Dräger X-am® 5000
approved as type MQG 0010

Multi-Gas Monitor
Technical Manual

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Content

For Your Safety

General safety statements
- Before using this product, carefully read the associated Instructions for Use. This document does not replace the Instructions for Use.

Definitions of alert icons
The following alert icons are used in this document to provide and highlight areas of the associated text that require a greater awareness by the user. A definition of the meaning of each icon is as follows:

⚠ DANGER
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING
Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION
Indicates a potentially hazardous situation which, if not avoided, could result in physical injury, or damage to the product or environment. It may also be used to alert against unsafe practices.

NOTICE
Indicates additional information on how to use the product.

Intended Use

Portable gas detection instrument for the continuous monitoring of the concentration of several gases in the ambient air within the working area and in explosion-hazard areas.

X-am 5000, depending on the device type and configuration of DrägerSensors: independent measurement of one up to five gases.

Tests and Approvals

Marking

Supply unit 83 22 237;
approved as Type ABT 0100
Temperature class T4
-20 °C ≤ Ta ≤ +50 °C
when used with alkaline batteries
Duracell Procell MN 1500*)

Temperature class T3
-20 °C ≤ Ta ≤ +40 °C
when used with NiMH batteries
GP 180AAHC*) (1800 mAh)

or with alkaline batteries
Varta Type 4006*)
Varta Type 4106*)
Panasonic LR6 Powerline

Supply unit 83 18,704;
approved as HBT 0000
Temperature class T4
-20 °C ≤ Ta ≤ +50 °C

Supply unit 83 22,244;
approved as HBT 0100
Temperature class T4
-20 °C ≤ Ta ≤ +50 °C

*) Not subject to the Metrological Performance Test BVS10ATEXE080X and PFG10G001X.

Serial no.[1] on separate sticker

⚠ WARNING

Read the safety measures in the Instructions for Use.
Do not replace or charge batteries in potentially explosive areas. Danger of explosion!

The BVS 10 ATEX E 080 X technical suitability test is based on the calibration with the target gas.

1) The year of manufacture is shown by the third letter of the serial no.: D = 2012, E = 2013, F = 2014, H = 2015, J = 2016, K = 2017, L = 2018, M = 2019, N = 2020 etc.
Example: Serial no. AREH-0054: the third letter is E, which means year of manufacture 2013.

Intended operating area and operating conditions

Hazardous areas classified by zones
The device is intended for use in explosion-hazard areas or mines, in which firedamp classified by zone 0, zone 1 or zone 2 may occur. It is determined for use within a temperature range of –20 °C to +50 °C, and for areas in which gases of explosion groups IIA, IIB or IIC and temperature class T3 or T4 (depending on the batteries and rechargeable battery) may be present. For zone 0, the temperature class is limited to T3.
If used in mines, the device is only to be used in areas known to have a low risk of mechanical impact.

Hazardous areas classified by divisions
This device is intended to be used in hazardous areas or mines susceptible to firedamp classified as Class I & II, Div. 1 or Div. 2 within a temperature range of -20 °C to +50 °C and where gases or dusts of groups A, B, C, D and temperature class T3 or T4 (depending on battery pack and batteries) may be present.

For applications in accordance with CSA (Canadian Standards Association), the following should be observed:
Only the performance of the detector part of this instrument for flammable gases has been tested. The instrument has not been approved for use in mines by the CSA.

⚠ WARNING:
The sensitivity must be tested on a daily basis before first use with a known concentration of the gas to be measured in accordance with 25 to 50 % of the concentration limit value. The accuracy must be 0 to +20 % of the actual value. The accuracy can be corrected via calibration.

Safety instructions

⚠ WARNING
To reduce the danger of explosion, do not mix new batteries with old batteries and do not mix batteries made by different manufacturers.

⚠ WARNING
Always disconnect the device from the power pack before carrying out any maintenance operations.

⚠ WARNING
Substitution of components may impair intrinsic safety.

⚠ CAUTION
Not tested in an oxygen-enriched atmosphere (>21 % O_2).

⚠ WARNING
High off-scale readings may indicate an explosive concentration.

⚠ CAUTION
Use only supply units ABT 0100 (83 22 237), HBT 0000 (83 18 704) or HBT 0100 (83 22 244). Check the supply unit for approved batteries and applicable temperature class.

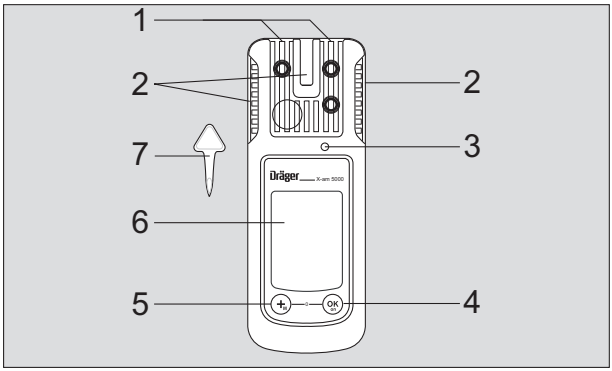
Note the following for CSA (Canadian Standards Association) applications:

For the CSA approval only the functions of the device component that is used to measure flammable gases are tested. The device is not approved by CSA for use in mining.

⚠ WARNING:
Before daily use, test the sensitivity with a known concentration of the applicable gas corresponding to 25 to 50% of the maximum concentration. The accuracy must be within a range of 0 to +20% of the actual value. Perform a calibration to correct the accuracy if necessary.

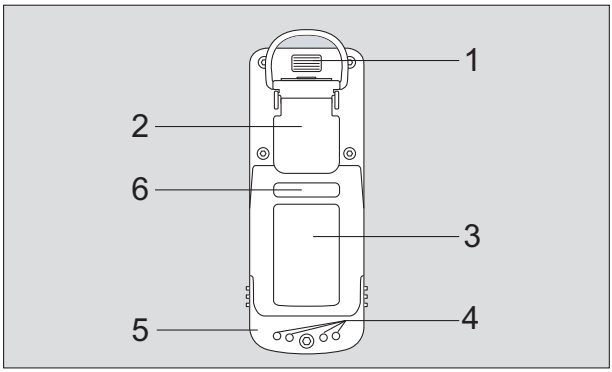
What is What

Front panel



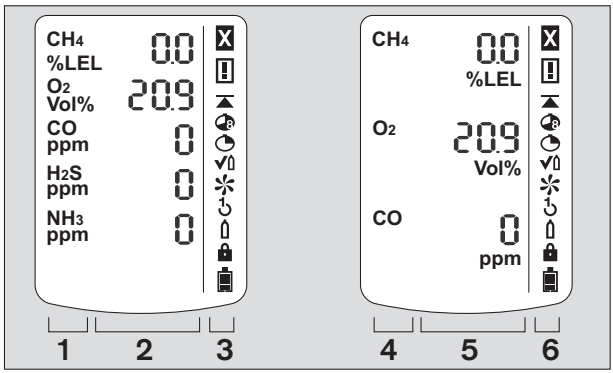
1 Gas entry
2 Alarm LED
3 Buzzer
4 ⓞ key
5 ⊕ key
6 Display
7 Tool for replacing the sensor

Rear panel



1 IR interface
2 Fastening clip
3 Type plate
4 Charging contacts
5 Power pack
6 Serial no.

Display



for 5 measuring channels only:
1 Measured gas display with unit
2 Measured value display
3 Special symbols

other:
4 Measured gas display
5 Measured gas display with unit
6 Special symbols

The following only shows the device version with 5 measuring channels.

Special symbols

- Fault message, refer to page 15
- Warning message, refer to page 15
- The peak value display for all measuring gases, refer to page 15
- The exposure evaluation display (TWA) for measuring gases, e.g., H_2S and CO, refer to page 15
- The exposure evaluation display (STEL) for measuring gases, e.g,. H_2S and CO, refer to page 15
- The device is set to function test with gas (bump test), refer to page 33
- The device is set to the fresh air calibration function, refer to page 39
- The device is set to the 1-button calibration function, refer to page 40
- The device is set to the single gas calibration function, refer to page 42
- The function for password entry is active, refer to page 17
- Battery / rechargeable battery 100 % full
- Battery / rechargeable battery 2/3 full
- Battery / rechargeable battery 1/3 full
- Battery / rechargeable battery empty

Configuration

Standard gas configuration

DrägerSensor	Measuring range [1]	Alarm A1 [1]			Alarm A2 [1]		
		setpoint	can be acknowledged	self-latching	setpoint	can be acknowledged	self-latching
CatEx 125 PR [%LEL]	0 to 100	20	Yes	No	40	No	Yes
CatEx 125 Mining PR [%LEL]	0 to 100	20	Yes	No	40	No	Yes
XXS O_2 [vol. %]	0 to 25	19 [2]	No	Yes	23	No	Yes
XXS O_2 100 [vol. %]	0 to 100	18 [2]	No	Yes	24	No	Yes
XXS CO [ppm]	0 to 2,000	30	Yes	No	60	No	Yes
XXS CO LC [ppm]	0 to 2.000	30	Yes	No	60	No	Yes
XXS CO HC [ppm]	0 to 10,000	600	Yes	No	1,200	No	Yes
XXS CO H_2-CP [ppm]	0 to 2.000	30	Yes	No	60	No	Yes
XXS H_2 [ppm]	0 to 2.000	200	Yes	No	400	No	Yes
XXS H_2S [ppm]	0 to 200	10	Yes	No	20	No	Yes
XXS H_2S LC [ppm]	0 to 100	5	Yes	No	10	No	Yes
XXS H_2S HC [ppm]	0 to 1,000	100	Yes	No	200	No	Yes
XXS H_2S/CO [ppm]	0 to 200 H_2S 0 to 2,000 CO	10 H_2S 30 CO	Yes	No	20 H_2S 60 CO	No	Yes
XXS NO [ppm]	0 to 200	25	Yes	No	50	No	Yes
XXS NO_2 [ppm]	0 to 50	5	Yes	No	10	No	Yes
XXS SO_2 [ppm]	0 to 100	1	Yes	No	2	No	Yes
XXS PH_3 [ppm]	0 to 20	0.1	Yes	No	0.2	No	Yes
XXS PH_3 HC [ppm]	0 to 2,000	5	Yes	No	10	No	Yes
XXS HCN [ppm]	0 to 50	10	Yes	No	20	No	Yes
XXS HCN PC [ppm]	0 to 50	5	Yes	No	10	Yes	No
XXS NH_3 [ppm]	0 to 300	50	Yes	No	100	No	Yes
XXS CO_2 [vol. %]	0 to 5	0.5	Yes	No	1	No	Yes
XXS Cl_2 [ppm]	0 to 20	0.5	Yes	No	1	No	Yes
XXS H_2 HC [vol. %]	0 to 4	0.8	Yes	No	1.6	No	Yes
XXS OV [ppm]	0 to 200	10	Yes	No	20	No	Yes
XXS OV A [ppm]	0 to 200	10	Yes	No	20	No	Yes
XXS Odorant [ppm]	0 to 40	10	Yes	No	20	No	Yes
XXS Amine [ppm]	0 to 100	10	Yes	No	20	No	Yes
XXS $COCl_2$ [ppm]	0 to 10	0,1	Yes	No	0,2	No	Yes
XXS O_3 [ppm]	0 to 10	0,1	Yes	No	0,2	Yes	No
XXS NO_2 LC [ppm]	0 to 50	0,5	Yes	No	1,0	Yes	No

1) Different settings can be selected to meet customer requirements on delivery. The current setting can be checked and changed with the Dräger CC Vision software. A version of Dräger CC-Vision suitable for the Dräger X-am 5000/2000 can be downloaded on the product page of the X-am 5000: www.draeger.com.
2) In the case of O_2 A1 is the lower alarm setpoint: an alarm is issued if the value is too low.

Standard device configuration

NOTICE
Only trained personnel are permitted to make changes to the device configuration.

Dräger X-am® 5000[1)]	
Bump test mode [2)]	Extended bump test
Fresh-gas adjustment[2)]	ON
Operating signal [2) 3)]	ON
Switch off [2)]	allowed
LEL factor [2)] (ch_4)	4.4 (vol. %) (4.4 vol. % corresponds to 100 %LEL)
STEL [2) 4) 5)] (short-term average)	STEL function - disabled Average value duration = 15 minutes
TWA [2) 5) 6)] (shift average)	TWA function - disabled Average value duration = 8 hours
Alarm A1 [7)]	can be acknowledged, non-latching, pre-alarm, rising flank
Alarm A1 at O_2 sensor [7)]	cannot be acknowledged, latching, like main alarm, falling flank
Alarm A2 [7)]	cannot be acknowledged, latching, main alarm, rising flank

1) X-am® is a registered trademark of Dräger.
2) Different settings can be selected to meet customer requirements on delivery. The current setting can be checked and changed with the Dräger CC Vision software.
3) A periodic short signal indicates the operating capacity of the instrument. If there is no operating signal, correct operation cannot be guaranteed.
4) STEL: average value of an exposure over a short period, generally 15 minutes.
5) Interpretation only if the sensor is designed for this.
6) TWA: shift averages are workplace limit values for generally eight hours per day of exposure for five days a week during a working life.
7) Latching and acknowledgement of alarms A1 and A2 can be configured with the Dräger CC Vision PC software.

Changing the standard configuration: See “Configuring the Device” on page 21.

⚠ **WARNING**
After a basic initialization has been carried out with the PC software Dräger CC Vision, individual alarm settings may have been changed.

Activating the Device

Before using the device for the first time, insert the supplied batteries or a charged NiMH power pack T4 (order no. 83 18 704), refer to Replacing the Batteries, page 47. Charge the rechargeable batteries if necessary, page 48.

The Dräger X-am 5000 is ready for operation.

Operation

Switching on the device

- Press and hold the ⓞⓚ key for approx. 3 seconds until the countdown **» 3 . 2 . 1 «** shown in the display has elapsed.
- All the display segments, including the visual, audible and vibration alarms, are activated for a short time.
- The software version is displayed.
- The device performs a self test.
- The next sensor which is next due for calibration is displayed with the days remaining until the next calibration, e.g., **» Ex %LEL CAL 20 «**.
- The time until the bump test interval elapses is displayed in days, e.g., **» bt 123 «**.
- All A1 and A2 alarm thresholds and **»** ◔ **«** (TWA)[1] and **»** ◔ **«** (STEL)[1] for all toxic gases (e. g. H_2S or CO) are displayed consecutively.
- During the warm-up period of the sensors, the respective display of the measured value flashes and the special symbol » ▯ « (for warning) is displayed. No alarms are issued during the running-in period of the sensors.
- Press the ⓞⓚ key to cancel the display of the activation sequence.

Switching off the device

- Press and hold the ⓞⓚ key and ⊕ key at the same time until the countdown **» 3 . 2 . 1 «** shown in the display has elapsed.
- Before the device is switched off, the visual, audible and vibration alarms are activated for a short time.

Before entering the workplace

⚠ WARNING

Before any measurements relevant to safety are made, check the adjustment with a bump test, adjust if necessary and check all alarm elements. If national regulations apply, a bump test must be performed according to the national regulations. Faulty adjustment may result in incorrect measuring results, with possible serious consequences.

- Switch on the device. The current measured values are shown in the display.

1) Only when activated in the instrument configuration. Delivery condition: not activated.

- Observe any warning » ⚠ « or fault messages » ☒ «.
  ⚠ **The device can be operated normally. If the warning message does not go out automatically during operation, the device must be maintained after the end of use.**
  ☒ **The device is not ready to measure and requires maintenance.**
- If one of these special symbols is displayed, appropriate measures, refer to page 25 to page 28, must be taken.
- Check that the gas inlet opening on the device is not covered.

⚠ WARNING

Explosion hazard! To reduce the risk of flammable or explosive atmospheres igniting, it is essential that the warning notices below are observed:

- Fractions of catalytic poisons in the measuring gas (e.g. volatile silicon, sulphur, heavy metal compounds or halogenated hydrocarbon) can damage the Cat Ex sensor. If the CatEx sensor can no longer be calibrated to the target concentration, the sensor must be replaced.
- In case of measurements in oxygen-deficient atmosphere (<8 vol. % O_2) the CatEx sensor may show incorrect displays; in this case, a reliable measurement with a CatEx sensor is not possible.
- In an oxygen enriched atmosphere (>21 vol. % O_2), the explosion protection cannot be guaranteed; remove instrument from the Ex area.
- High values outside the display area indicate an explosive concentration where applicable.

During operation

During operation, the measured values for every measured gas are displayed.
If a measuring range is exceeded or a negative drift occurs, the following displays are shown instead of the measured value display:

» ⌜⌜ « (concentration too high) or

» ⌞⌞ « (measuring range not reached) or

» ⌜⌟ « (blocking alarm).

- Excess concentrations of flammable materials can lead to a lack of oxygen.
- At O_2 concentrations below 8 Vol.-%, on the Ex channel instead of the measured value a fault is displayed with » - - « if the measured value is below the pre-alarm threshold and the device is equipped with an O_2 sensor (not with setting CH4 with measuring range >100 %LEL).

In the event of an alarm, the corresponding displays, including the visual, audible and vibration alarms, are activated – see “Identifying Alarms” on page 18.

NOTICE
Special states in which there is no measuring operation (quick menu, calibration menu, warm-up of sensors, password input) are indicated by a visual signal (slow flashing of the alarm LED ⎍⎍⎍⎍).

If the measuring range is exceeded significantly on the CatEx channel (very high concentration of flammable materials), a blocking alarm is triggered. This CatEx blocking alarm can be acknowledged manually by switching the device off and back on again in fresh air.
In configuration setting CH_4 with measuring range 100 vol. %, no blocking alarm is triggered as the heat conductance measurement principle is used.

⚠ CAUTION

The measuring range 0 to 100 vol. % CH4 is not suitable for monitoring explosive mixtures in the measuring range from 0 to 100%LEL.

⚠ WARNING

When using a CatEx sensor in the Dräger X-am 5000, a calibration of zero point and sensitivity must be carried out after an impact load that results in a fresh air display not equal to zero.

After the measuring range of the TOX measuring channels has been exceeded temporarily (up to one hour), checking the measuring channels is not necessary.

Calling the Info Mode

- In measuring mode, press the ⓞⓚ key for approx. 3 seconds.

If any warning or fault messages exist, the corresponding information or error codes are displayed (page 25 to page 31).
Press the ⓞⓚ key successively for the next display.
The peak values and the exposition values TWA[1)] and STEL[1)] are displayed.

- Warning messages are displayed. Numerical codes of warning messages: see page 25.
  ⓞⓚ key
- Fault messages are displayed. Numerical codes of fault messages: see page 28.
  ⓞⓚ key
- The peak values = the maximum measured values in the case of, e.g., CO, H_2S, ... or the minimum measured values in the case of O_2 within the storage interval are displayed
  ⓞⓚ key
- The average values of the exposures based on a shift of, e.g., 8 hours (TWA) of all the active sensors for the exposure evaluation are displayed
  ⓞⓚ key
- The short-term values (STEL) = average values of the concentrations over the average value duration of all the active sensors for the exposure evaluation are displayed
  ⓞⓚ key
  The device is in measuring mode again

– If no key is pressed for 10 seconds, the device returns automatically to measuring mode.

1) Only when activated in the device configuration. Delivery status: not activated.

Calling the Info-Off Mode

When the device is in a deactivated state, press the ⊕ key.
The name of the gas, measuring unit and measuring range limit value are displayed for all channels.

Pressing the OK key again exits the Info Off mode (or via timeout).

Calling the Quick Menu

– Only the fresh air calibration is activated in the quick menu on delivery. The PC software Dräger CC Vision can be used to activate the bump test for the quick menu and/or the function for displaying and deleting peak values.

• In measuring mode, press the ⊕ key three times.
If no functions have been activated in the quick menu, the device remains in measuring mode.

– You can select the activated functions of the quick menu by pressing the ⊕ key.

• Press the OK key to call the selected function.

Possible functions of the quick menu

Bump test, refer to page 33

Fresh-gas adjustment, refer to page 39

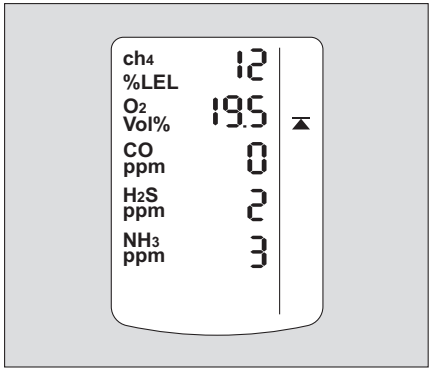
Delete peak values, refer to page 16

• Press the ⊕ key to cancel the active function and to switch to measuring mode.

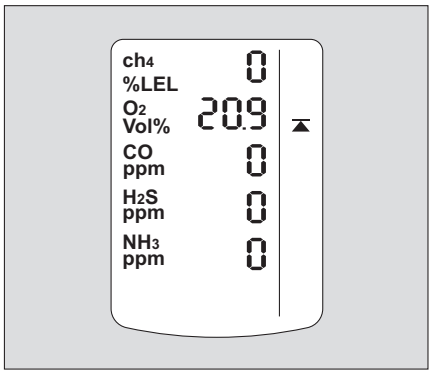
– If no key is pressed for 60 seconds, the device returns automatically to measuring mode.

Quick menu "Delete peak values"

After the function has been selected, the current peak values are displayed; the peak values special symbol appears in the display at the same time.



- The peak values can be deleted by pressing the ⓞⓚ key for 5 sec.
  The adjacent display appears.



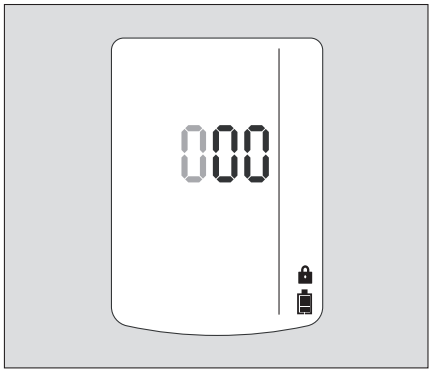
- Press the ⓞⓚ key to end the function.

Calling the Calibration Menu

– The calibration menu can only be accessed by entering a password.
  Password on delivery: **» 001 «**
– The default password on delivery can be changed using the PC software Dräger CC Vision.

- In measuring mode, press the ⊕ key for at least 4 seconds.
– The function for entering the password is selected.
– The » 🔒 « special symbol (for the "enter password" function) is displayed.

– The display shows **» 000 «**, with the first digit flashing.
- Use the ⊕ key to set the flashing digit.
- Press the ⓞⓚ key, the second digit starts flashing.
- Use the ⊕ key to set the flashing digit.
- Press the ⓞⓚ key, the third digit starts flashing.
- Use the ⊕ key to set the flashing digit.
- Press the ⓞⓚ key to confirm the password once it has been set completely.



– The calibration menu functions can now be selected by pressing the ⊕ key.
- Press the ⓞⓚ key to call the selected function.

Calibration menu functions

Fresh air calibration, refer to page 39

1-button calibration, refer to page 40

Single gas calibration, refer to page 42

- Press the ⊕ key to cancel the active function.

– If no key is pressed for 10 minutes, the device automatically returns to measuring mode.

Identifying Alarms

An alarm is displayed visually, audibly and through vibration in a specific pattern.

Concentration pre-alarm A1

The alarm is indicated by an intermittent alarm message:

Display **» A1 «** and measured value alternating: not for O_2!

– The pre-alarm A1 is not self-latching and stops when the concentration has dropped below the alarm setpoint A1.
– In the case of A1 a single tone is audible and the alarm LED flashes.

Acknowledging the pre-alarm:

- Press the OK key. Only the audible alarm and the vibration alarm are switched off.

Concentration main alarm A2

The alarm is indicated by an intermittent alarm message:

Display **» A2 «** and measured value alternating:
In the case of A2 a double tone is audible and the alarm LED flashes twice.
For O_2:**» A1 «** and measured value alternating = oxygen deficiency
» A2 « and measured value alternating = oxygen surplus

⚠ DANGER

Leave the area immediately. Danger to life! A main alarm is self-latching and cannot be acknowledged or cancelled.

After leaving the area, if the concentration is less than the alarm setpoint A2:

- Press the OK key. The alarm messages are switched off.

If the measuring range is exceeded significantly on the CatEx channel (very high concentration of flammable materials), a blocking alarm is triggered. This CatEx blocking alarm can be acknowledged manually by switching the device off and back on again in fresh air.

In configuration setting CH_4 with measuring range 100 vol. %, no blocking alarm is triggered as the heat conductance measurement principle is used.

⚠ CAUTION
The measuring range 0 to 100 vol. % CH_4 is not suitable for monitoring explosive mixtures in the measuring range from 0 to 100 %LEL.

STEL / TWA exposure alarm

The alarm is indicated by an intermittent alarm message: 

Display **» A2 «** and **»**  **«** (TWA) or **»**  « (STEL) and measured value alternating:

⚠ CAUTION
Leave the area immediately. After this alarm, the deployment of personnel is subject to the relevant national regulations.

– STEL and TWA alarms cannot be acknowledged or canceled.
- Switch off the device. The values for the exposure evaluation are deleted after the device is switched on again.

Battery pre-alarm

The alarm is indicated by an intermittent alarm message: 

Flashing special symbol **»**  **«** on the right side of the display:

Acknowledging the pre-alarm:
- Press the ⓞⓚ key. Only the audible alarm and the vibration alarm are switched off.

– The battery still lasts approx. 20 minutes after the first battery pre-alarm.

Battery main alarm

The alarm is indicated by an intermittent alarm message: 

Flashing special symbol **»**  **«** on the right side of the display:

The battery main alarm cannot be acknowledged or canceled:
– The device is automatically switched off again after 10 seconds.
– Before the device is switched off, the visual, audible and vibration alarms are activated for a short time.

Device alarm

The alarm is indicated by an intermittent alarm message: 

Special symbol »  « on the right side of the display:

– The device or one or several sensor channels are not ready for operation.
– For remedies, refer to page 25 to page 31.
- If necessary, commission the Dräger Service Center to eliminate the error.

Operation with pump

With Dräger Pump X-am 1/2/5000

Accessories:
Dräger Pump X-am 1/2/5000, sampling hose and probes, refer to Order List, see “Accessories” on page 60..

Commissioning and performing the measurement:
- Refer to the Instructions for Use of the Dräger Pump X-am 1/2/5000.

With manual pump adapter and rubber ball pump

Accessories:
For manual pump adapter, rubber ball pump, sampling hose and probes, refer to Order List, see “Accessories” on page 60..

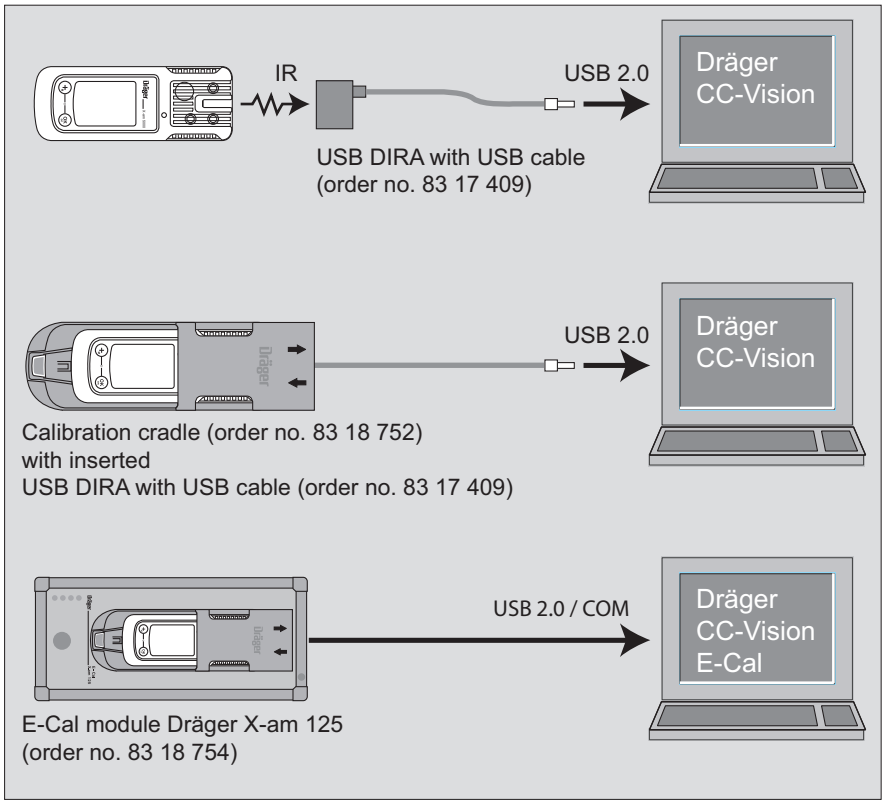
Commissioning and performing the measurement:
- Refer to the Instructions for Use of the accessories used.

Observe the following during measuring mode with pump

- The required waiting time when flushing the hose probe:
  Before every measurement, flush the Dräger sampling hose or the Dräger probes with the air sample to be measured.
- It is absolutely necessary to flush the extension hose to eliminate or minimize the effects which may interfere with measurements when using a sampling hose or a probe, e.g., memory effects, dead volume.
- The flushing phase depends on various factors, e.g., type and concentration of the gas or vapor to be measured, material, length, diameter, and age of the sampling hose or probe. Generally, when using a sampling hose (new, dry, clean), a typical flushing time of approx. 3 seconds is required for each meter. This flushing time applies in addition to the sensor response time (see the Instructions for Use of the gas measuring device used).
  Example:
- In the case of a sampling hose with a length of 10 m, the flushing time is approx. 30 seconds and the sensor response time is in addition approx. 60 seconds. Therefore, the total time before reading the gas measuring device is approx. 90 seconds.
- The flow rate alarm is delayed by 10 to 30 seconds depending on the length of the hose.

Configuring the Device

To individually configure a device with standard configuration, the device must be connected with a PC.



The installed PC software Dräger CC Vision is used for configuration.

- Observe the documentation and online help of the software.

– A version of Dräger CC-Vision suitable for the Dräger X-am 5000 can be downloaded on the product page of the X-am 5000: www.draeger.com.

Device settings

NOTICE
Only trained personnel are permitted to make changes to the device configuration.

The following changes can be made to the device parameters for a device:

Designation	**Field**
Password	Numeric field (3-figure)
Operating signal LED [1)]	Yes/No
Operating signal horn[1)]	Yes/No
Switch-off mode	“Switch off permitted” or “Switch off prohibited” or “Switch off prohibited at A2”
Shift length (TWA) [2)] (in minutes)	60 - 14400 (setting for exposure alarm)
Short-term exposure limit (STEL) [3) 4)] (in minutes)	0 - 15 (setting for exposure alarm)
User ID(12 characters)	Alphanumeric field
Switch database on or off	On/Off
Overwrite database	Yes/No
Database mode	Peak/Average
Database interval	1 s / 10 s / 30 s / 1 min / 2 min / 5 min / 10 min / 30 min
Date	(date on the PC)
Time	(time on the PC)
Warning after expiry of calibration interval	Yes/No
Error after expiry of calibration interval	Yes/No
Delay until error after expiry of calibration interval (days)	0 - 10
Automatic detection of Bump Test Station	Yes/No
Activate sensitivity calibration following negative bump test	Yes/No (relates only to a device connected to the Dräger Bump Test Station)
Bump test mode	“extended bump test” or “quick bump test” or “bump test deactivated”
Warning after expiry of bump test interval	Yes/No
Error after expiry of bump test interval (if warning activated)	Yes/No
Bump test interval (days)	1 - 732
Delay until error after expiry of cal. interval (days)	0 - 10
Activate user service life	Yes/No

User service life (days) (if activated)	0 - 999
Running in	Yes/No
LEL category	"---" or "PTB" or "IEC" or "NIOSH" (if this is changed, the LEL factor will be altered to match)

1) At least one of the two operating signals must be switched on.
2) Corresponds to the averaging time and is used to calculate the exposure value TWA.
3) Only evaluated if the sensor is provided for the purpose.
4) Corresponds to the averaging time and is used to calculate the exposure value STEL.

Sensor settings

The following changes can be made to the sensor parameters for the sensors:

Designation	**Field**
Alarm threshold A1 (in measurement unit)	0 - A2
Alarm threshold A2 (in measurement unit)	A1 – Measuring range limit value
Type of evaluation[1)]	Inactive, TWA, STEL, TWA+STEL
Alarm threshold STEL (in measurement unit)[1)]	0 – Measuring range limit value
Alarm threshold TWA (in measurement unit)[1)]	0 – Measuring range limit value
Calibration interval (days)	0 - 180 (sensor-dependent)
Unit (sensor-dependent)	Vol%, %UEG, %LEL, %LIE, ppm, mbar, ppb, mg/m^3
Gas name: "Ex" (CatEx sensor only)	Yes/No

1) Only evaluated if the sensor is provided for the purpose.

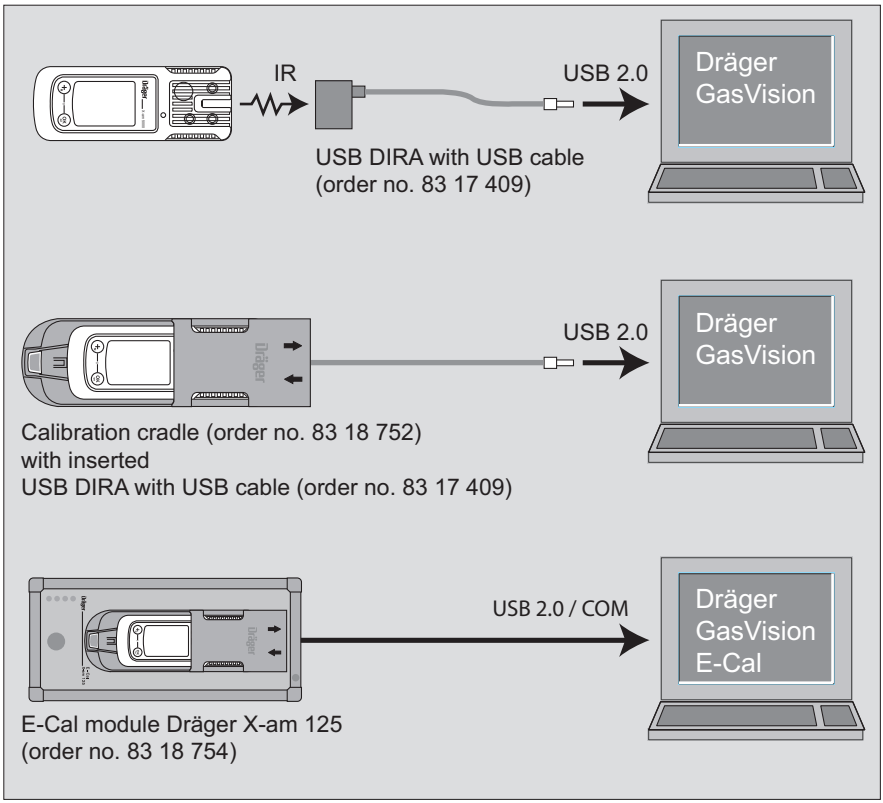
Testing the parameters

In order to ensure that the values have been correctly transferred to the gas measuring device:

- Press the touch button **Data from X-am 1/2/5x00**
- Check parameters.

Read Database and Display Graphically

To read the database of the device and display it graphically, the device must be connected with a PC.



The installed PC software Dräger GasVision is used for reading and displaying the database.

- Observe the documentation and online help of the software.

Faults, Cause and Remedy

Fault	Cause	Remedy
Not possible to switch on the device	Discharge the power pack	Charge the power pack, page 48.
	Discharge the alkaline batteries	Insert new alkaline batteries, page 47.
Not possible to switch off the device	The device is not set to measuring mode	Select measuring mode.
	The device is configured to "Disable prohibited"	Configure the device to "Disable allowed" with Dräger CC Vision.
Display **» – – «**	Measuring range calibrated incorrectly	Recalibrate the measuring range, page 38.
	Electronics or sensors defective	Must be repaired by DrägerService.

To display the numerical codes of the warning and fault messages in the info mode, page 15.

Warning messages

Special symbol » ⚠ « and displayed numerical code:	Cause	Remedy
152	Customer's service life counter about to elapse	Reset the service life counter using Dräger CC Vision.
153	Database 90 % full	Read the database soon and clear memory afterwards.
154	Database full	Read the database and clear memory.
155	Interval for the function test with gas (bump test) elapsed	Carry out the function test, page 33.
159	Calibration not possible. The menu function cannot be carried out because of a message which is preventing the function (e.g., sensors in warm-up phase).	Determine the message code via the info menu and switch it off, if necessary.

251	DrägerSensor CatEx 125 PR in warm-up phase	Wait until warm-up time is complete.
252	DrägerSensor CatEx 125 PR in warm-up phase	Wait until warm-up time is complete.

Special symbol » ⚠ « and displayed numerical code:	Cause	Remedy
253	Ex concentration has drifted into the negative range	Carry out fresh air calibration, page 39.
254	The temperature is too high	Operate the device within the allowed temperature range.
255	The temperature is too low	Operate the device within the allowed temperature range.
256	The calibration interval for DrägerSensor CatEx 125 PR has elapsed	Carry out span calibration for DrägerSensor CatEx 125 PR, page 42.
257	Alarm setpoint A2 setting is greater than 60 %LEL	Set alarm setpoint to less than 60 % LEL.
271	The calibration interval for thermal conduction for DrägerSensor CatEx 125 PR has elapsed	Carry out span calibration for DrägerSensor CatEx 125 PR, page 42.
272	Sensor is switched off due to excess gas	Restart the device
351	DrägerSensor XXS EC1 in the warm-up phase	Wait until warm-up time is complete.
352	DrägerSensor XXS EC1 in the warm-up phase	Wait until warm-up time is complete.
353	EC1 concentration has drifted into the negative range	Carry out fresh air calibration, page 39.
354	The temperature is too high	Operate the device within the allowed temperature range.
355	The temperature is too low	Operate the device within the allowed temperature range.
356	The calibration interval for DrägerSensor XXS EC1 has elapsed	Carry out span calibration for DrägerSensor XXS EC1, page 42.
357	Alarm setpoint A2 setting is greater than 60 %LEL	Set alarm setpoint to less than 60 %LEL.
451	DrägerSensor XXS EC2 in the warm-up phase	Wait until warm-up time is complete.
452	DrägerSensor XXS EC2 in the warm-up phase	Wait until warm-up time is complete.
453	EC2 concentration has drifted into the negative range	Carry out fresh air calibration, page 39.
454	The temperature is too high	Operate the device within the allowed temperature range.
455	The temperature is too low	Operate the device within the allowed temperature range.

Special symbol » ⚠ « and displayed numerical code:	Cause	Remedy
456	The calibration interval for DrägerSensor XXS EC2 has elapsed	Carry out span calibration for DrägerSensor XXS EC 3, page 42.
457	Alarm setpoint A2 setting is greater than 60 %LEL	Set alarm setpoint to less than 60 %LEL.

551	DrägerSensor XXS EC3 in the warm-up phase	Wait until warm-up time is complete.
552	DrägerSensor XXS EC3 in the warm-up phase	Wait until warm-up time is complete.
553	EC3 concentration has drifted into the negative range	Carry out fresh air calibration, page 39.
554	The temperature is too high	Operate the device within the allowed temperature range.
555	The temperature is too low	Operate the device within the allowed temperature range.
556	The calibration interval for DrägerSensor XXS EC3 has elapsed	Carry out span calibration for DrägerSensor XXS EC 3, page 42.
557	Alarm setpoint A2 setting is greater than 60 %LEL	Set alarm setpoint to less than 60 %LEL.
575	Calibration interval for the compensation channel has elapsed	Adjust the sensitivity of the compensation channel.
576	Calibration required because of overgassing.	Adjust the sensitivity of the compensation channel.

651	DrägerSensor XXS EC 4 in the warm-up phase	Wait until warm-up time is complete.
652	DrägerSensor XXS EC 4 in the warm-up phase	Wait until warm-up time is complete.
653	EC 4 concentration has drifted into the negative range	Carry out fresh air calibration, page 39.
654	The temperature is too high	Operate the device within the allowed temperature range.
655	The temperature is too low	Operate the device within the allowed temperature range.
656	The calibration interval for DrägerSensor XXS EC 4 has elapsed	Carry out span calibration for DrägerSensor XXS EC 4, page 42.
657	Alarm setpoint A2 setting is greater than 60 %LEL	Set alarm setpoint to less than 60 %LEL.

Fault messages

Special symbol » X « and displayed numerical code:	Cause	Remedy
102	The customer's service life counter has elapsed	Reset the service life counter using Dräger CC Vision.
103	The device is defective	The device must be repaired by DrägerService.
104	Check sum error program code	The device must be repaired by DrägerService.
105	The bump test interval has elapsed	Carry out bump test, page 35.
106	The calibration interval has elapsed (at least 1 calibration interval has elapsed)	Carry out span calibration, page 40 or page 42.
107	Bump test error (at least 1 channel has a bump test error)	Carry out bump test, page 35 or carry out span calibration, page 40 or page 42.
108	The device is defective	The device must be repaired by DrägerService.
109	The menu function cannot be carried out because of an error.	Determine the error code via the info menu and switch it off, if necessary.
111	Failed alarm element test: alarm light.	Repeat alarm element test with Dräger X-dock.
112	Failed alarm element test: alarm horn.	Repeat alarm element test with X-dock.
113	Failed alarm element test: Vibration motor.	Repeat alarm element test with X-dock.
114	Defective parameter check	Correct parameters and repeat test using X-dock
115	Device is disabled by X-dock.	Activate device with X-dock.
116	Failed software update.	The device must be repaired by DrägerService.
117	User parameters not feasible	Check configuration of user parameters and adjust
201	The zero point calibration of DrägerSensor CatEx 125 PR is not valid	Carry out fresh air calibration, page 39.
202	The span calibration of DrägerSensor CatEx 125 PR is not valid	Carry out span calibration, page 40 or page 42.

Special symbol » ☒ « and displayed numerical code:	**Cause**	**Remedy**
203	The measurement value of DrägerSensor CatEx 125 PR is in the negative range	Carry out fresh air calibration, page 39.
204	DrägerSensor CatEx 125 PR is not inserted or defective	Check DrägerSensor CatEx 125 PR, page 51.
205	Error during the function test with gas (bump test) of DrägerSensor CatEx 125 PR	Repeat the function test. Calibrate or replace DrägerSensor CatEx 125 PR, if necessary page 51.
207	Failed rise time test.	Repeat rise time test with X-dock.
208	User parameters not feasible	Check configuration of user parameters and adjust
218	Blocking alarm not plausible.	Adjust the sensor.
221	DrägerSensor CatEx 125 PR cannot be operated due to oxygen deficiency	Use in the sensor in an environment containing at least 8 vol. % O_2.
222	No valid zero point calibration of DrägerSensor CatEx 125 PR for thermal conduction	Carry out fresh air calibration, page 39.
223	No valid span calibration of DrägerSensor CatEx 125 PR for thermal conduction	Carry out span calibration for thermal conduction, page 40 or page 42.
224	Device incorrectly configured by Dräger CC-Vision.	Change sensor for applicable channel with Dräger CC-Vision.

301	The zero point calibration of DrägerSensor XXS EC1 is not valid	Carry out fresh air calibration, page 39.
302	The span calibration of DrägerSensor XXS EC1 is not valid	Carry out span calibration. Carry out page 42 or fresh air calibration, page 39.
303	The measured value of DrägerSensor XXS EC 1 is in the negative range	Carry out fresh air calibration, page 39.
304	DrägerSensor XXS EC1 is not inserted or defective	Check DrägerSensor XXS EC1, page 51.
305	Error during the function test with gas (bump test) of DrägerSensor XXS EC1	Repeat function test. Calibrate or replace DrägerSensor XXS EC1, if necessary page 51.
306	Failed filter test.	Repeat filter test with X-dock.

Special symbol » ☒ « and displayed numerical code:	Cause	Remedy
307	Failed rise time test.	Repeat rise time test with X-dock.
308	User parameters not feasible	Check configuration of user parameters and adjust
324	Device incorrectly configured by Dräger CC-Vision.	Change sensor for applicable channel with Dräger CC-Vision.
326	Error during warm-up acceleration Dräger Sensor XXS EC1	Disconnect and reconnect power pack or replace the sensor. Sensor must not be loaded with gas within the first 5 minutes.

401	The zero point calibration of DrägerSensor XXS EC2 is not valid	Carry out fresh air calibration, page 39.
402	The span calibration of DrägerSensor XXS EC2 is not valid	Carry out span calibration, page 42.
403	The measured value of DrägerSensor XXS EC 2 is in the negative range	Carry out fresh air calibration, page 39.
404	DrägerSensor XXS EC2 is not inserted or defective	Check DrägerSensor XXS EC2, page 51.
405	Error during the function test with gas (bump test) of DrägerSensor XXS EC2	Repeat function test. Calibrate or replace DrägerSensor XXS EC2, if necessary page 51.
406	Failed filter test.	Repeat filter test with X-dock.
407	Failed rise time test.	Repeat rise time test with X-dock.
408	User parameters not feasible	Check configuration of user parameters and adjust
424	Device incorrectly configured by Dräger CC-Vision.	Change sensor for applicable channel with Dräger CC-Vision.
426	Error during warm-up acceleration Dräger Sensor XXS EC2	Disconnect and reconnect power pack or replace the sensor. Sensor must not be loaded with gas within the first 5 minutes.

501	The zero point calibration of DrägerSensor XXS EC3 is not valid	Carry out fresh air calibration, page 39.

Special symbol » ☒ « and displayed numerical code:	**Cause**	**Remedy**
502	The span calibration of DrägerSensor XXS EC3 is not valid	Carry out span calibration, page 42.
503	The measured value of DrägerSensor XXS EC3 is in the negative range	Carry out fresh air calibration, page 39.
504	DrägerSensor XXS EC3 is not inserted or defective	Check DrägerSensor XXS EC3, page 51.
505	Error during the function test with gas (bump test) of DrägerSensor XXS EC3	Repeat function test. Calibrate or replace DrägerSensor XXS EC3, if necessary page 51.
506	Failed filter test.	Repeat filter test with X-dock.
507	Failed rise time test.	Repeat rise time test with X-dock.
508	User parameters not feasible	Check configuration of user parameters and adjust
524	Device incorrectly configured by Dräger CC-Vision.	Change sensor for applicable channel with Dräger CC-Vision.
525	The span calibration for the compensation channel is not valid	Carry out span calibration for compensation electrode.
526	Error during warm-up acceleration Dräger Sensor XXS EC3	Disconnect and reconnect power pack or replace the sensor. Sensor must not be loaded with gas within the first 5 minutes.
601	The zero point calibration of DrägerSensor XXS EC4 is not valid	Carry out fresh air calibration, page 39.
602	The span calibration of DrägerSensor XXS EC4 is not valid	Carry out span calibration, page 42.
603	The measured value of DrägerSensor XXS EC4 is in the negative range	Carry out fresh air calibration, page 39.
604	DrägerSensor XXS EC4 is not inserted or defective	Check DrägerSensor XXS EC4, page 51.
605	Error during the function test with gas (bump test) of DrägerSensor XXS EC4	Repeat function test. Calibrate or replace DrägerSensor XXS EC 4, if necessary page 51.
606	Failed filter test.	Repeat filter test with X-dock.

607	Failed rise time test.	Repeat rise time test with X-dock.
608	User parameters not feasible	Check configuration of user parameters and adjust
624	Device incorrectly configured by Dräger CC-Vision.	Change sensor for applicable channel with Dräger CC-Vision.
626	Error during warm-up acceleration Dräger Sensor XXS EC4	Disconnect and reconnect power pack or replace the sensor. Sensor must not be loaded with gas within the first 5 minutes.

Maintenance

Maintenance intervals

The device should be inspected and maintained by suitably qualified persons annually.
Comparisons:
- EN 60079-29-2 – Gas detectors - Selection, installation, use and maintenance of detectors for flammable gases and oxygen
- EN 45544-4 – Electrical apparatus used for the direct detection and direct concentration measurement of toxic gases and vapours - Part 4: Guide for selection, installation, use and maintenance
- National regulations

Recommended calibration interval for measuring channels Ex, O_2, H_2S, SO_2, NO_2 and CO: 6 months.
Calibration interval of other gases: refer to the Instructions for Use of the respective DrägerSensors.

- Depending on device configuration:
  Replace the alkaline batteries or charge the battery – refer to page 47 to page 48 – after each use, at the latest after the battery alarm has been triggered or after 2 weeks.

- Calibrating the device – page 38.

– In regular intervals, according to the sensors used and the operating conditions. For sensor-specific calibration data, refer to the Instructions for Use/data sheets of the sensors used[1)].
– Before you carry out safety-related relevant measurements, the zero point and sensitivity of the devices should be tested in accordance with national regulations.

- Inspection by suitably qualified persons – every year.

– The inspection intervals must be established in each individual case and shortened if necessary, depending on technical safety considerations, engineering conditions

1) Instructions for Use/data sheets for DrägerSensors can be downloaded on the product page of the X-am 5000 at the following Internet address: www.draeger.com. See also the enclosed Instructions for Use and data sheets for the sensors used.

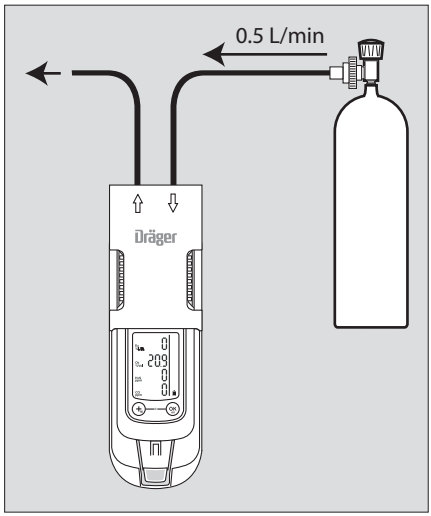
and the technical requirements of the equipment.
– We recommend that a service agreement be concluded with Dräger and that repairs also be carried out by them.

- Replace the sensors, page 51 – if necessary, when it is not possible to calibrate the sensors anymore.

Carry out manual bump test

Manual implementation without the documentation of results in the device memory

- Prepare a test gas cylinder, the volume flow must be 0.5 L/min and the gas concentration must be higher than the alarm setpoint concentration to be tested.
  Example test gas cylinder 68 11 130 = mixed gas with 50 ppm CO, 15 ppm H_2S, 2.5 vol. % CH_4, 18 vol. % O_2
- Connect the test gas cylinder with the calibration cradle (83 18 752).
- Vent the test gas into a fume cupboard or into the open air (with a hose connected to the second connector of the calibration cradle).



⚠ CAUTION

Do not inhale the test gas. Risk to health! Observe the hazard warnings of the relevant Safety Data Sheets.

- Switch on the device and insert it into the calibration cradle – press downwards until it engages.
- Open the test gas cylinder valve to let test gas flow over the sensors.
- Recommendation: Wait until the device displays the test gas concentration with sufficient tolerance –
  Ex: ±20% of the test gas concentration [1)]
  O_2: ±0.6 vol. % [1)]
  TOX: ±20% of the test gas concentration [1)].
  Wait al least until the alarm setpoint A1 or A2 is exceeded.
- If the alarm setpoints are exceeded, the device displays the gas concentration in alternation with **» A1 «** or **» A2 «** depending on the test gas concentration.
- Close the test gas cylinder valve and remove the device from the calibration cradle
– If the concentration has now fallen under the A1 alarm setpoint:
- Acknowledge the alarm.
- If the displays are outside of the above-mentioned ranges:
- Calibrating the device, refer to page 38.

1) Upon application of the Dräger mixed gas (order no. 68 11 130) the displays should be within this range.

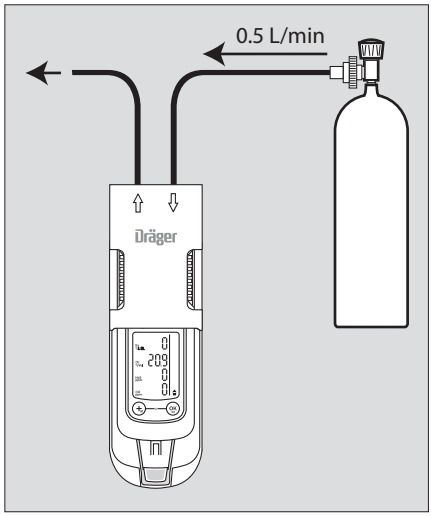
Menu implementation with the documentation of results in the device memory

The "Quick bump test" or the "Extended bump test" is selected using the Dräger CC Vision PC software. The "Quick bump test" checks whether the gas concentration has exceeded the Alarm 1 threshold (with oxygen, the check is whether the concentration has fallen below the Alarm 1 threshold). In the case of the “Extended bump test”, a check is made as to whether the gas concentration has reached the set bump test concentration within a tolerance window.

Setting on delivery: Extended bump test.

- Prepare a test gas cylinder, the volume flow must be 0.5 L/min and the gas concentration must be higher than the alarm setpoint concentration to be tested.
  Example test gas cylinder 68 11 130 = mixed gas with 50 ppm CO, 15 ppm H_2S, 2.5 vol. % CH_4, 18 vol. % O_2

- Connect the test gas cylinder with the calibration cradle (83 18 752).
- Vent the test gas into a fume cupboard or into the open air (with a hose connected to the second connector of the calibration cradle).



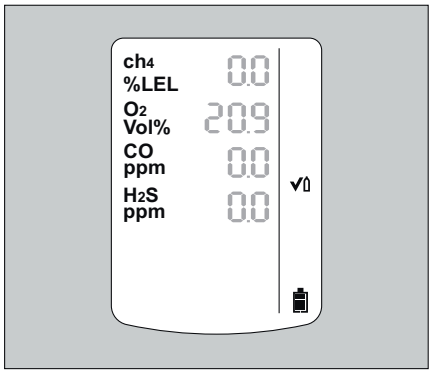
⚠ CAUTION

Do not inhale the test gas. Risk to health!
Observe the hazard warnings of the relevant Safety Data Sheets.

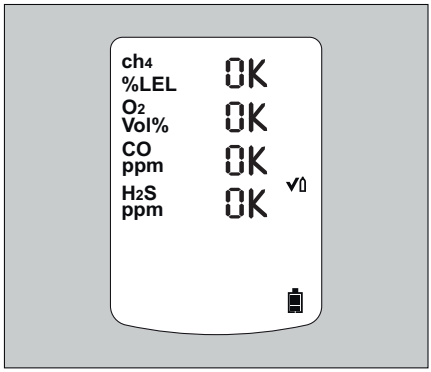
- Switch on the device and insert it into the calibration cradle – press downwards until it engages.
- Call the quick menu and select the function test with gas (bump test), page 16.

– The current gas concentration values and the special symbol » ✓ « (for bump test) flash.
- Press the ⓞⓚ key to start the function test with gas.
- Open the test gas cylinder valve to let test gas flow over the sensor.

– If gas concentration exceeds the alarm thresholds A 1 or A 2 the corresponding alarm will occur.
  Exit the function test with gas:

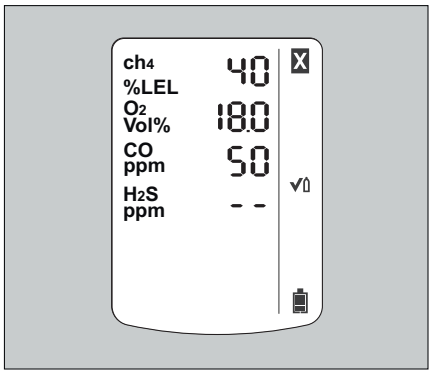


After the preset bump test concentration is reached or a gas alarm is triggered (with the "Quick bump test"):
– The display containing the current gas concentration changes with the display **» OK «**.
– The bump test that was carried out is documented with the result and date in the device memory.



- Close the test gas cylinder valve and remove the device from the calibration cradle.
– If the concentration values have now fallen under the A1 alarm setpoints, the device returns to the measuring mode.

– If the set bump test concentration is not reached within the specified time, the alarm mode is activated to indicate failure.
– The fault message » X « appears and » - - « is displayed instead of the measured value on the faulty measuring channel.
- In this case, repeat the function test with gas or calibrate the device, page 38.



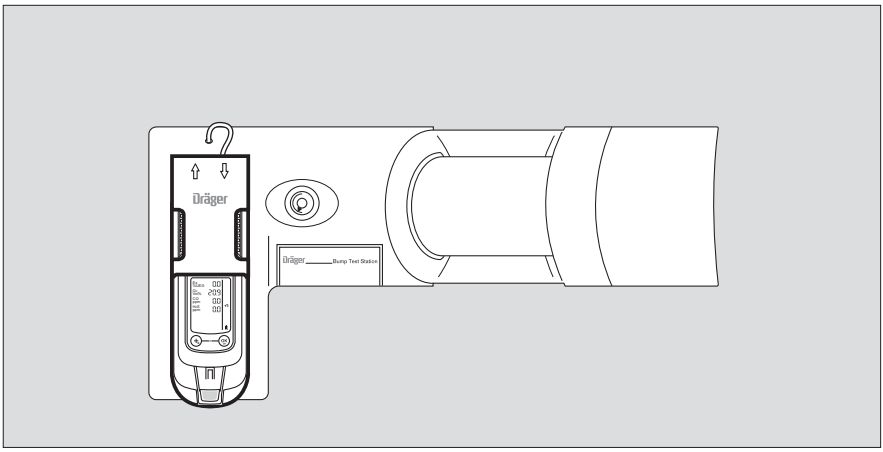
The function test with gas can also be carried out automatically.
The "Bump Test Station" is required for this function, refer to page 35.

Automatic implementation with the Bump Test Station

Prerequisite:
The device must first be configured for the automatic function test with gas (bump test) using the PC software Dräger CC Vision.
– Activating the device for the automatic function test.
– Composition of test gas (mixed gas) – standard on delivery: 50 ppm CO, 15 ppm H_2S, 2.5 vol. % CH_4, 18 vol. % O_2
– Define which measuring channels should participate in the automatic function test. All measuring channels participate in the function test by default.

- Prepare the Bump Test Station according to the instructions.

- Switch on the device and insert it into the receptacle of the Bump Test Station until it engages.



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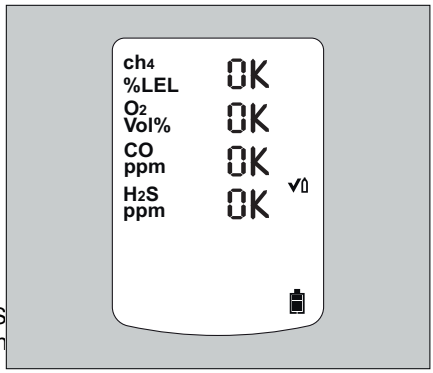
– The function test with gas is started automatically. The special symbol » ✓⇧ « (for bump test) flashes.

– If a gas alarm (Quick bump test) is triggered and the preset bump test concentration (Extended bump test) is reached within the specified time, the display shows the current gas concentration, alternating with **» OK «**.



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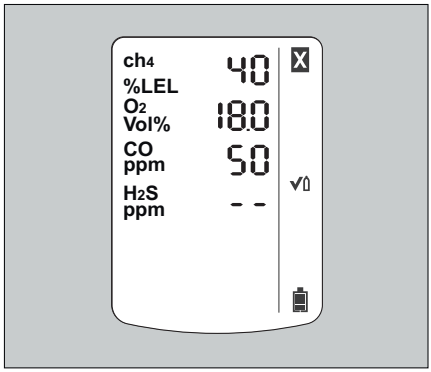
• Remove the device from the Bump Test S
– If the concentration values have now fallen returns to the measuring mode.

– An error will be triggered if the preset bump test concentration is not reached within the specified time.

– The fault message » X « appears and » - - « is displayed instead of the measured value on the faulty measuring channel.
- In this case, repeat the function test with gas or calibrate the device, page 38.



The function test with gas can also be carried out manually, refer to page 33 and page 34.

The PC program Dräger CC Vision can be used to enable the "Automatic calibration after incorrect bump test" option.

Calibrating the Device

Calibration may not be possible due to device and channel errors.
Allow the sensors to warm up before the calibration!
Warm-up time: see Instructions for Use/data sheets of the installed DrägerSensors (at www.draeger.com).

Calibration interval:
- Observe the relevant specifications in the Instructions for Use/data sheets of the DrägerSensors installed.
- For critical applications, observe the recommendations in EN 60079-29-2[1)] or EN 45544-4[2)] and national regulations. We recommend that you calibrate the channels after 6 months.

⚠ CAUTION
Do not inhale the test gas. Risk to health! Observe the hazard warnings of the relevant Safety Data Sheets.

- Improve the zero point accuracy – carry out the fresh air calibration, page 39.
- Set the sensitivity of all sensors to the value of the test gas – carry out the 1-button calibration, page 40.
- Set the sensitivity of a sensor to the value of the test gas – calibrate the sensitivity, page 42.

1) EN 60079-29-2 – Gas measuring device - Selection, installation, use and maintenance of apparatus for the measurement of combustible gases or oxygen
2) EN 45544-4 – Electrical devices for the direct detection and direct concentration measurement of toxic gases and vapors – Part 4: Guidelines for selection, installation, use and maintenance.

Carrying out the fresh air calibration

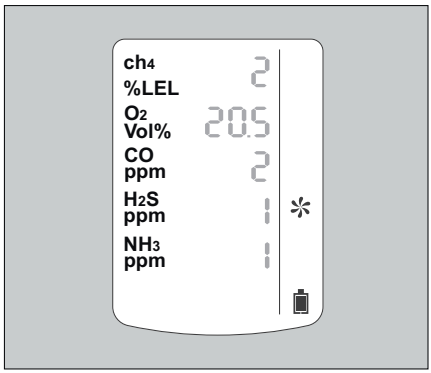
To improve the zero point accuracy, you can carry out a fresh air calibration.

NOTICE
If none of the sensors fitted permits calibration with fresh air (e.g. only O_3, only IR-CO_2), fresh air calibration is not offered as a menu function.

– Calibrate the device to fresh air, free of measured gases or other interfering gases.
– Not all sensors are included in the fresh air calibration[1)]. Sensors which have not warmed up or which are faulty prevent a calibration.
  In the case of sensors which are in the warm-up phase, the message **» 159 «** is displayed with the special symbol » ⚠ « (for warning message).
  In the case of a sensor or device error, the message » 109 « is displayed with the special symbol » ⚠ « (for a fault message).
  The message is cleared after 5 seconds and the function is available again in the menu
– During the fresh air calibration, the zero point of all sensors (with the exception of DrägerSensor XXS O_2) is set to 0.
  In the case of DrägerSensor XXS O_2, the display is set to 20.9 vol. %.
• Switch on the device.

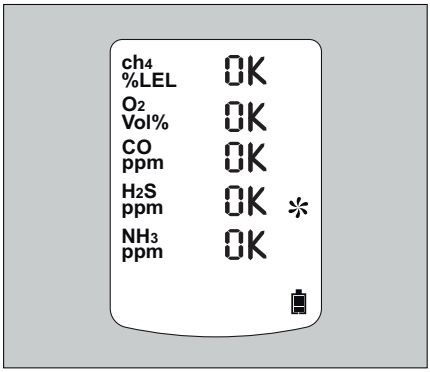
Depending on device configuration:
• Call the quick menu and select the Fresh Air Calibration function, page 16.
  or
• Call the calibration menu and select the Fresh Air Calibration function, page 17.

– The current gas concentration values flash.
  When the measured values have stabilized:
• Press the OK key to perform the fresh air calibration.

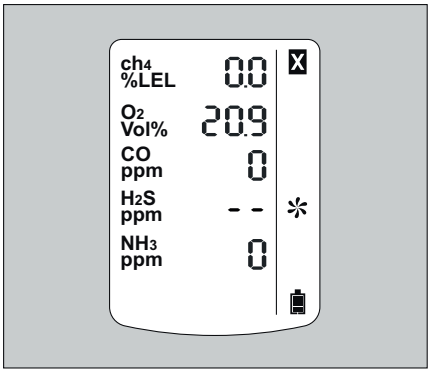


1) Fresh air calibration / zero point adjustment is not supported by the DrägerSensor XXS O_3. A zero point calibration / adjustment of these sensors can be conducted using the Dräger CC-Vision PC software. To do so, a suitable zero gas that is free of ozone (e.g. N_2) should be used.

– The display containing the current gas concentration changes with the display **» OK «**.
• Press the ⓞⓚ key to confirm the calibration or wait for approx. 5 seconds.



If a fault occurred during the fresh air calibration.
– The fault message » X « appears and » - - « is displayed for the respective sensor instead of the measured value.
• In this case, repeat the fresh air calibration.
• If necessary, replace the sensor, page 51.

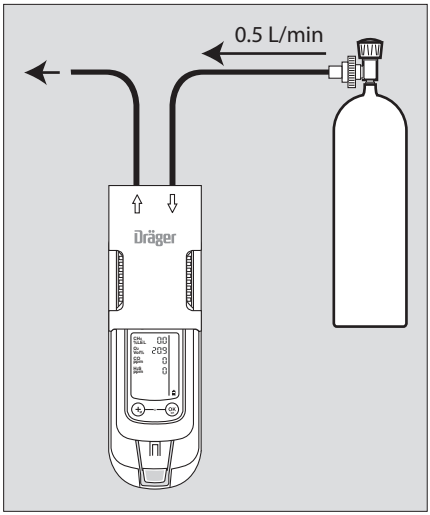


Carrying out 1-button calibration

NOTICE
If no sensors are enabled for 1-button calibration by the Dräger CC Vision PC program, the 1-button calibration menu function will not be offered.

– All sensors that are enabled by the Dräger CC Vision PC program take part in the 1-button calibration.
– In the case of the 1-button calibration, the sensitivity of all sensors is set to the value of the test gas.
When using the test gas cylinder 68 11 130 = mixed gas with 50 ppm CO, 15 ppm H_2S, 2.5 vol. % CH_4,
18 vol. % O_2.

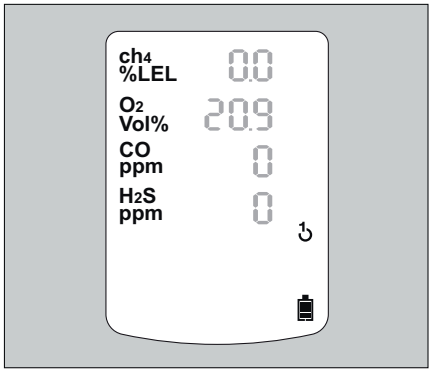
– If a mixed gas with another composition is used, the specified concentration values in the device must be changed to the target values of the mixed gas used using the PC software Dräger CC Vision.
- Connect the test gas cylinder with the calibration cradle.
- Vent the test gas into a fume cupboard or into the open air (with a hose connected to the second connector of the calibration cradle).



⚠ CAUTION
Do not inhale the test gas. Risk to health! Observe the hazard warnings of the relevant Safety Data Sheets.

- Switch on the device and insert it into the calibration cradle until it engages.
- Call the calibration menu, enter the password and select the 1-button calibration function, page 17.
- Press the OK key to start the 1-button calibration.
- Open the test gas cylinder valve to let test gas flow over the sensor.

– The currently displayed measured values start to flash.
The flashing stops after a static measured value has been reached.
– The calibration is now carried out automatically.
– The displayed measured values change to the values according to the gas supplied.



– The automatic stability monitoring can be overridden by pressing the OK key. A calibration then takes place immediately. If it is detected that no test gas has been applied, the 1-button calibration will be aborted. The channels will then indicate **» n/a «**. If only one sensor is taking part in the 1-button calibration, a calibration will be performed in each case when the OK key is pressed.

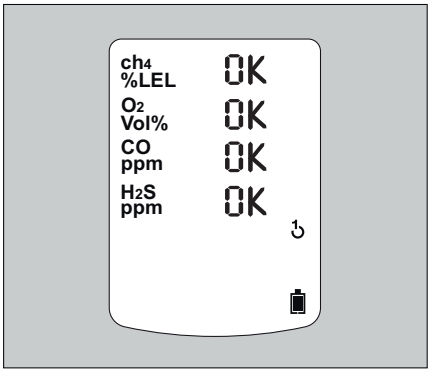
When the calibration is completed and the displayed measured values have stabilized:

– The display containing the current gas concentration changes with the display **» OK «**.

• Press the ⓞⓚ key or wait for 5 seconds to quit the calibration.

– The device changes to the measuring mode

• Close the test gas cylinder valve and remove the device from the calibration cradle.

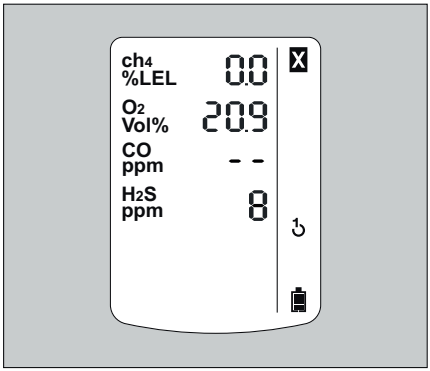


If a fault occurred during the 1-button calibration.

– The fault message » ☒ « appears and » – – « is displayed for the respective sensor instead of the measured value.

• In this case, repeat the 1-button calibration or carry out a single gas calibration, refer to page 42.

• If necessary, replace the sensor, page 51.



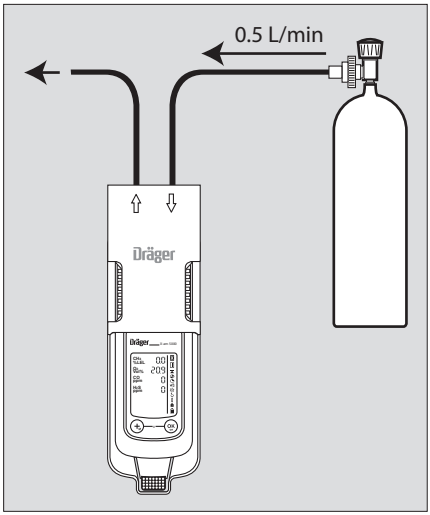
Calibrating the sensitivity for an individual measuring channel

– The span calibration can be carried out specifically for individual sensors.

– In the case of the span calibration, the sensitivity of the selected sensor is set to the value of the test gas used.

– Use a standard test gas.
  Allowed test gas concentration:
  Ex: 40 to 100 %LEL
  O_2 10 to 25 vol. %
  CO: 20 to 999 ppm
  H_2S: 5 to 99 ppm
  Test gas concentration of other gases: refer to the Instructions for Use of the respective DrägerSensors.

- Connect the test gas cylinder with the calibration cradle.
- Vent the test gas into a fume cupboard or into the open air (with a hose connected to the second connector of the calibration cradle).



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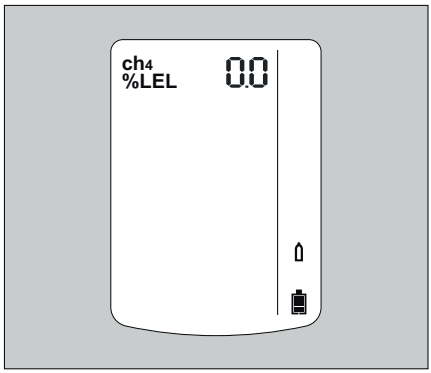
⚠ CAUTION

Do not inhale the test gas. Risk to health!
Observe the hazard warnings of the relevant Safety Data Sheets.

- Switch on the device and insert it into the calibration cradle.
- Press and hold the **[+]** key for 5 seconds to call the calibration menu, enter the password and select the single gas calibration function, page 17.
- Press the ⓞⓚ key to start the channel selection.

– The display flashes the gas of the first measuring channel, e.g., » Ex - %LEL «.



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- Press the ⓞⓚ key to carry out the calibration of this measuring channel, or
- Use the ⊕ key to select another measuring channel (O_2 - vol. %, H_2S - ppm or CO - ppm).

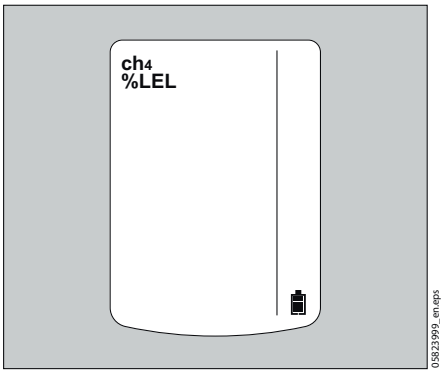
Span calibration for CatEx

– If the measuring range end value < = 100%LEL, the adjustment for the heat tinting is offered.

–

Display in the case of channel selection:

- Open the test gas cylinder valve to let test gas flow over the sensor.
- Press the ⓞⓚ key to start the calibration for the heat tinting or press the ⊕-key to select the next sensor.



If the displayed measurement value is stable:

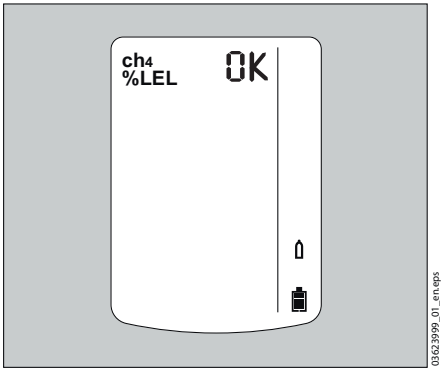
- Press the ⓞⓚ key to perform the calibration.

– The display containing the current gas concentration changes with the display **» OK «**.

- Press the ⓞⓚ key or wait for approx. 5 seconds to end the calibration of this measuring channel.

– The next measuring channel is offered for calibration.

– After the calibration of the last measuring channel, the device changes to measuring mode.



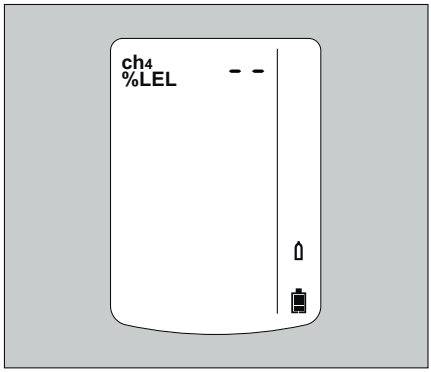
- Close the test gas cylinder valve and remove the device from the calibration cradle.

If a fault occurred during the span calibration.

– The fault message » ☒ « appears and » – – « is displayed for the sensor instead of the measured value.

• In this case, repeat the calibration.

If necessary, replace the sensor, page 51.



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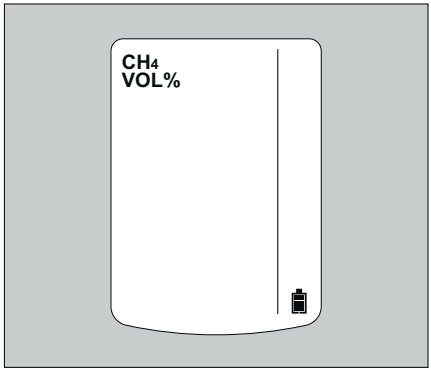
– If the gas CH_4 (measurement range up to 100 vol. %) is selected on the CatEx channel, the heat conductivity is calibrated, display with channelselection:



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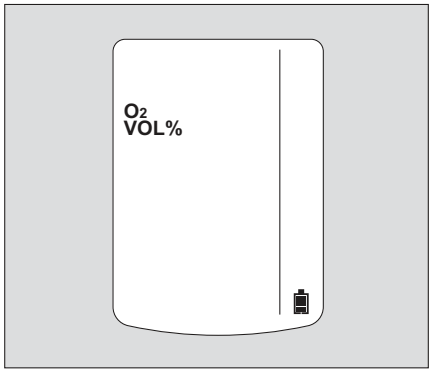
• Press the ⓞⓚ key to perform the calibration for heat conductivity.

• Press the ⊕ key to select the next sensor.



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• Press the ⓞⓚ key to perform the calibration of the selected measuring channel.

– The test gas concentration is displayed.

• Press the ⓞⓚ key to confirm the test gas concentration or use the **[** + **]** key to change the test gas concentration and complete the process by pressing the ⓞⓚ key.

– The measurement value flashes.

• Open the test gas cylinder valve to let test gas flow over the sensor.

– The displayed, flashing measurement value changes to the value according to the supplied test gas.

– Press the ⊕ key to select the next sensor.

Note on adjusting the Ex channel to nonane as the measured gas:

- When calibrating the Ex channel, propane can be used as a substitute for the calibration gas.
- When using propane to adjust the Ex channel to nonane, the display must be set to 2x the test gas concentration used.

Note on the use in underground mining:

- When calibrating the Ex channel to methane as the measured gas, the indication on the instrument must be set to a value 5 % (relative) higher than the test gas concentration used.

Replacing the batteries / rechargeable batteries

⚠ WARNING

Explosion hazard! To reduce the risk of flammable or explosive atmospheres igniting, it is essential that the warning notices below are observed:
Do not throw used batteries into fire or try to open them by force.
Do not replace or charge batteries in areas at risk of an explosion hazard.
Do not mix new batteries with used batteries, and do not mix batteries from different manufacturers or of different types.
Remove batteries before maintenance work.
Batteries / rechargeable batteries are part of the Ex approval.
Only the following types may be used:
– Alkaline batteries – T3 – (non rechargeable!)
  Panasonic LR6 Powerline,
  Varta Type 4106[1)] (power one) or
  Varta Type 4006[1)] (industrial)
– Alkaline batteries – T4 – (non rechargeable!)
  Duracell Procell MN1500[1)]
– NiMH rechargeable batteries – T3 – (rechargeable)
  GP 180AAHC[1)] (1800) max. 40 °C ambient temperature.

1) Not subject to the Metrological Performance Test BVS10 ATEX E 080X and PFG 10 G 001X.

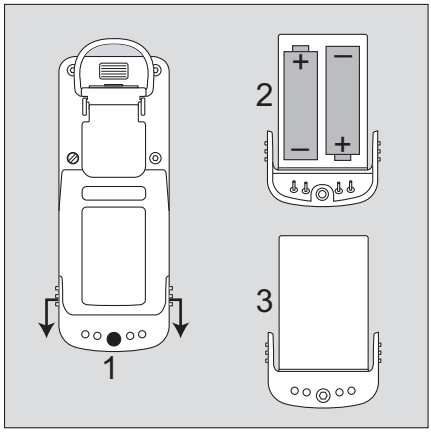
Switching off the device:
- Press and hold the OK key and the ⊕ key at the same time.

1 Loosen the screw (2.0 mm hexagon socket) on the power pack and remove the power pack.

2 Replace the alkaline batteries with new ones or the rechargeable NiMH batteries with charged ones – **ensure correct polarity**.

3 Completely replace the power pack T4 (with sealed rechargeable batteries, order no. 83 18 704).

- Insert the power pack into the device and tighten the screw, the device switches on automatically.



After replacing the power pack T4, it is recommended that a complete charging is carried out.

After the batteries have been replaced:
– The settings and data are stored when the battery is replaced. The sensors warm up again.

Charging the rechargeable batteries

⚠ WARNING

Explosion hazard! To reduce the risk of flammable or explosive atmospheres igniting, it is essential that the warning notices below are observed:
Do not charge underground or in explosion-hazard areas! Danger of explosion!
The chargers are not designed in accordance with the regulations for firedamp and explosion protection.
Charge the NiMH power pack T4 (HBT 0000 type) or T4 HC (HBT 0100 type) using the corresponding Dräger charger. Ambient temperature during the charging process: 0 to +40 °C.

Even if the device is not used, we recommend that you store the device in the charger (Charging module X-am 1/2/5000, order no. 83 18 639)!

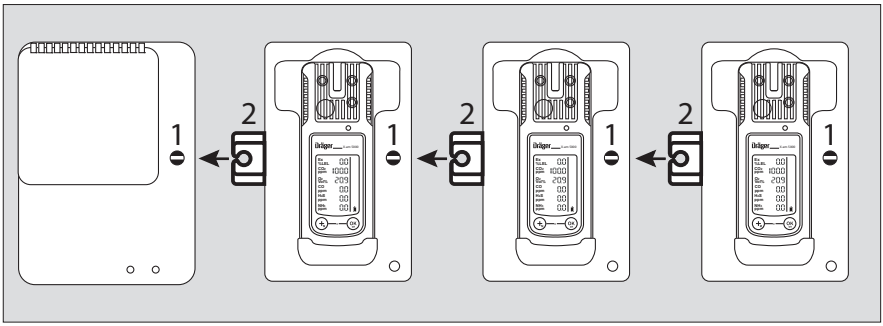
To maintain the lifetime of the batteries, charging is temperature controlled and only performed in a temperature range of 5 to 35 °C.
When this temperature range is left, the charging process is automatically interrupted and automatically continued after the temperature range has been reached again.
The charging time is typically 4 hours.
A new NiMH power pack reaches its full capacity after three complete charging/discharging cycles. Never store the device for extended periods without being connected to a power source (maximum of 2 months) because the internal buffer battery will drain.

Charging with the multiple charging station

– A maximum of 20 devices can be charged at the same time on the power pack (order no. 83 18 805) of the multiple charging station.
• When attaching the charging modules, disconnect the power pack from the mains supply!

Attaching charging modules

1 Turn the slots of the interlock into a horizontal position by using a screwdriver or coin.
2 Insert the projecting tongue of the charging module (at the same time, current entry) until it engages.
1 Close the interlock with a quarter turn (slot is positioned vertically).



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- Attach additional charging modules in the same way.

– Always connect or disconnect the charging modules individually and not in groups in order to prevent the charging station from becoming damaged. During transportation, the power pack and the charging modules should also always be handled individually and without inserted devices.

- Position the device on an even and level surface.

- Connecting the power pack to the mains.

1 The green "Mains" LED lights.

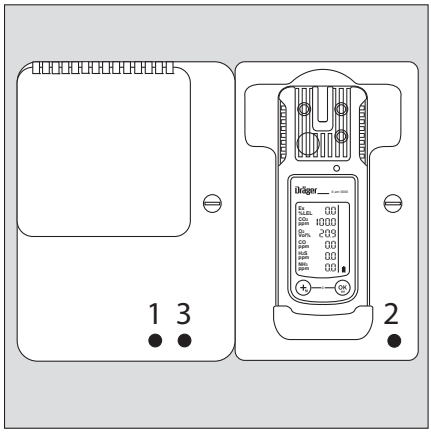
- Insert the device into the charging module.

2 Display LED on the charger:

Charge

Fault

Full



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If a fault occurs:
Remove the device from the charging module and insert it again.
If the fault still occurs, have the charging module repaired.

It takes approx. 4 hours to fully charge an empty rechargeable battery.

A short circuit of the charging contacts in the charging modules, e.g., by metallic objects that have fallen in, does not result in damage to the charging station. It should, however, be avoided due to possible heating hazards and incorrect displays on the charging module.

In the event of a short circuit or if the power pack is overloaded:

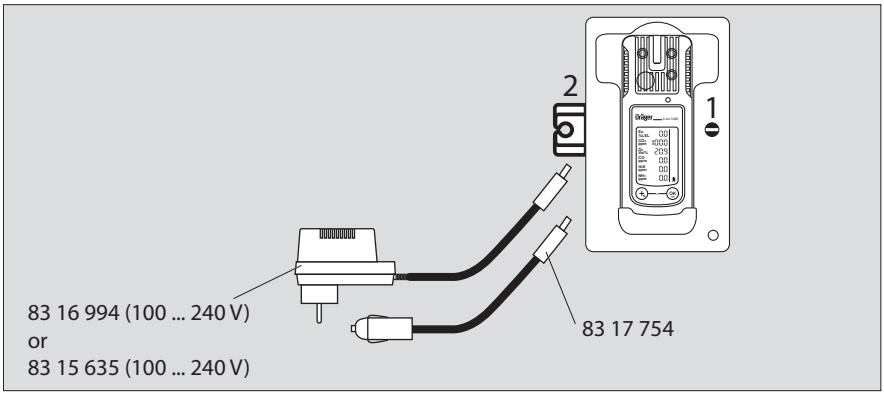
3 The red "Overload" LED lights, and an audible alarm sounds.

– After the fault has been corrected, the alarm is switched off automatically and the charging process is restarted.

– In the event of a power failure, the devices already charged will be protected from discharging.

Charging with charging module and plug-in power pack or vehicle charging adapter

– When using the power pack (order no. 83 16 994), up to 5 devices can be charged at the same time, with power pack (order no. 83 15 635) up to 2 devices.
– The power pack contained in the rechargeable battery and charging set (order no. 83 18 785) is suitable for charging a device.
– When using the vehicle charging adapter (order no. 45 30 057) it is recommended that you supply every charging module separately.

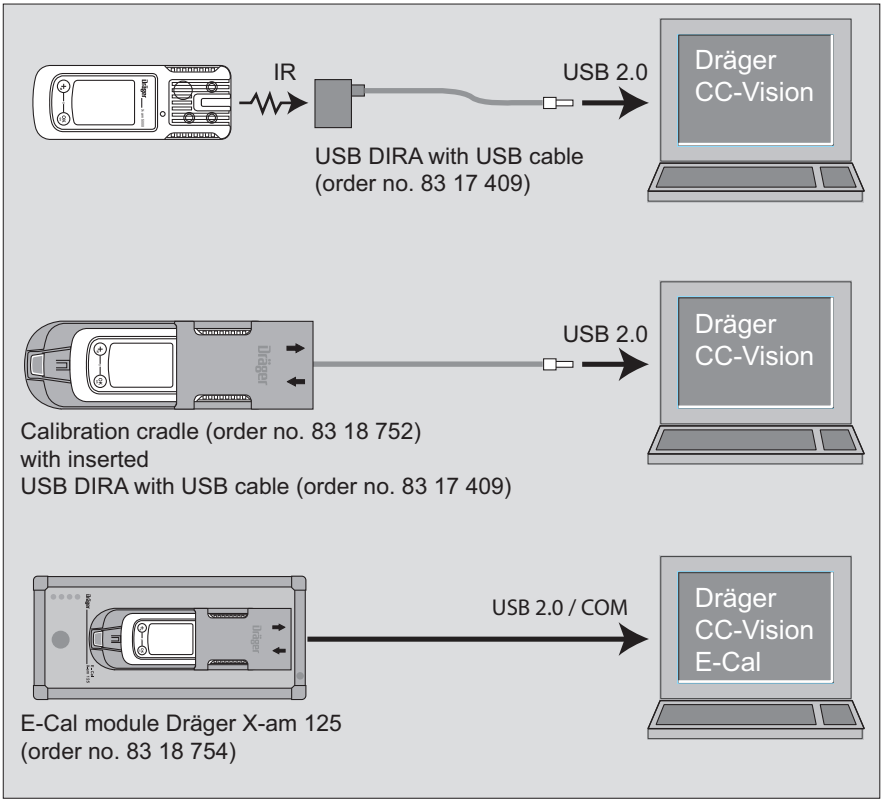


The charging process is carried out analog to charging with the multiple charging station.

Replacing the Sensors

⚠ CAUTION
⚠ Damage to components! There are components in the instrument that are sensitive to electric charge. Before opening the instrument to replace the sensor, ensure that the person performing the work is earthed to avoid damage to the device. Earthing can be safely ensured, e. g. via an ESD workstation (electrostatic discharge).

- To replace the sensors of the device, connect the device with a PC.
- Replace the sensors using the PC program Dräger CC Vision.



Next:

- Carry out a fresh air calibration, page 39.

and then:

- Calibrate the sensitivity:
  either
  carry out 1-button calibration, page 40
  or
  carry out span calibration, page 42.

Electrochemical sensors

⚠ WARNING
Do not throw into fire, Do not force open. Danger! Acid burn risk! Sensors of type XXS O_3 and XXS NO_2 LC contain small quantities of nanomaterials.

Like batteries, only dispose of as special waste,
in accordance with local waste disposal regulations. Further information can be obtained from the relevant local authority and from appropriate waste disposal companies.

The DrägerSensor CatEx 125 PR should be disposed of as electronic waste.

Sensor warm-up acceleration

There is a function available for accelerating the warm-up procedure for selected EC sensors. The function shortens the time taken until the unit is ready to make measurements, i.e. the time taken to save the display and alarm evaluation of the measurements. The time to activate the calibration is not changed.

- In order to use the sensor warm-up acceleration function in the Dräger X-am 5000, at least one sensor suitable for the purpose must be fitted and registered in the unit using the Dräger CC-Vision PC software.
- After that, activate the function by ticking the "Accelerated warm-up" checkbox ("Device" menu) and updating the device data with Dräger CC-Vision.

NOTICE
A selection menu for activating the process will only be displayed after the device is restarted by plugging in a power pack.

- Restart the device by plugging in a power pack.

– All the display segments, including the visual, audible and vibration alarms, are activated for a short time.
– The software version is displayed.
– The instrument performs a self test.
– The sensor warm-up acceleration menu is displayed.
The steps in the selection menu are limited by a 25-second time-out, which then changes to the standard setting of unaccelerated warm-up and proceeds with the device start-up procedure.

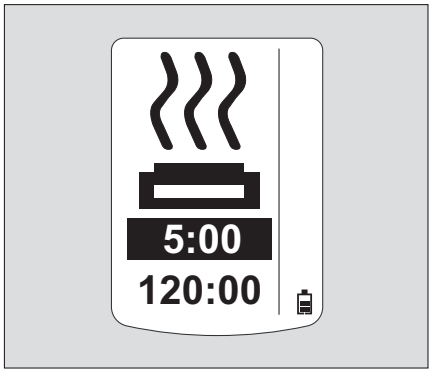
- It is necessary to select between two times for the sensor warm-up acceleration,

— the shortened time achievable as a result of the warm-up acceleration,
— the unshortened time required by the installed sensors to save the measurement display (measurement does not flash any more).

- Select the shortened warm-up time with the ⊕ button and confirm it with the OK button.

– The function for entering the password is called up.

- Enter the digits with the ⊕ button and confirm with the OK button.



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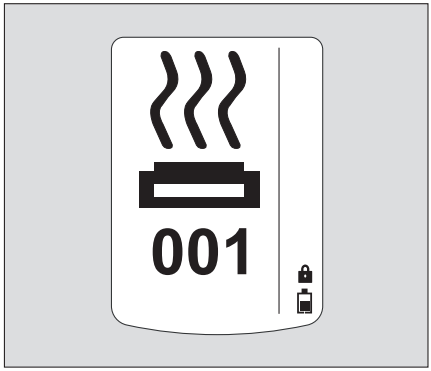

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– Start of the warm-up acceleration.
– The remaining time is displayed and decremented.

⚠ WARNING

This function requires that the device is in a gas-free environment. A warning screen is displayed and the remaining time during which no gas may be applied is shown It is essential to ensure that the sensor is in the fresh air during this time (for approx. 5 minutes)! Any gas applied during this period could later result in faulty alarms or suppressed alarms!

If the procedure is unsuccessful, e.g. as a result of a defective sensor, this will be indicated by error code **»** X07 **«** on the channel for the affected sensor (X). In the event of a fault, the device will also switch to the unaccelerated mode.

Dräger recommends that the device not be switched off and on again for a period of two hours when the accelerated warm-up is in use.

Cleaning

The device does not need any special care.

- Dirt and deposits can be removed from the device by washing it with cold water. A sponge can be used for wiping if necessary.

NOTICE
Abrasive cleaning implements (brushes etc.), cleaning agents and cleaning solvents can destroy the dust and water filters.

- Carefully dab dry the device using a cloth.

Storage

- Dräger recommends storing the instrument in the charger module (order no. 83 18 639).
- Dräger recommends checking the charge of the power supply at least every three weeks if the instrument is not stored in the charger module.

Disposal

This product must not be disposed of as municipal waste. This is indicated by the adjacent icon.
You can return this product to Dräger free of charge. For information please contact the national sales organisations and Dräger.

Batteries and rechargeable batteries must not be disposed of as municipal waste. This is indicated by the adjacent icon. Collect and dispose of batteries and rechargeable batteries at battery collection centres, in accordance with applicable regulations.

Technical Data

X-am 5000

Ambient conditions:	
during operation and storage	–20 to +50 °C for NiMH power packs type: HBT 0000 and HBT 0100, with alkali single cells type: Duracell Procell MN 1500[1)] -20 to +40 °C for NiMH single cells type: GP 180AAHC[1)] and for alkali single cells type: Panasonic LR6 Powerline 0 to +40 °C for alkali single cells type: Varta 4006[1)], Varta 4106[1)], 700 to 1300 hPa 10 to 90% (to 95% briefly) relative humidity
Device data	
Protection class	IP 67 for devices with sensors
Alarm volume	Typically 90 dB (A) in 30 cm distance
Operation time	
– Alkaline battery	Typically 12 hours under normal conditions
– NiMH power pack: T4 (HBT 0000) T4 HC (HBT 0100)	 Typically 12 hours under normal conditions Typically 13 hours under normal conditions
Dimensions	approx. 130 mm x 48 mm x 44 mm (H x W x D)
Weight	approx. 220 g to 250 g
Storage time X-am 5000 Sensors	 1 year 1 year
Position of use	any
Refresh interval for display and signals	1 s
CE markings	Electromagnetic compatibility (Directive 2004/108/EC) Explosion protection (Directive 94/9/EC)
Approvals[2)]:	see “Tests and Approvals” on page 5. The BVS 10 ATEX E 080 X technical suitability test is based on the adjustment with the target gas.

1) Not subject to the Metrological Performance Test BVS10ATEXE080X and PFG10G001X.
2) The technical approvals are valid for the X-am 5000 gas detection instrument and the calibration cradle. The explosion-protection approvals are only valid for the X-am 5000 gas detection instrument; the calibration cradle must not be used in the Ex zone.

Sensor data

Extract: For details, see the Instructions for Use/data sheets for the sensors used[1)]

	Ex	XXS O_2	XXS H_2S	XXS H_2S LC	XXS CO
Measuring principle	Catalytic oxidation	Electrochemical	Electrochemical	Electrochemical	Electrochemical
Measurement value configuration time $t_{0...90}$	≤17 seconds for methane ≤25 seconds for propane	≤10 seconds	≤15 seconds	≤18 seconds	≤25 seconds
Measurement value configuration time $t_{0...50}$	≤7 seconds for methane ≤40 seconds for nonane[2)]	≤6 seconds	≤6 seconds	≤6 seconds	≤6 seconds
Measuring range	0 to 100 %LEL[3)] 0 to 100 vol. % for methane	0 to 25 vol. %	0 to 200 ppm H_2S [4)]	0 to 100 ppm H_2S [5)]	0 to 2000 ppm CO [6)]
Zero point deviations (DIN EN 45544)	– – –	– – –	2 ppm	0.4 ppm	6 ppm
Device drift	– – –	– – –	≤1 % of the measurement value/month	≤1 % of the measurement value/month	≤1 % of the measurement value/month
Warm-up time	35 seconds	≤5 minutes	≤5 minutes	≤5 minutes	≤5 minutes
Effect of sensor poisons Hydrogen sulphide H_2S, 10 ppm Hydrogen sulphides, heavy metals, gases containing silicone, sulphur or polymerizable substances	≤1 %LEL/ 8 hours Possible poisoning	– – –	– – –	– – –	– – –
Linearity error	≤5 %LEL	≤0.3 vol. %	≤2 % of the measurement value	≤2 % of the measurement value	≤3 % of the measurement value
Standards (Measuring function for explosion protection and measurement of oxygen deficiency and surplus as well as toxic gases, DEKRA EXAM, Essen, Germany: BVS 10 ATEX E 080 X[3)], PFG 10 G 001 X)	EN 60079-29-1 [7)] EN 50271	EN 50104 [8)] (measurement of oxygen deficiency and oxygen surplus) EN 50271	EN 45544-1/-2 [9)] EN 50271	EN 45544-1/-2 [9)] EN 50271	EN 45544-1/-2 [10)] EN 50271

1) The Technical Manual and Instructions for Use/data sheets for the sensors used and the PC software CC-Vision for Dräger X-am 5000 can be downloaded on the product page for the X-am 5000 at the following website: www.draeger.com See also the enclosed Instructions for Use and data sheets for the sensors used.
2) For decreasing concentrations, the adjustment time for nonane is about 50 seconds.
3) For alkanes from methane to nonane, LEL-values in accordance with EN 60079-20-1 For flow speeds of 0 to 6 m/s the deviation of the display can be 5 - 10 % of the measurement value. When calibrating for propane, the deviation of the display in the range of 80 to 120 kPa can be up to 6 %LEL.
4) Certified for 1 to 100 ppm
5) Certified for 0.4 to 100 ppm
6) Certified for 3 to 500 ppm
7) The device responds to most combustible gases and vapours. The sensitivities differ depending on the type of gas. We recommend a calibration using the target gas to be measured. For the range of alkanes, the sensitivity decreases from methane to nonane.
8) The measuring signals can be affected negatively by ethane, ethene, ethyne, carbon dioxide and hydrogen. No O_2 measurement in helium.
9) The measuring signals can be affected additively by sulphur dioxide, nitrogen dioxide and hydrogen, and negatively by chlorine.
10) The measuring signals can be affected additively by acetylene, hydrogen and nitrogen monoxide.

Order List

Name and Description	Order No.
Dräger X-am 5000 Unlimited 1 to 5 multi gas monitor with exchangeable sensors. With selectable special calibration. Standard calibration of the Ex sensor: Methane. Inclusive to country-specific adjustable standard alarm set-points.	**83 20 000**
Power supply units:	
NiMH supply unit T4	**83 18 704**
NiMH supply unit HBT 0100 T4 HC	**83 22 244**
Battery holder ABT 0100[1)] (without alkaline batteries)	**83 22 237**
Alkaline batteries T3 (2 pcs)[1)]	**83 22 239**
Alkaline batteries T4 (2 pcs)[1)]	**83 22 240**
Battery and charger kit (contains NiMH supply unit T4, charger module for Dräger X-am 1/2/5000 and power supply unit)	**83 18 785**
HC battery and charger kit (contains NiMH supply unit HBT 0100 T4 HC, charger module for Dräger X-am 1/2/5000 and power supply unit)	**83 22 785**
Chargers:	
Charging module for Dräger X-am 1/2/5000	**83 18 639**
Power pack with connecting cord (worldwide) for a maximum of 20 charging modules Dräger X-am 1/2/5000	**83 15 805**
Plug-in power pack (worldwide) for a maximum of 5 charging modules Dräger X-am 1/2/5000	**83 16 994**
Plug-in power pack (worldwide) for a maximum of 2 charging modules Dräger X-am 1/2/5000	**83 15 635**
Vehicle connecting line 12V/24V for Dräger X-am 1/2/5000 charging module	**45 30 057**
Vehicle installation set for 1 Dräger X-am 1/2/5000 charging module	**83 18 779**

Name and Description	Order No.
Accessories The accessories are not subject to BVS10 ATEX E 080X and PFG 10 G 001X.	
Pump accessories:	
Dräger Pump X-am 1/2/5000	**83 19 400**
Case for Dräger Pump X-am 1/2/5000	**83 19 385**
Rubber ball pump	**68 01 933**
Manual pump adapter	**83 19 195**
Dust and water filter	**83 13 648**
Extension hoses and probes:	
Measuring probe 0.5 m	**64 08 238**
Measuring probe 1.5m	**64 08 239**
Plug-in telescopic probe	**68 01 954**
Telescopic probe 100 with accessories	**83 16 530**
Telescopic probe 150 stainless steel	**83 16 533**
Tester 90	**83 16 532**
Float probe with accessories	**83 18 371**
Viton hose	**12 03 150**
Hose	**11 80 681**
Accessories for measured value acquisition and configuration:	
Dräger GasVision (time limited test version available from www.draeger.com/software)	
Licence code for Dräger GasVision (full version)	**83 25 646**
Dräger CC Vision (full version available from www.draeger.com/software)	
PC communication set 1 Dräger X-am 1/2/5000 with USB connection and Dräger CC Vision	**83 18 761**
PC communication set 2 Dräger X-am 1/2/5000 with USB connection, Dräger CC Vision and barcode reader	**83 18 762**
USB DIRA with USB cable (USB infrared adaptor for communication Dräger X-am 1/2/5000 – PC)	**83 17 409**

Name and Description	Order No.
Calibration accessories:	
Dräger X-dock, e. g. X-dock 5300 X-am 125	**83 21 880**
Bump Test Station, including mixed gas cylinder	**83 19 130**
Calibration cradle Dräger X-am 1/2/5000	**83 18 752**
Mixed gas cylinder 2.5 vol. % CH_4, 18 vol. % O_2, 15 ppm H_2S, 50 ppm CO	**68 11 130**
Test gas cylinder propane, 0.9 vol. % C_3H_8 in air	**68 11 118**
On demand controller	**83 16 556**
Standard controller	**68 10 397**
Other accessories:	
Rubberboot Dräger X-am 1/2/5X00	**83 21 506**
Carrying case	**83 18 755**
Spare parts	
DrägerSensor CatEx 125 PR, 0 to 100 %LEL (0 to 100 vol. % methane)	**68 11 050**
DrägerSensor CatEx 125 PR, 0 to 100 %LEL	**68 13 080**
DrägerSensor XXS O_2, 0 to 25 vol. %[2)]	**68 10 881**
DrägerSensor XXS O_2 100, 0 to 100 vol. %	**68 12 385**
DrägerSensor XXS CO, 0 to 2000 ppm[1)]	**68 10 882**
DrägerSensor XXS H_2S, 0 to 200 ppm[1)]	**68 10 883**
more DrägerSensors	**on request [3)]**

1) Not subject to the Metrological Performance Test BVS10ATEXE080X and PFG10G001X.
2) Expected service life of the sensors: O_2, CO and H_2S >5 years, CatEx > 3 years.
3) Data sheets for all sensors that can be used for the device can be downloaded on the product page of the X-am 5000 at the following Internet address: www.draeger.com.

Declaration of Conformity

EG-Konformitätserklärung
EC-Declaration of Conformity

Dräger

Dokument Nr. / *Document No.* SE20588-04

Wir / *we* Dräger Safety AG & Co. KGaA, Revalstraße 1, 23560 Lübeck, Germany

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product

Gasmessgerät Typ MQG 0010 (X-am 5000)
Gas Detection Instrument type MQG 0010 (X-am 5000)

mit der EG-Baumusterprüfbescheinigung
is in conformity with the EC-Type Examination Certificate
BVS 10 ATEX E 080 X
BG Verkehr 213.052

ausgestellt von der benannten Stelle *issued by the Notified Body*	**DEKRA EXAM GmbH** **Dinnendahlstraße 9** **D-44809 Bochum**	**BG Verkehr** **Reimerstwiete 2** **D-20457 Hamburg**
Kenn-Nr. der benannten Stelle *Identification Number of Notified Body*	**0158**	**0736**

und mit den folgenden Richtlinien unter Anwendung der aufgeführten Normen übereinstimmt
and is in compliance with the following directives by application of the listed standards

Bestimmungen der Richtlinie *provisions of directive*	**Nummer sowie Ausgabedatum der Norm** *Number and date of issue of standard*
94/9/EG: **ATEX-Richtlinie** *94/9/EC: ATEX Directive*	EN 60079-0:2009, EN 60079-1:2007, EN 60079-11:2007, EN 60079-26:2007, EN 50303:2000, EN 60079-29-1:2007, EN 50271:2010
96/98/EG: **Schiffsausrüstungs-Richtlinie** *96/98/EC: Marine Equipment Directive*	EN 60945:2002 & Cor.1:2008, IEC 60092-504:2001, IEC 60533:1999, EN 50104:2002 & A1:2004, EN 60079-29-1:2007, IEC 60079-0:2007, IEC 60079-1:2007 & Cor.1:2008, IEC 60079-11:2006, IEC 60079-26:2006
2004/108/EG: **EMV-Richtlinie** *2004/108/EC: EMC Directive*	EN 50270:2006 (type 2), EN 61000-6-3:2007 & A1:2011 & Cor:2012

Überwachung der Qualitätssicherung Produktion durch *Surveillance of Quality Assurance Production by*	**DEKRA EXAM GmbH** **Dinnendahlstraße 9** **D-44809 Bochum**	**BG Verkehr** **Reimerstwiete 2** **D-20457 Hamburg**
Kenn-Nr. der benannten Stelle *Identification Number of Notified Body*	**0158**	**0736**

Lübeck, 2014-06-13

Ort und Datum (jjjj-mm-tt)
Place and date (yyyy-mm-dd)

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