Axel Semrau®

Manual

ODOR handy plus

Please read these instructions carefully before using the device and follow them exactly!

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Contents

1. General

The reliable analysis of odorants in natural gas is a very difficult analytical task.
The second generation of hand-held measuring instruments with electro-chemical sensors is available in the **ODOR handy plus**, which, apart from simple handling, also enables the precise determination of odorants using the proven electro-chemical sensors.

Precise measured values can be obtained only if the ODOR handy plus is used correctly for taking samples and properly calibrated.

Sampling:
Sulphurous odorants, such as THT and mercaptans, exhibit an extreme tendency towards adsorption. It is therefore very important to use only suitable hose material and to flush the pipes until the dead volume has been exchanged.
If the gas in the supply line has been standing for a longer period of time, the odorant may also have degraded here. In this case, the supply pipes must be flushed before connecting the measuring instrument. A flushing time of an appropriate length must be selected in these cases.
PTFE (Teflon®) is suitable for use as a hose material.
Rubber hoses must not be used!

Calibration:
Precise measurement results can only be guaranteed by regular calibration. It is recommended to check the calibration before daily use of the device for measurement.

Cross-sensitivities:
Please note that the ODOR handy plus is a sensor-based measuring instrument. The sensor has been optimised for the odorant that is to be measured. As with all sensor-based measuring instruments, however,

there are gas impurities to which the sensor is cross-sensitive. For example, the THT sensor reacts to certain concentrations of hydrogen and alcohol (e.g. methanol). These substances then indicate an odorant content on the display that does not exist.
A simple check for cross sensitivities can be carried out through measurement with non-odorised gas. If ODOR handy also produces a reading with non-odorised gas, the gas contains substances to which the sensor also responds. In these cases a reference measurement should be performed using gas chromatography for safety.

One last comment concerns the display accuracy. The digital display of the measuring instrument indicates the measured value with a precision of 0.1mg/m³. The accuracy of the measurement itself is around +/- 10% of the measurement result and the detection limit for THT is around 0.5mg/m³, so that deviations between two consecutive measurements of a few tenths of a mg/m³ are of a statistic nature. The detection limit for TBM is lower, at around 0.1mg/m³.

The quality of the available calibration gases is already subject to this uncertainty. In our experience, odorisation at precisely the required minimum concentration is not possible in practice. You should always err on the safe side.

If you follow these tips and information, ODOR handy plus will make the task of "odorant control" very straightforward.

1.1. Safety aspects

In order to ensure maximum safety and to avoid malfunctions, it is essential that you read the **operating instructions**.

The handling of the device requires exact knowledge of, and attention to these instructions. Where reference is made to laws, regulations and standards, these are based on German law. The ODOR handy plus may be used only for the purpose described. Observe the ambient temperature for the use of the device (-10°C to +40°C).

1.2. Maintenance

Annual maintenance may only be carried out by the manufacturer's authorised service department. **Only original spare parts from the manufacturer may be used.**

1.3. Use

The ODOR handy plus measuring instrument is intended for the detection of sulphurous odorants in natural gas/liquefied gas and for the monitoring of indoor air for sulphurous odorants.

THT (tetrahydrothiophene):	0-100mg/m³
	0-6lbs/MMCF
TBM (tertiary butyl mercaptan):	0-50mg/m³
	0-3lbs/MMCF
EM (ethyl mercaptan):	0-50mg/m³
	0-3lbs/MMCF

The ODOR handy plus is suitable only for measurements in gases under the pressure and flow conditions described below.

It is not intended for use with town gas containing CO and H_2.

The devices are equipped either with a sensor for THT or with a sensor for mercaptans. Conversion from THT to mercaptans or from mercaptans to THT can only be carried out by Axel Semrau®.

The ODOR handy plus mercaptan version can also be used to detect ethyl mercaptan in liquefied gas (LPG). The liquefied gas may thereby be supplied to the sensor only in an evaporated form. The presence of further mercaptans can falsify the measurement result.

1.4. Liability for function or damage

Liability for the function and use of the ODOR handy plus is transferred to the owner or user if the device is inappropriately maintained or repaired. This also applies if any handling occurs that does not correspond to use for the intended purpose.

2. Operating elements

2.1. Illustration of device

2.2. Functions

2.2.1. Sensor head (1)

The electro-chemical sensor is located in the sensor head. The measuring cap is pulled over the sensor head for measurements.

The sensor becomes less sensitive over the course of time. This is compensated by the ODOR handy plus by adjustment of the amplifier during the calibration procedure.

A sensor must be changed if

- the maximum amplification has been reached. A warning is given that calibration is no longer possible
- the white filter is very soiled
- the adhesive joint on the sensor is leaky
- the sensor reacts unnaturally
- the sensor is more than two years old

Caution: **The sensor must not be exchanged in potentially explosive areas.**
Only original sensors from the manufacturer may be used.

In order to change the sensor, first turn off the device. Then unscrew the aluminium nut. The sensor becomes visible and is simply pulled off.

The guide lug at the side facilitates insertion of the new sensor. Place this in the guide groove and press the sensor carefully into the sensor base. As you will have seen by now, the sensor rests on fine gold contacts that fit into the sockets

in the sensor base. Never use force when inserting the sensor - carefully try and find the right position. Finally, firmly tighten the aluminium nut again.

As soon as you switch the ODOR handy plus on again, leave the equipment alone until the following day in order to give the new sensor time to set a stable electro-chemical potential and only then perform a calibration.

2.2.2. Alarm LEDs (2)

A visual alarm signal is given by two bright alarm LEDs. The LEDs flash at the same frequency with which the acoustic signal sounds.

2.2.3. Display (3)

The display consists of a graphic-capable LCD display and enables the clear display of measured values and text information. The name of the respectively activated menu item is shown in the upper text line. In addition, the upper line serves to display warning messages and information (e.g. charge battery).

2.2.4. Function keys (4)

The functions of the function keys F1 and F2 depend on the respective menu item. These functions are described in the lowest line of the LCD. The text on the left applies to key F1 and the text on the right to key F2.
If no text is displayed, the associated key has no function.

2.2.5. Menu key (5)

The menu key is used to switch the device on and off. It must be pressed for approx. 1 second to switch on and 3 seconds to switch off. The main menu appears first after switching on. Submenus are selected by briefly pressing the menu key. This key is also used to return to the main menu from a submenu.

2.2.6. Infrared interface (6)

The ODOR handy plus has an infrared interface. Via the docking station (charger AS-ME-3009) it can exchange data with a PC. Special measuring data management software is available for this.

2.2.7. Acoustic alarm (7)

The acoustic alarm sounds if the preset alarm limit is reached.

2.2.8. Base plate (8)

The base plate is secured by two socket-head screws (M3). The battery is accessible after unscrewing the screws.

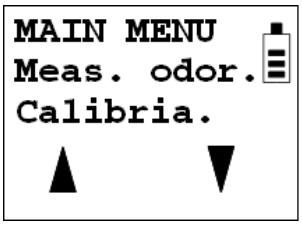
3. Menu

3.1. Menu structure

Main menu	Selection
Measurement odor	Sensor initialisation Zero point display Display last calibration Apply gas Measurement Save measurement Enter measuring point RDL selection Remove gas Sensor rest period
Calibration	Sensor initialisation Zero point display Apply gas Calibration Save calibration Sensor rest period
Monitoring	Sensor initialisation Measurement
Memory	Memory contents Display measured value
Info	Gas sensor info Memory info Serial no. info Software version info Date info Time info
Date/time	Set date, Set time
Options	Lighting Contrast Automatic switch off Language Direct start Unit Alarm limits

3.2. Main menu

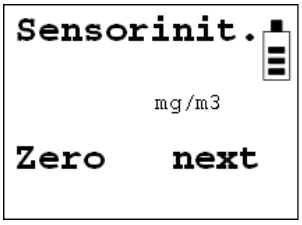
After switching the device on with the 'Menu (on/off)' key, the main menu appears following a short visual signal test. The charge state of the battery is always shown on the right-hand side.



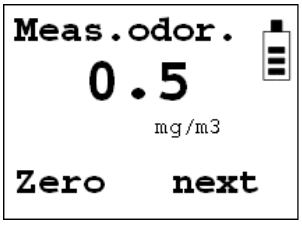
The individual menu items can be selected from the main menu. The desired menu item is selected by scrolling using the F1 and F2 keys. The menu item is thereby highlighted by a mark. Two submenus are always displayed in addition to the main menu and the arrow keys. The corresponding menu is then accessed via the 'Menu (on/off)' key.

3.3. Measurement odor

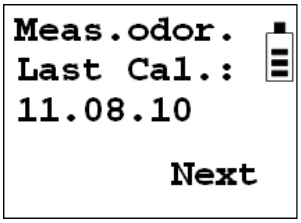
The odorant measurements are carried out in this menu.



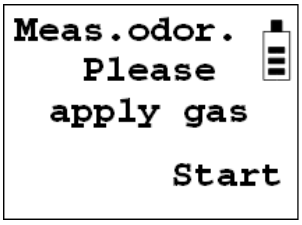
First of all, the sensor is initialised. This procedure takes a few seconds. No other functions can be used during this time. Also, no measuring or calibration gas should be connected during this time.



Following the initialisation the zero point is displayed. If this deviates significantly from the value 0.0mg/m³, then 0.0mg/m³ can be set using the F1 key. The F2 key (next) is then pressed to continue.



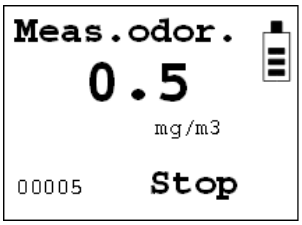
The date when the last calibration took place is displayed at this point. The ODOR handy plus should be checked with a calibration gas on each measurement day.



The measuring cap must now be placed on the sensor head and the measuring gas is switched on. The device must be connected via a nylon line **either directly (at 22–50mbar or 0,31-0,72psi) or via a flow regulator (e.g. rotameter at up to 10bar or 145psi). The gas flow should be adjusted to 0.5l/min. (or 30l/h).** The measurement begins as soon as the F2 key (start) is pressed.

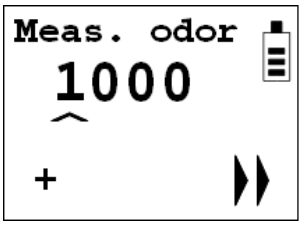
Note:
THT (Tetrahydrothiophene) and mercaptans, the usual odorants for whose measurement the ODOR plus handy was developed, exhibit an extreme tendency towards adsorption. This means that e.g. THT will bond to any suitable surface up to saturation. However, THT that is held back by a surface cannot be measured, since it never reaches the sensor. For this reason, your ODOR handy should always be connected to the natural gas pipe using the hose material supplied. This material – nylon or PTFE – tends little toward adsorption.

Never use a rubber hose!!!

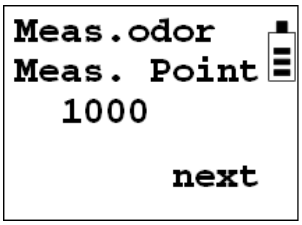


The measurement now begins and the measured value is displayed constantly. The time in which the measured value is stable, according to the measured value parameters stored in the software, counts down in the bottom left-hand corner. If the measured value is stable, this is indicated by an acoustic signal. The measurement can also be terminated prematurely with the F2 key (stop).

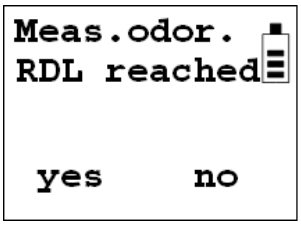
If the measurement has ended, the measured value can either be discarded (F1) or saved (F2). Discarding the measured value returns you to the main menu.



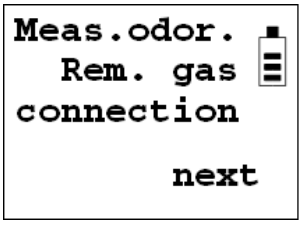
In order to save the measured value, a number must be assigned to the measuring point. A total of 4 digits from 0000 to 9999 are available. The digit is incremented using the F1 key (+) and the next digit is selected using the F2 key. If the entry is finished, this is confirmed with the 'Menu (on/off)' key.



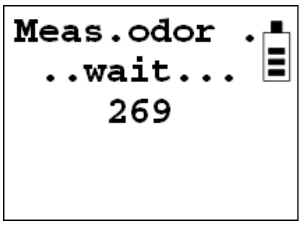
The measuring point number entered is displayed once again and the entry is quit with F2 (next).



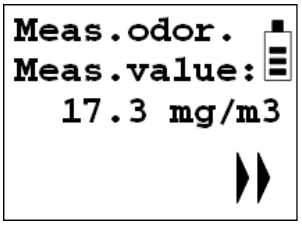
In the odorant check it is necessary to document the warning smell (readily detectable limit, RDL) of the odorant. The gas technician smells the gas and specifies here whether the warning odour was present.



After the entry is ended, the measuring cap must be removed so that the sensor can regenerate itself. The regeneration is started with the F2 key (next).



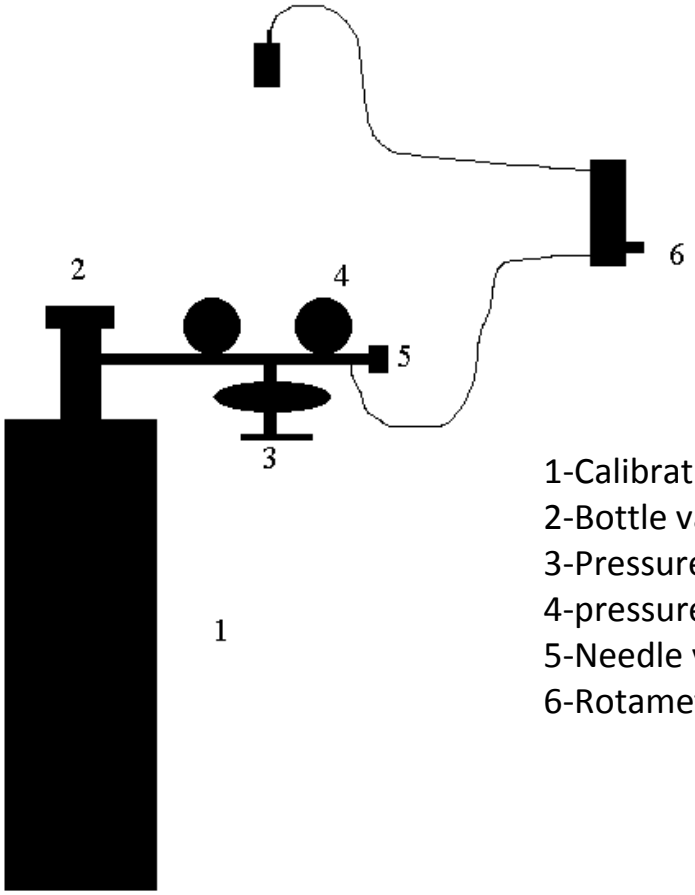
During this time no new measurements or calibrations can be started.



After the waiting period ends, the saved measurement data (measured value, measuring point no. etc.) are displayed. Pressing the 'Menu (on/off)' key returns you to the main menu.

3.4. Calibration

The calibration of the ODOR handy plus is described in this menu. Calibration should be performed frequently and it is best to do this on each measuring day. For the calibration, a test gas is required that contains the respective odorant in the same concentration existing in the network. The test gas must not contain any further components to which the employed sensor is sensitive. The carrier gas is usually nitrogen (N2). A special low-adsorption pressure reducer is used for the removal of gas from the bottle. A measuring instrument (e.g. rotameter) must be used to set the required gas flow (0.5l/min or 30l/h) through the measuring cap.



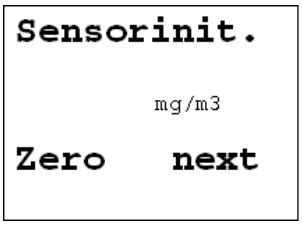
1-Calibration gas bottle
2-Bottle valve
3-Pressure reducer
4-pressure gauge
5-Needle valve
6-Rotameter

Flush the pressure reducer:
Adequate flushing of the pressure reducers is important for ensuring that the correct calibration gas concentration reaches the sensor of the ODOR handy.

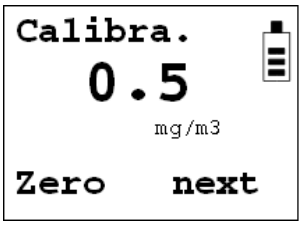
- Connect the pressure reducer to the calibration gas bottle (1)
- Close the needle valve (5)
- Open the bottle valve (2)
- Turn the knob (3) until the pressure gauge (4) shows a pressure of approximately 1bar
- Close the bottle valve (2) and release the pressure reducer by opening the needle valve (5)

This procedure should be repeated three times.

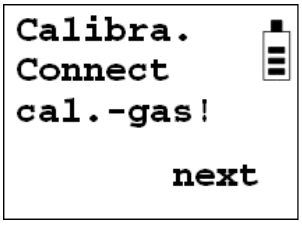
The sensor is initialised first, as soon as the calibration function is selected in the main menu and started with the 'Menu (on/off)' key.



This procedure takes a few seconds. No other functions can be used during this time. Also, no calibration gas should be connected during this time.

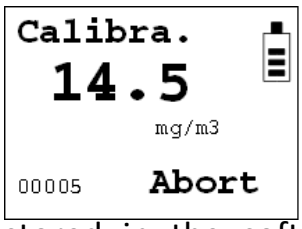


Following the initialisation the zero point is displayed. If this deviates significantly from the value 0.0mg/m³, then 0.0mg/m³ can be set using the F1 key. The F2 key (continue) is then pressed to continue.

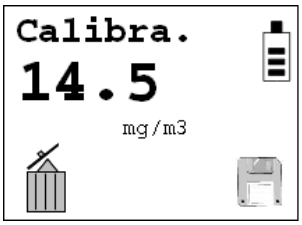


The measuring cap must now be placed on the sensor head and the calibration gas is then switched on. The device must be connected via a nylon line via a flow

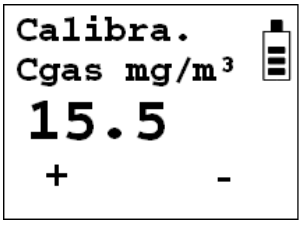
regulator (e.g. rotameter at up to 10bar or 145psi). The gas flow should be adjusted to 0.5l/min. (or 30l/h). The measurement begins as soon as the F2 key (continue) is pressed.



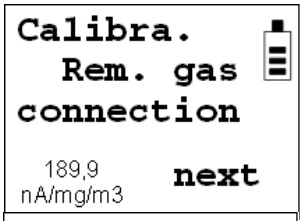
The calibration now begins and the measured value is displayed constantly. The time in which the measured value is stable, according to the measured value parameters stored in the software, counts down in the bottom left-hand corner. If the measured value is stable, this is indicated by an acoustic signal. The calibration can also be terminated prematurely with the F2 key (Abort). In this case, however, the calibration is not valid and is discarded.



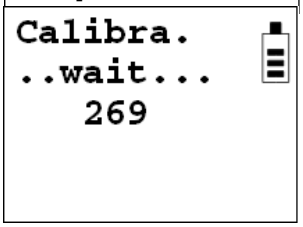
If the calibration has ended, the measured value can either be discarded (F1) or saved (F2). Discarding the measured value returns you to the main menu.



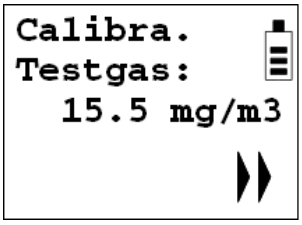
The concentration of the calibration gas is now entered. The concentration from the last calibration appears on the display. Using the F1 (+) and the F2 (-) keys, this value can be adapted according to the **calibration gas certificate**. The value is subsequently confirmed using the 'Menu (on/off)' key.



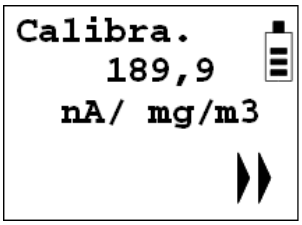
The measuring cap can now be removed and the calibration gas bottle is closed. F2 (continue) takes you to the sensor regeneration.



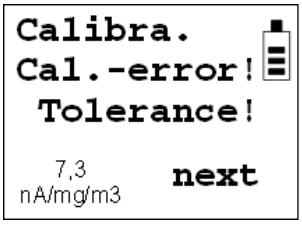
During this time no new measurements or calibrations can be started.



After the waiting period ends, the stored calibration data (calibration gas concentration, date, time) are displayed again.



In addition to concentration value, the signal output of the sensor is displayed.



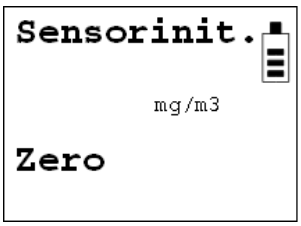
If the calibration was not correct or the liftime of the sensor is near to its end, then the calibration will be rejected and the display shows an alarm. Pressing the ‘Menu (on/off)’ key returns you to the main menu.

3.5. Monitoring

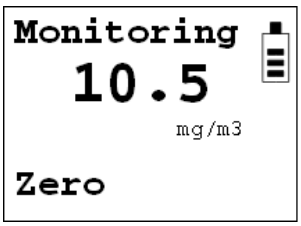
In the field of personal protection, the ODOR handy plus is also suitable for the determination of the concentration of odorants in the ambient air, for instance when filling or servicing the odorant containers.

The monitoring function is in the menu only available, if an alarm limit is set. Refer to 3.9 and 3.9.7.

The sensor is initialised first, as soon as the monitoring function is selected in the main menu and started with the ‘Menu (on/off)’ key.



This procedure takes a few seconds. No other functions can be used during this time. Also, no calibration gas should be connected during this time.

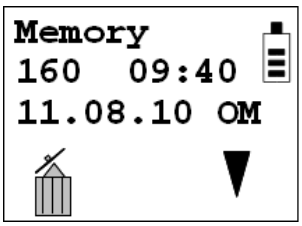


The measurement begins immediately afterwards. The current measured value is always displayed. It can be reset to ‘zero’ using the F1 key. The measurement can only be terminated with the ‘Menu (on/off)’ key.

The ‘Monitoring’ function should only be used for interior and exterior air. The continuous monitoring of gas flows tires the sensor and the measurements are not meaningful without the regular regeneration.

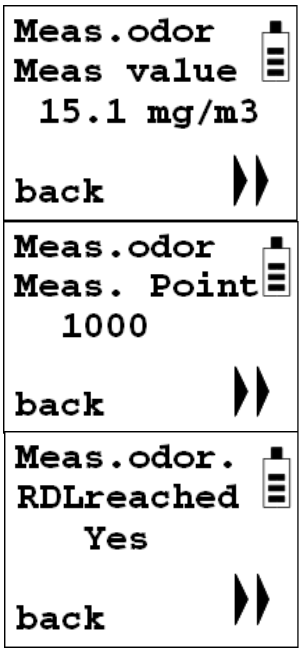
3.6. Memory

The memory of the ODOR handy plus can be viewed and managed in this section.



The memory management is accessed by selecting the Memory function in the main menu and pressing the ‘Menu (on/off)’ key. Each measurement (abbreviation OM) and calibration (CA) is displayed here with number, time and date. The F1 and F2 keys are used to switch between memory locations. At the first memory entry there is an option to clear the entire memory.

A memory entry is opened with the ‘Menu (on/off)’ key.



A memory entry consists of the saved entries for measured value, measuring point number and warning odour. The date and time of the measurement have already been displayed in the memory directory. It is not possible to subsequently amend any memory entries. The ‘Menu (on/off)’ key returns you to the memory management.

3.7. Info

The following information can be read out from the device in the 'Info' menu:

-Type of gas sensor (THT or mercaptan)

-Memory capacity

-Serial number

-Software version

-Date

-Time

Pressing the 'Menu (on/off)' key returns you to the main menu.

3.8. Date/time

The date (dd:mm:yy) and the time (hh:mm:ss) in the device can be set or changed in the 'Date/time' menu. The respectively active digit, which is marked by '_' is incremented by 1 each time the F1 key (+) is pressed. The F2 key (⏭) takes you to the next digit. The time can also be set after setting the date.

3.9. Options

The user can make several adjustments to the device in the 'Options' menu. In order to do so, the Settings menu must first be activated. This is done by simultaneous pressing the F1 and F2 keys. After an acoustic signal, this menu can be entered.

The user can make several adjustments to the measuring instrument in the 'Settings' menu. The F1 key (+) is used to change the value and F2 (⏭) is used to move to the next setting. Pressing the 'Menu (on/off)' key returns you to the main menu.

3.9.1. Backlight

On:	lighting is permanently on
Off:	lighting remains off
Timer:	the lighting is switched off automatically after the specified period of inactivity.

3.9.2. Contrast

The contrast of the display can be controlled via this menu item. To do this, the desired step from 0 – 30 is set using the F1 key (+).

3.9.3. Automatic-off

Setting for the automatic shutdown of the device if the user is inactive.

No: The device does not shut down automatically.

15min / 30min:
The device shuts down after the specified time if it is not used.
This function is always deactivated in the 'Monitoring' menu.

3.9.4. Language

Apart from the standard languages of English and German, further languages can be selected here if they are implemented.

3.9.5. Direct start

The ‘Direct start’ function of the device can be set via this menu item. If the ‘Quick start’ function is switched on, the ‘measurement Odor’ submenu is activated immediately after switching the device on.

3.9.6. Unit

The odorant concentrations are displayed as standard in mg/m³. Other units like lbs/MMCF can be selected if these have been implemented accordingly.

3.9.7. Alarm limit

The alarm in the device can be set or changed in this menu. The alarm limit can be changed with the F1 key. Alarm is off at alarm limit zero. If the measured concentration reaches this alarm limit, an acoustic and optical signal will be started.

4. Operation

4.1. Power supply

The rechargeable hand-held measuring instrument contains an NiMH rechargeable battery, which can be charged in a charging station with a power supply unit or a car charging cable.

Connect the charging station to the power supply (12V DC, 1.100mA) and place the device in the charging station. The rechargeable battery is then charged up automatically.

The duration of operation with a fully charged battery is at least 15 hours (depending upon the mode of operation, without display lighting).

The current battery capacity is always displayed in the top line of the display or in the Info menu. The capacity display can only show a tendency and is thus represented by four different symbols:

 ≈ 100 - 66 %

 ≈ 66 - 33 %

 ≈ 33 - 5 %

 : The rechargeable battery is almost flat! The ‘flat battery’ display flashes in the top line of the display.

In this case, the rechargeable battery should be charged up again immediately. The devices continue to be usable for a limited time after this display appears. The device shuts down automatically as soon as safe measuring operation is no longer guaranteed.

The rechargeable battery is charged up with an adapted charging current of 500mA. A completely discharged device is charged up again in approx. 5 hours. As soon as the rechargeable battery is completely charged, the device switches automatically to trickle charging. Thanks to the integrated overcharging protection, the

device can be stored in the charging station until you wish to use it again.

Caution: **If the ODOR handy plus is not used for a longer period of time, it should be taken out of the charging station and stored horizontally, since the life span of the sensor decreases after several months of storage in an exclusively upright position.**

Caution: **The ODOR handy plus also consumes current when switched off in order to supply voltage to the sensor. Recharge the battery regularly when not is use (approx. every 4 weeks).**
The rechargeable battery can be destroyed if discharged too deeply.

Only the charging station provided may be used for charging up the measuring instrument. It is fitted with a fuse of the type Wickmann series 425 (or comparable) with a maximum rated current of 2A for the protection of the device.

Caution! **Charging is not permitted in potentially explosive areas!**
Only the original charging cradle from the manufacturer may be used.

Note!
If the rechargeable battery is discharged and the device can no longer be switched on, the equipment should be placed in the charging cradle. The device displays 'Battery full’ after approx. 5 minutes. The device is now taken briefly out of the charger again and then charged up for 4 to 5 hours as usual.

4.1.1. Exchanging the rechargeable battery

It is only necessary to exchange the rechargeable battery pack in an exceptional case (e.g. in the case of a defect or significantly reduced battery performance).

Caution: **The rechargeable battery pack must not be exchanged in potentially explosive areas.**
In order to ensure protection against explosion, use only the original rechargeable battery pack from the manufacturer.

Proceed as follows to exchange the rechargeable battery pack:

1- Switch off the measuring instrument and remove the two socket-head screws (M3) from the base plate.
2- The base plate can be now removed.
3- Pull the plug connector carefully off the rechargeable battery pack. The rechargeable battery pack can now be removed from the device. Be careful not to damage the cable of the plug connector when doing this.
4- Carefully place the new rechargeable battery pack into the guide and reconnect the plug connector. Make sure that the connecting cable is not damaged when doing this.
5- Screw the base plate on again firmly.

4.1.2. Disposal of the rechargeable battery

Used batteries should not be disposed of in the household waste. As a consumer it is your duty to return used batteries. You can dispose of your used batteries at your local council collecting station or wherever batteries of the respective type are sold.
We also take back your used rechargeable batteries. Simply send them to the following address, marked 'Used':

Axel Semrau GmbH & Co. KG
Stefansbecke 42
45549 Sprockhövel
Germany
Keyword: Rechargeable battery disposal

4.2. Repair

The ODOR handy plus is adjusted for use in the respectively specified odorant.
The sensitivity of the electro-chemical sensor employed can be temporarily reduced or permanently damaged due to the effects of sensor poisons.
Therefore, the sensitivity of the sensor should be checked regularly using a suitable test gas. An annual inspection is recommended! The Axel Semrau GmbH & Co. KG service workshop is at your disposal for repairs to the devices.

4.3. Error handling

Problem	**Possible cause**	**Solution**
The device displays incorrect measured values	- Sensor sensitivity has changed due to long period of disuse - Compensation data in the software is incorrect	- Allow the sensor to run in and readjust - Have the device readjusted by Axel Semrau service
Rechargeable battery is not charged (measuring instrument)	Charging contacts corroded	Clean the charging contacts
Rechargeable battery is not charged (charging station/car charging cable)	- Defective fuse - Defective power supply unit	- Send the device to Axel Semrau service - Exchange the power supply unit
The device shuts down during operation	Automatic shutdown is selected in the device menu	Deactivate automatic shutdown
"	Rechargeable batteries are flat	Charge up rechargeable batteries

Device does not function at all	Connection of the power supply is defective	Check the connection and connect correctly
"	- Rechargeable battery is deeply discharged	- Try to charge up the device - Exchange the rechargeable battery
Device does not react to key press	- Defective key	Send the device to Axel Semrau Service
Display is not lit up	- 'Lighting off' is selected in the device menu - Backlight defective	- Select 'Lighting on' or desired duration - Send the device to Axel Semrau Service
Device does not come out of the run-in phase	Sensor or electronic defective	- Send the device to Axel Semrau Service
Gas display is slow-acting	- Sensor is not sensitive	- Exchange the sensor - Send the device to Axel Semrau Service

5. Technical Data

Designation:	ODOR handy plus
Dimensions:	180mm x 58mm x 34mm
Weight:	approx. 450g (incl. rechargeable batteries)
Display:	illuminable LCD graphic display with 128x64 pixels
Power supply:	4 NiMH secondary cells in an encapsulated rechargeable battery pack, Rated voltage: 4,8Volt, Rated capacity: 1,500mAh
Charging time:	approx. 5 hours until fully charged
Charging voltage:	11–14V DC
Charging current:	max. 500mA (fused)
Operating duration:	> 15 hours (without lighting), Warning when remaining capacity is low, Automatic shutdown if voltage is too low
Ambient temperatures:	operation: -10°C to +40°C
Display:	visual by digital concentration display with one decimal place (mg/m³) Acoustic by concentration-dependent sound signal Sensory by concentration-dependent vibration
Data memory:	> 30,000 measured values (Measured data are retained even if rechargeable batteries are removed)

Explosion protection:	EC type-examination certificate
Testing body:	DEKRA EXAM GmbH
Test number:	BVS 10 ATEX E 140 X
Marking:	 II 2G Ex ib IIB T 4

Sensor data:

Mode of operation:	electro-chemical sensor THT or electro-chemical sensor TBM

Measuring range THT:	0 to 100mg/m³ (0-6lbs/MMCF)
Resolution THT:	0.5mg/m³
Measuring range TBM:	0 to 50mg/m³ (0-3lbs/MMCF)
Resolution TBM:	0.1mg/m³

Measuring accuracy:	± 10% of measured value
Response time:	t90 approx. 2 min. for THT t90 approx. 8 min. for TBM

The ODOR handy plus is intended for the measurement of odorants in odorised natural gas. It is not intended for use with town gas containing CO and H2.

Please take account of possible cross sensitivities (e.g. vis-à-vis methanol). A simple check for cross sensitivities can be carried out through measurement with non-odorised gas. If ODOR handy also produces a reading with non-odorised gas, the gas contains substances to which the sensor also responds. In these cases a reference measurement should be performed using gas chromatography for safety.

6. Warranty conditions

Thank you for purchasing an ODOR handy plus. All devices are carefully inspected by our technicians before leaving the factory.

We guarantee all devices for 12 months if used for the intended purpose. 9 months warranty on THT sensors and 6 months on TBM sensors.

Our liability is limited to the repair or adjustment of the device, which must be returned to the factory for this purpose.
Wearing parts such as rechargeable batteries are expressly excluded from this warranty. Damage to the gas sensor caused by inappropriate handling is likewise excluded.

Repairs are chargeable if a fault is caused by incorrect handling or abnormal operating conditions.
In such cases we will inform you of the expected costs before commencing with the repair.

7. Appendix

7.1. EC type-examination certificate

DEKRA

Translation

(1) **EC-Type Examination Certificate**

(2) **- Directive 94/9/EC -**
Equipment and protective systems intended for use in potentially explosive atmospheres

(3) **BVS 10 ATEX E 140 X**

(4) **Equipment:** **Gas measurement device type ODOR handy plus**

(5) **Manufacturer:** **Axel Semrau GmbH & Co. KG**

(6) **Address:** **45541 Sprockhövel, Germany**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.

(8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the test and assessment report BVS PP 10.2265 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

EN 60079-0:2006 General requirements
EN 60079-11:2007 Intrinsic safety ´i´

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the appendix to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

II 2G Ex ib IIB T4

DEKRA EXAM GmbH
Bochum, dated 16th November 2010

Signed: Dr. Eickhoff
Certification body

Signed: Dr. Wittler
Special services unit

DEKRA EXAM GmbH Dinnendahlstrasse 9 " 44809 Bochum Germany Phone +49 234/3696-105 Fax +49 234/3696-110 E-mail zs-exam@dekra.com

7.2. EC declaration of conformity

Axel Semrau®
Axel Semrau GmbH & Co. KG
Stefansbecke 42
45549 Sprockhövel
Telefon +49 (0)2339/1209-0
Telefax +49 (0)2339/6030
E-Mail info@axelsemrau.de
Internet www.axelsemrau.de

EG-Konformitätserklärung
EC Declaration Of Confirmity
CE-Déclaration De Conformité

Wir (we; nous), **Axel Semrau GmbH & Co. KG, Stefansbecke 42, 45549 Sprockhövel, Germany**

erklären in alleiniger Verantwortung, dass das Produkt	**ODOR handy plus**
hereby declare in our sole responsibility, that the product	ODOR handy plus
déclarons de notre seule responsabilité, que le produit	ODOR handy plus

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standard(s) or normative documents
auquel cette déclaration se rapporte, est conforme aux norme(s) ou aux documents normatifs suivant

Bestimmungen der Richtlinie terms of the directive prescription de la directive	**Titel und/oder Nr. sowie Ausgabedatum der Norm** title and/or No. and date of issue of the standard titre et/ou No. ainsi que date d'émission des normes
2004/108/EG: **Elektromagnetische Verträglichkeit** 2004/108/EC: Electromagnetic compatibility 2004/108/CE: Compatibilité électromagnétique	EN 61000-6-3:2002 EN 61000-6-2:2002 EN 50270:2006
94/9/EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen 94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres 94/9/CE: Appareils et systèmes de protection destinés á êtré utilisés en atmosphéres explosibles	EN 60079-0:2006 EN 60079-11:2007

Die Prüfung des Gerätetyps auf Übereinstimmung mit den Anforderungen der EG-Richtlinie 94/9/EG: Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen, erfolgte durch DEKRA EXAM GmbH, benannte Stelle Nr. 0158, Dinnendahlstr. 9, 44809 Bochum, Deutschland, EG-Baumusterprüfbescheinigung BVS 10 ATEX E 140 X.

The equipment was tested and found to comply with the requirements of EC-Directive 94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres, by DEKRA EXAM GmbH, notified body no. 0158, Dinnendahlstr. 9, 44809 Bochum, Germany, EC-Type Examination Certificate BVS 10 ATEX E 140 X..

L'équipement a été testé et est conforme aux exigences de la directive 94/9/CE sur les appareils et les systèmes de protection destinés à être utilisés en atmosphères explosibles par DEKRA EXAM GmbH, l'organisme notifie no. 0158, Dinnendahlstr, 44809 Bochum, Allemagne, attestation d'examen CE de type BVS 10 ATEX E 140 X..

Sprockhövel, 22.02.2011

Ort und Datum
Place and date
lieu et date

Geschäftsleitung
General Management
Directeur Général

7.3. List of accessories/list of spare parts

AS-ME-2004	THT sensor
AS-ME-2003	Mercaptan (TBM) sensor
AS-ME-3006	Rechargeable battery pack
AS-ME-3001	230V power supply unit
AS-ME-3002	12 V car power supply unit
AS-ME-3007	Charger station
AS-ME-3009	Charger with IR-USB interface
AS-ME-3003	Protective bag
AS-ME-3005	Software for readout of the data memory
AS-ME-3021	Case
AS-S03414	Rotameter
AS-ME-3008	Measuring cap
AS-S03136	Connecting hose with union
AS-S03120	Calibration gas set 2l THT, incl. pressure reducer

Further calibration gases are available on request

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