely on the filter cap.
- Connect span gas.

NOTE: If using HCN, Cl_2 or other corrosive gases, use non-porus tubing such as Tygon lined with teflon or polypropylene.

- Open gas cylinder. The recommended flow is 250 ml / min, for Phosgene: 500 ml / min.
- Now push the "**CAL"** button while "**GCAL"** is active. The display flashes **"GCAL"**.
- When "**GCAL"** is steady, a stable measured value has been reached.
- Close the gas cylinder.
- Push "**Cal"** button.
- Now the display shows the most recently used span gas concentration. Confirm by pushing "**Cal"** or alter by pushing and holding **"Cal"**.
- Your operation will be confirmed by the unit displaying **"Stor".**
- The Monitox will now perform another self test and then show the actual gas concentration.
- Move switch to **"ON"** position.





2.2 Current calibration

This procedure must only be done when using new sensors. You can find the sensor specific current on the sensor label.
Push the "**Cal"** button **while "ICAL"** is active on the display.
Now the display shows the current of the sensor that has most recently been used. If the current on the display is correct, confirm it by moving the switch to **"ON",** or alter by pushing and holding the **"Cal"** button.

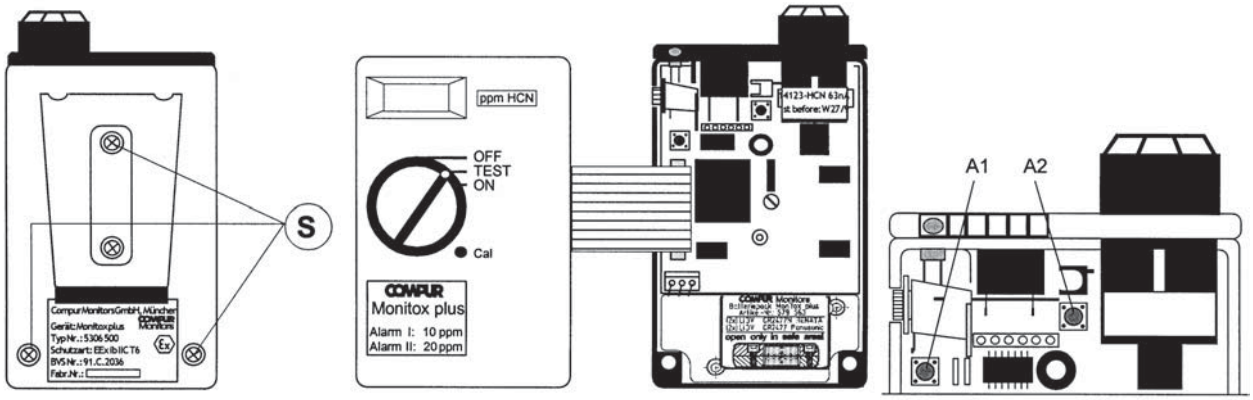
2.3 Oxygen sensor

The calibration procedure is the same as above, but you can use fresh air as span gas. Fresh air always contains 20,9 % oxygen. Zero can be adjusted with pure Nitrogen **(GCAL)** or electronically **(ICAL)**.

3. Alarm thresholds

Compur Monitors recommends to strictly observe the local regulations for the alarm thresholds.
Open the instrument. Use proper safety measures for handling CMOS components.
Place switch in **"TEST"** position.
Following the normal self test which occurs when powering on, push button "A1". The display will now show the active alarm threshold and an arrow. To increase the threshold push and hold "A1". To decrease the threshold push and hold "A2". If the desired alarm threshold appears on the display release the button and thus save the new value. Now move the switch into position **"ON"**.

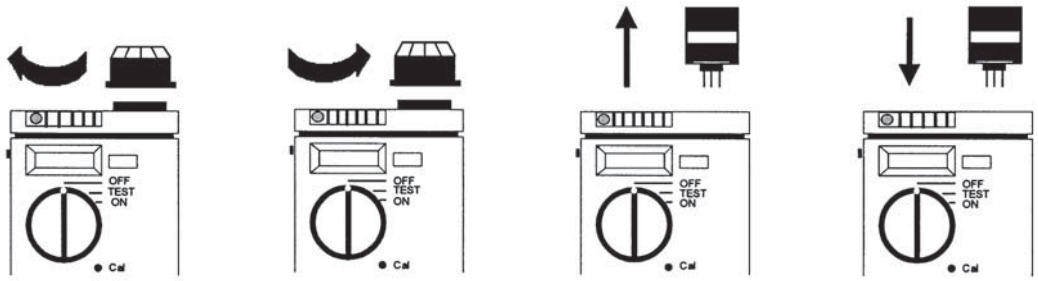
Follow the same procedures for setting the alarm threshold for A2.



4. Maintenance

4.1 Filter cap replacement
Carefully turn the old filter cap 90° counter clockwise. Insert the new filter cap. Turn 90° clockwise. Make sure to use only filter caps for the relevant gas!

4.2 Sensor replacement
Remove filter cap. Pull sensor out. Some sensors are shipped with a plug that short circuits the contacts. Remove this. Check best before date of the sensor. Note the output current, which is on the sensor label. Perform a current calibration.



4.3 Battery replacement
Open the instrument. Disconnect and remove the battery pack. Remove battery pack cover. Replace the batteries. Observe the proper polarity, as is illustrated on the battery pack cover. Close, connect and mount the battery pack. Perform a functional test.

5. Accessories

	Article No.:
Earphone	566032
Leather Pouch	503746
Steel clip	568434
Gas adapter	569747
Suspender Clip	554566
Belt Clip	568434
Gas generator H_2S	510329
Gas generator $COCl_2$	510634
Gas generator HCN 100 ppm	510717
Gas generator HCN 20 ppm	510640
Gas generator NO_2	510741
Gas generator CO	510790
Gas generator Cl_2	510204
Gas generator SO_2	510279

6. Error messages

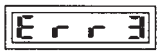
Whenever a malfunction occurs, the Compur Monitox plus will give you an error message.

The sensor current obtained during gas calibration is out of range.

- Calibration gas concentration must be within 0,5 TLV and full scale.
- Switch instrument off and on again to make it operate with the old calibration data.
- Sensor defective: Replace sensor.

The switch has been moved into the "ON"- position during calibration. The instrument stops working.

- Switch instrument off and on again to make it operate with the old calibration data.



Temperature is out of range. This message is displayed for a short time interval. Then the Monitox will go on to operate.

- The instrument operates out of the temperature - compensated range. Bring it into the specified temperature.

EEPROM defective. The instrument stops operating.

- The instrument must be serviced.

The A/D-Converter input voltage is out of range. The instrument stops working.

- Switch instrument off and on again.
- If error persists, check sensor.
- If the sensor is OK and the problem persists, the instrument must be serviced.

Sensor is missing, has bad contact or is defective.

- Replace sensor.
- Check contacts.
- If no success, replace sensor.

The Monitox **NO_2 0-10 ppm, NO_2 0-50 ppm and Cl_2** do not have this feature.

7. Status messages

The status messages give information about the mode in which the instrument operates.

New data in the menu **GCAL**, **ICAL**, **A1** or **A2** have been stored.

Autozero in process.

Gas calibration.

Current calibration.

Intermediate display when the operation mode has been altered and during the self-test.

Self test in process.

Battery pre-alarm: “Batt“ and the actual measured value alternate on the display.
Buzzer gives a frequent beep.
8 hours of battery capacity remain.

Batterie alarm: “Batt“ is steady on the display.
Battery empty. Instrument stops working.

- Replace batteries.

8. Technical data

Type:	5306 500
Manufacturer:	Compur Monitors, München
Protection class:	EEx ib IIC T6
Operating environment:	II 2 G
Operating temperature:	-20°C to +50°C (-4°F to + 122°F)
Power supply:	2 x Li, 3V: only CR 2477N (Renata) or CR 2477 (Panasonic)
Sensor principle	Electrochemical
Humidity	typ.: 20% to 90% r.h.
Pressure	920 hPa – 1120 hPa
Display	4-digit LCD-Display
Weight	130 g (4,6 oz)
Dimensions (With filter cap)	4,9 x 2,6 x 1“
Battery lifetime	about 800 hours
Alarm thresholds adjustable range	0 – 100% of range
Alarms loudness	typ.: 80 db (A) / 30 cm
Terminal	Earphone
Sensor warranty	6 to 12 months

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