Operating Instructions

Compur Monitox plus
### 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

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 permanently 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, Cl₂ or other corrosive gases, use non-porous 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

<table>
<thead>
<tr>
<th>Article No.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earphone: 566032</td>
</tr>
<tr>
<td>Leather Pouch: 503746</td>
</tr>
<tr>
<td>Steel clip: 568434</td>
</tr>
<tr>
<td>Gas adapter: 569747</td>
</tr>
<tr>
<td>Suspender Clip: 554566</td>
</tr>
<tr>
<td>Belt Clip: 568434</td>
</tr>
<tr>
<td>Gas generator H₂S: 510329</td>
</tr>
<tr>
<td>Gas generator COCl₂: 510634</td>
</tr>
<tr>
<td>Gas generator HCN 100 ppm: 510717</td>
</tr>
<tr>
<td>Gas generator HCN 20 ppm: 510640</td>
</tr>
<tr>
<td>Gas generator NO₂: 510741</td>
</tr>
<tr>
<td>Gas generator CO: 510790</td>
</tr>
<tr>
<td>Gas generator Cl₂: 510204</td>
</tr>
<tr>
<td>Gas generator SO₂: 510279</td>
</tr>
</tbody>
</table>
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 NO₂ 0-10 ppm, NO₂ 0-50 ppm and Cl₂ 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

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Type</td>
<td>5306 500</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Compur Monitors, München</td>
</tr>
<tr>
<td>Protection class</td>
<td>EEx ib IIC T6</td>
</tr>
<tr>
<td>Operating environment</td>
<td>II 2 G</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-20°C to +50°C ( -4°F to +122°F)</td>
</tr>
<tr>
<td>Power supply</td>
<td>2 x Li, 3V: only CR 2477N (Renata) or CR 2477 (Panasonic)</td>
</tr>
<tr>
<td>Sensor principle</td>
<td>Electrochemical</td>
</tr>
<tr>
<td>Humidity typ.</td>
<td>20% to 90% r.h.</td>
</tr>
<tr>
<td>Pressure</td>
<td>920 hPa – 1120 hPa</td>
</tr>
<tr>
<td>Display</td>
<td>4-digit LCD-Display</td>
</tr>
<tr>
<td>Weight</td>
<td>130 g (4.6 oz)</td>
</tr>
<tr>
<td>Dimensions (With filter cap)</td>
<td>4.9 x 2.6 x 1&quot;</td>
</tr>
<tr>
<td>Battery lifetime</td>
<td>about 800 hours</td>
</tr>
<tr>
<td>Alarm thresholds adjustable range</td>
<td>0 – 100% of range</td>
</tr>
<tr>
<td>Alarms loudness</td>
<td>typ.: 80 db (A) / 30 cm</td>
</tr>
<tr>
<td>Terminal</td>
<td>Earphone</td>
</tr>
<tr>
<td>Sensor warranty</td>
<td>6 to 12 months</td>
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Specifications are subject to change without notice, and are provided only for comparison of products. The conditions, under which our products are used, are beyond our control. Therefore, the user must fully test our products and/or information to determine suitability for any intended use, application, condition or situation. All information is given without warranty or guarantee. Compur Monitors disclaims any liability, negligence or otherwise, incurred in connection with the use of the products and information. Any statement or recommendation not contained herein is unauthorized and shall not bind Compur Monitors. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or device or its use. No licence is implied or in fact granted under the claims of any patent. Instruments are manufactured by Compur Monitors GmbH & Co. KG, Munich. The General Conditions of Supply and Service of Compur Monitors GmbH & Co. KG are applicable.
DECLARATION OF CONFORMITY

Compur Monitors GmbH & Co.KG
Weißenseestraße 101
D 81539 München

as the manufacturer hereby declares, that the

Gasalarm- and Monitoring Device
Monitox plus Type 5306 500

complies with the essential requirements of the following directives and has been
tested according to European standards:

1. Directive 89/336/EC
   EN 50081-1
   EN 55022
   EN 50082-2
   EN 55024

2. Directive 94/9/EC
   EN 50014 : 1997+A1-A2
   EN 50020 : 1994
   EC Type Examination Certificate: DMT 02 ATEX E 033
   Notified Body: DMT / 0158

Munich, 03-20-2003

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