Dansensor®
CheckMate3
User Guide EN

AMETEK® | mocon®

P/N 300042-I
05/2019

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Dansensor®
CheckMate 3
User Guide

EN

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P/N 300042-I
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1. Introduction

Register your product

Thank you for purchasing a **Dansensor®** product, we hope that the product will fullfill your needs.

In order to learn more about our customers and the markets we serve, we kindly ask you to fill out the product registration form available on-line at

www.dansensor.com/register

In return we can offer to send important product information to you.

About this Manual

Intended Use of this Manual

- This manual describes the common use and maintenance procedures of the **Dansensor® CheckMate 3** device.
  It is intended for the daily users and should be kept with the equipment for reference at all times.

Reservations

- This manual was written and illustrated using the best possible information available at the time of publication.
- Any differences between this manual and the equipment reflect improvements introduced after the publication of the manual.
- Changes, technical inaccuracies and typographic errors will be corrected in subsequent editions.
- As a part of our policy of continuous improvement, we reserve the right to alter design and specifications without further notice.

Important!

Safety and Use

- Prior to using the equipment it is assumed that it has been properly installed and configured as described in this manual.
- The manufacturer cannot be held responsible for any damage caused by incorrect use of this equipment.

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Notes, cautions and warnings!

Throughout the manual notes, cautions, and warnings are indicated with various icons and written in bold like the example below:

CAUTION! Always replace a fuse with one of the same size and rating.

Explanation

NOTE! The operator should observe and/or act according to the information in order to obtain the best possible function of the equipment.

CAUTION! The operator must observe and/or act according to the information in order to avoid any mechanical or electrical damage to the equipment.

WARNING! The operator must observe and/or act according to the information in order to avoid any personnel injury.

Safety Instructions

Personnel operating and maintaining the device must be familiar with all aspects of its operation and be proficient in maintenance.
Such personnel should review the following precautions to promote safety awareness.

General

- Always refer to the manual before operating or maintaining the equipment.
- Observe all WARNINGS, CAUTIONS and NOTES.
- Do not open the device. In case of technical problems please contact your service provider.
- Do not cover the machine with a cloth or piece of plastic to protect it from dust, as this prevents free air circulation around the machine and might lead to overheating.
- Do not expose the equipment to heavy moisture or heat and keep it away from direct sunlight.
- Never short circuit or remove safety devices.

Installation

- To ensure the best installation with the least technical problems, please install equipment as described in this manual.
- Never install the equipment in explosive environments.
- Always use correct fittings when connecting gas from the gas bottle.
- Provide adequate space around the equipment for proper ventilation.
- The units are Class 2 appliances and do not need to be connected to an earthed mains socket-outlet.
- It is the responsibility of the owner and operator(s) of the equipment, that the installation is made in accordance with local rules and regulations.
- When installing the equipment it is necessary to ensure proper ventilation in the room of the installation in accordance with requirements from manufacturer.
- The manufacturer cannot be held responsible for any damage caused by incorrect installation of this equipment.

Operation and Maintenance

- Be sure to disconnect electrical power and unplug the unit before performing any cleaning or maintenance.
- All panels and protective guards must be in place before operating the equipment.
- When operating or maintaining the equipment always obey the relevant rules and regulations for workers safety.
- Repair or replace damaged power cords immediately.
- Never block gas outlets or needles.
- Replace needles if they get clogged (e.g. when cutting through septa).
- Do not expose the needles to liquids.

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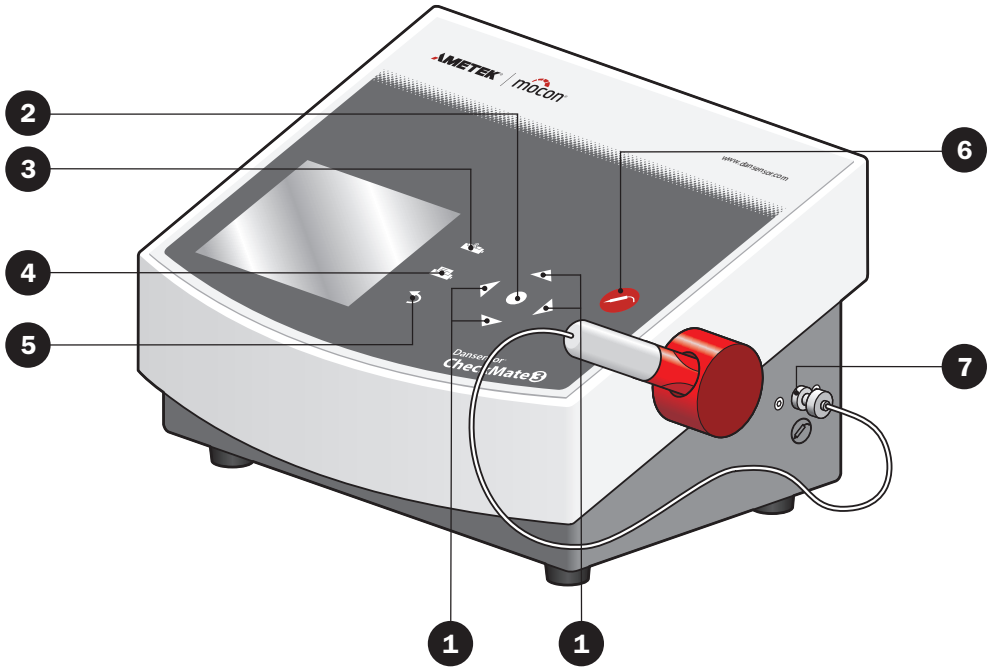
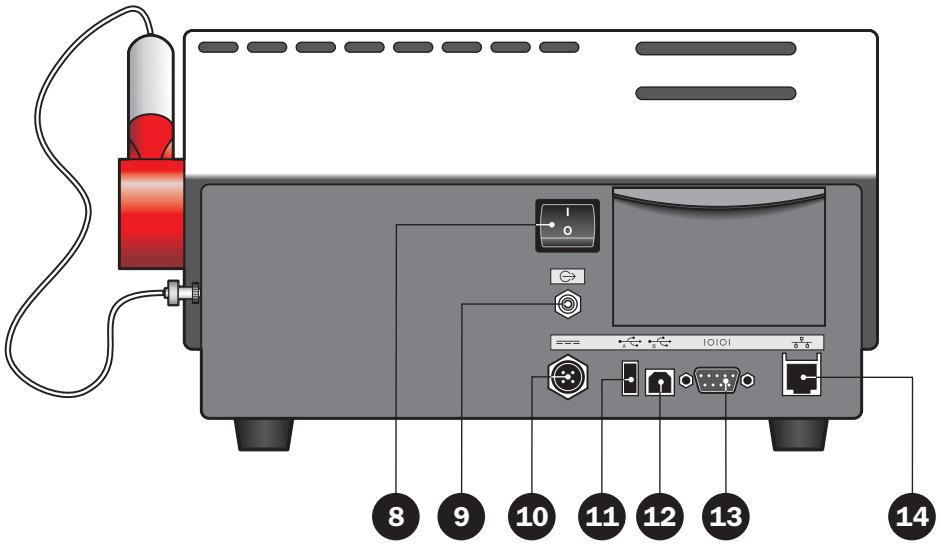
Dansensor® CheckMate 3 Overview

Dansensor® CheckMate 3 is based on an all-in-one concept which together with state-of-the-art sensor technology ensures fail-safe tests and documentation. With full self-diagnostics, **Dansensor® CheckMate 3** detects most common operator faults and offers an efficient automatic report function.



1. The arrow keys (navigation keys) are used to select menus and functions.
   - select previous item/scroll up (Contrast adjustment in measuring screen)
   - select next item/scroll down (Contrast adjustment in measuring screen)
   - go to previous menu or undo a change/selection
   - go to next menu level (select)
2. select menu or select/confirm a value
3. (formfeed) feeding printer paper (version with built-in printer only)
4. print current screen contents for built-in printer (version with built-in printer only)
5. undo a selection or a change. If you hold down the key you will automatically return to the measuring screen or the warm-up screen
6. (measuring key) starts or stops a measurement
7. measuring gas inlet for connection of filter and needle set/Smart Pen



8 Main switch

9 Gas outlet

10 24VDC Power supply connection

11 USB A port for connection of barcode reader, memory key and keyboard

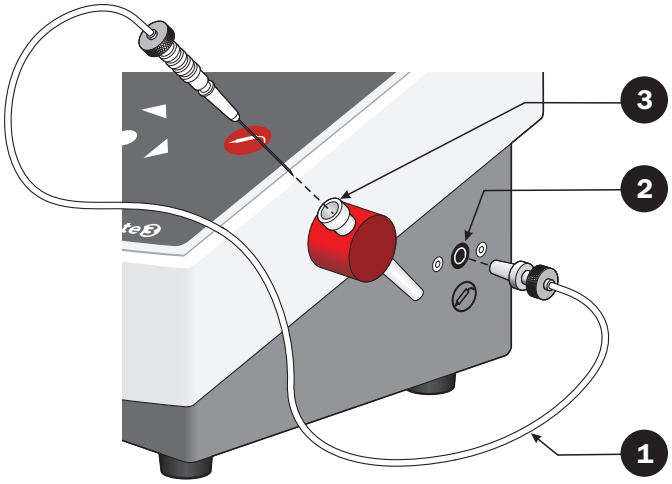
12 USB B port for PC communication (for future use)

13 Serial COM port for dump of data for external data collection

14 Connection to local computer network (LAN) for external data collection

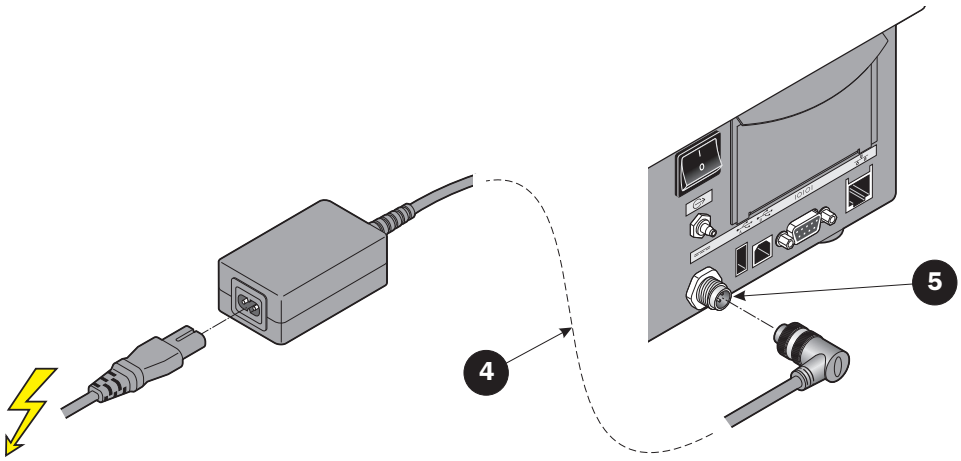
Setting up

1. Place the device on a level and stable surface.
2. Connect the supplied needle set ❶ to the measuring gas inlet ❷ (labelled ⊘) on the right side of the device as shown below, then place the needle in the holder ❸.



NOTE! It is not possible to fit the needle set without a filter on the measuring gas inlet. Make sure that all connections are pressed firmly and carefully together, as leaks will compromise the measurement results.

3. Connect the power supply ❹ between the main power supply outlet and the 24 VDC connection ❺ at the back of the device (labelled ⎓).



4. Starting up and use of the device is described in *"Operation and Maintenance" on page 15*.

Connection of additional equipment

Barcode reader

It is possible to connect a barcode scanner ❶ to CheckMate 3. The barcode scanner must be a USB type and we recommend using a "Datalogic Heron D130" barcode scanner.

The barcode scanner must be connected to the USB A connector ❷ (labelled ⇠) at the back of the device.

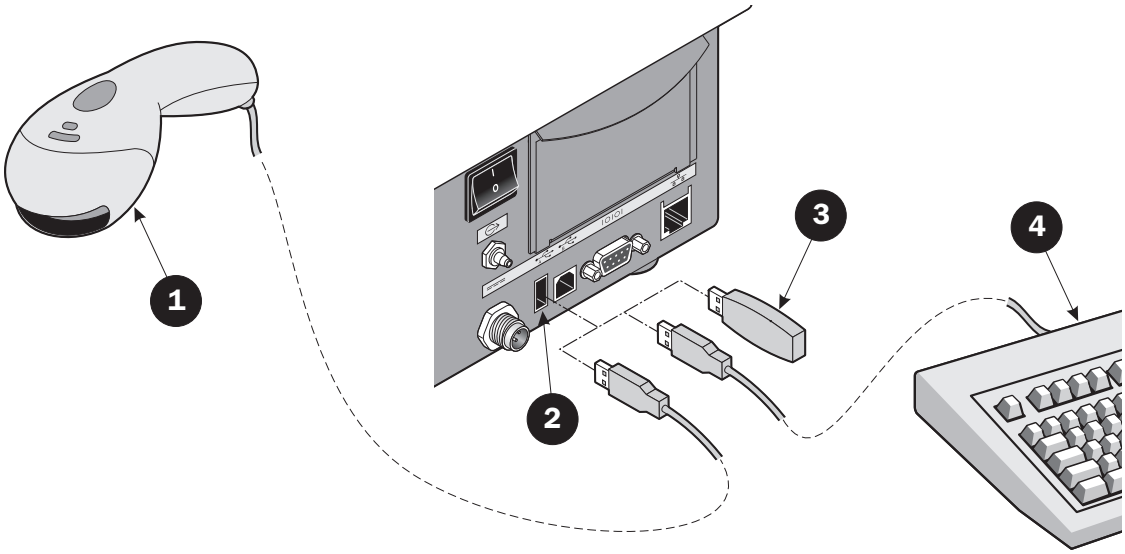
The barcode scanner is avaliable as an option - see *"Options" on page 56*.

USB Memory Key

When importing and exporting data you may use a USB memory key ❸. The memory key must be connected to the USB A connector ❷ (labelled ⇠) at the back of the device.

USB Keyboard

A keyboard ❹ can be connected to the device for keying in various data. The keyboard must be a USB type and it can be connected to the USB A connector ❷ (labelled ⇠) at the back of the device.



SmartPen

SmartPen is an optional needle retainer/measuring gas extractor with built-in protection and lock. The SmartPen replaces the standard needle set and must be connected to the measuring gas inlet (labelled ⊘) on the right side of the device.

2. Operation and Maintenance

Modes

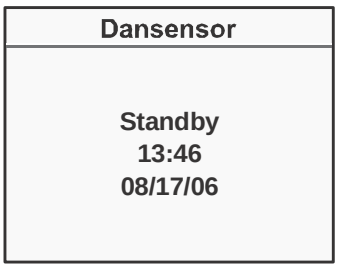
The device can be in one of 5 modes:

Switched off Power supply disconnected.

Standby mode Display shows the **Standby** screen.
User has been logged off (if login is required).

Sensor temperature is maintained.

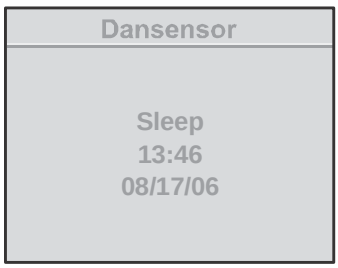
Standby mode settings are set in "General setup" - see *page 37* for details.



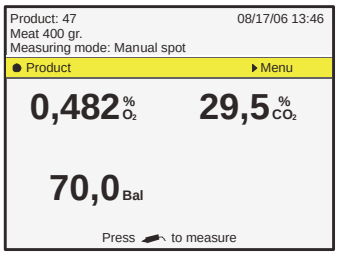
Sleep mode Display shows the **Sleep** screen.
User has been logged off (if login is required).

Sensor temperature is not maintained.

Sleep mode settings are set in "General setup" - see *page 37* for details.



Ready mode Display will normally show the measuring screen.
Sensor has correct temperature.

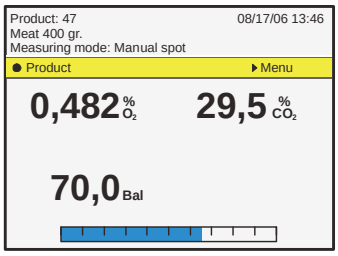


Measuring mode Display will normally show the measuring screen.

Measuring has been started on the key.

While measuring the display will continuously show measurement values.

When in “Manual spot” measuring mode a progress bar is displayed in the bottom of the screen.

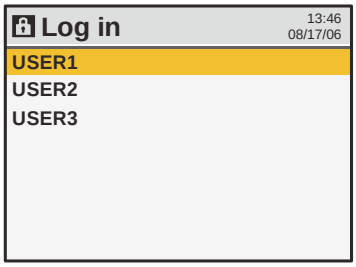


Login

Different levels of login can be set up:

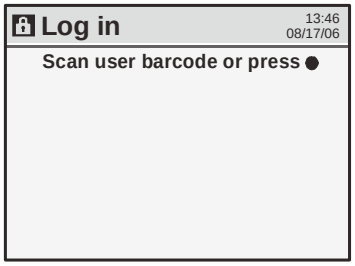
No login At start-up the device will automatically run the self-test and warm-up period and when finished it changes to show the measuring screen and will be ready for measuring.

User login At start-up the display will show the list of users.

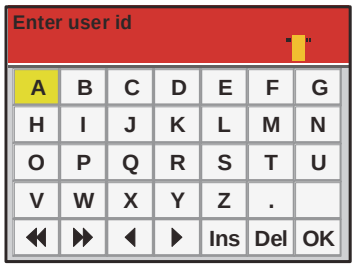


Use ▲ and ▼ keys to select user and press ● key to confirm.
Now the device will run the self-test and warm-up period and when finished it changes to show the measuring screen and will be ready for measuring.

Login with User ID At start-up the display will look like this:



Either use barcode scanner (option) to scan User ID or press ● to bring up the touch screen keyboard.



NOTE! If you forget your User ID, you should create a new (ask a **Supervisor**).
Enter the User ID by means of the touch screen keyboard or the external keyboard (option). Confirm by pressing the **OK** key.
Now the device will run the self-test and warm-up period and when finished it changes to show the measuring screen and will be ready for measuring.

See *"User setup" on page 43* for details about user and login settings.

Logging off

To log off press the ↩ key from the measuring screen.

When device is switched into **Standby** or **Sleep** mode either automatically or when manually selected from the "Main menu", current user will be logged off.

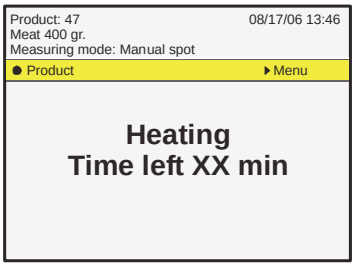
Daily Start-Up

At the start of the working day the device will normally be in one of the following modes:

- **Switched Off**
- **Standby mode**
- **Sleep mode**

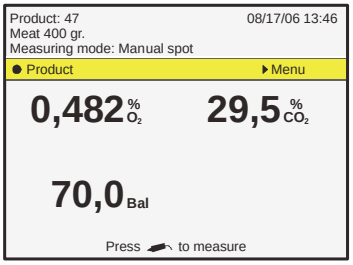
Starting the device from the either of the three modes is described in the following:

1. If device is switched off apply power to it.
   If device is in either **Standby** or **Sleep** mode simply touch the screen.
2. If no login is required the device will start up and automatically run a self-test and warm-up period of approx. 10 min.



If device is started from **Standby** mode the sensor temperature has been maintained and the device will be ready after max. 1 min.

3. If **User login** or **login with User ID** is required, login as described in *"Login" on page 16*.
4. After a successful login the device runs the self-test and warm-up period and when finished the display changes to show the measuring screen.



5. Now the device is ready to begin measuring.

Measuring

Getting the best measurement performance

There are a number of factors to take into consideration when measuring O_2 and CO_2 gasses. The following guidelines should help you to obtain the best possible measurement accuracy and performance from the CheckMate 3 device.

The device uses either a Zirconia (Zr) based O_2 sensor or an electrochemical (EC) O_2 sensor. The electrochemical (EC) O_2 sensor has some limitations compared to the Zirconia based sensor with regards to response time and lifetime.

The CO_2 sensor (if installed) is of the Non Dispersive Infrared (NDIR) type.

Both sensors are temperature- and pressure compensated in software. However temperature compensation requires stabilizing internally for some time.

In spite of the above efforts there are still limitations to what can be physically achieved. To get the most out of your device, we strongly recommend that you read these next pages to familiarize yourself with the various conditions, which may have impact on the measurements.

Dynamic Sample Time (DST)

NOTE! Only valid for devices with an electrochemical (EC) O_2 sensor.

The DST function uses a variable measuring time to ensure that all measurements are as accurate as possible. Especially when measuring on packages with very different oxygen contents, it may be necessary to extend the measuring time to ensure that the measurement is correct.

Via the **Product menu** you can choose a nominal measuring time and basically this is the applied measuring time. If the device detects a large change in the oxygen concentration, it will automatically extend the measuring time, considering the oxygen sensor's response time. The extended measuring time can not exceed twice the nominal measurement time.

If the additional measuring time is not acceptable (e.g. due to lack of headspace), the use of DST can be disabled. If DST is disabled, we recommend to extend the measuring time to achieve the same accuracy.

DST is enabled by default but setting can be changed as follows:

- Change device to **Supervisor** access level - see *"Access level" on page 45* for details.
- Enter **General setup** from the **Main menu**.
- Scroll down to find and highlight the **DST** item.
- Press ● key to change **DST** setting to required setting (**Yes/No**).
- Press ↩ key twice to return to the measuring screen.

NOTE! Do not disable DST function on the device without consulting an authorised Dansensor Service Point. Disabling DST has great influence on the measuring accuracy!

Explanation of the "Response time (T_{95})"

NOTE! Only valid for devices with an electrochemical (EC) O_2 sensor.

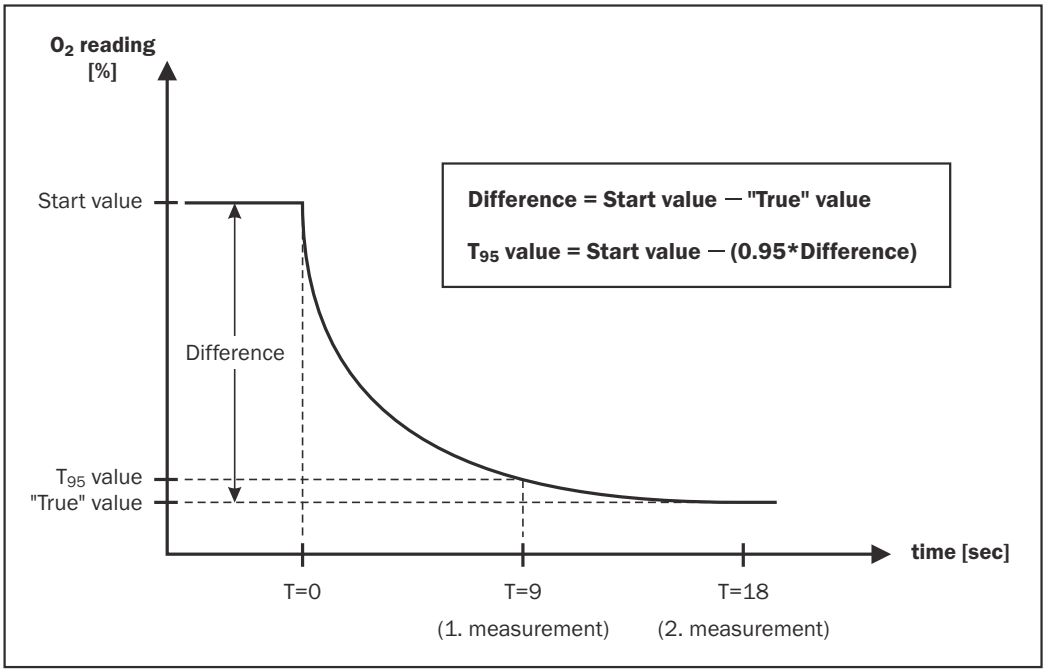
According to the specifications the Electro-chemical (EC) O_2 sensor has a **Response time (T_{95})** of 9 sec.

This means that when performing consecutive measurements in areas with large differences in the O_2 concentrations, the device will as a minimum reach 95% of the "true" value during the first measurement (9 sec.).

Example:

(See illustration below):

- Last measurement was performed in i.e. **20.9% O_2**
- The following value to be measured is **1.0% O_2**
- Difference is:
  20.9 - 1.0 = 19.9% O_2
- The expected read-out value after first measuring is:
  20.9 - (0.95 * 19.9) = 2.0% O_2



Consequently this means that if there is a large difference in the O_2 concentrations between two consecutive measurements, multiple measurements must be performed to obtain a more accurate result.

O_2 offset calibration

NOTE! Only valid for devices with an Electro-chemical (EC) O_2 sensor.

An electrochemical (EC) sensor is a wearing part as the chemistry inside wears proportionally to the amount of O_2 seen during its lifetime.
We therefore recommend that you perform daily offset (20.9%) calibrations before starting measurements.

See *"Offset (20,9%) calibration" on page 46* for details.

NOTE! As a minimum a weekly offset calibration is required to ensure correct measuring results!

NOTE! If device is used entirely at very high O_2 concentrations above 20.9% the lifetime will be reduced proportionally. At O_2 levels up to 20.9%, the normal lifetime is approximately 9 months.

O_2 sensor temperature sensitivity

NOTE! Only valid for devices with an Electro-chemical (EC) O_2 sensor.

Due to the sensor design the readout will be affected when moving the device from cold to warm temperatures or vice versa. Normally for compensation to work properly the device must be stabilized at the current ambient temperature for some time (up to 1-2 hours)

However if you cannot wait for this time, use short stabilizing time, for example 10-15 min., and perform an offset (20.9%) calibration of the O_2 sensor right before each measurement series until device has stabilized. This will bring the calibration back in line with current response.

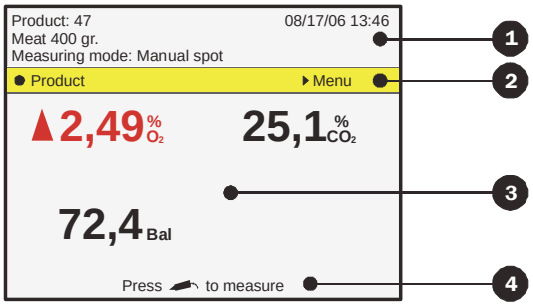
NOTE! When entering another ambient temperature area, the device must again be offset calibrated before use to ensure proper accuracy.

The sensor is also slower in response in cold environments so for better accuracy you should measure the values twice and skip first measurement (though the first measurement will comply with T_{95}). Alternatively select longer measuring periods in the product setup for the particular measurements.

CO_2 sensor temperature sensitivity

The CO_2 measurements however has faster response when changing ambient temperature zones so if you are only interested in measuring the CO_2 values, you need not recalibrate O_2 offset but can start the CO_2 measurements right away.

The Measuring screen



1 Upper section

The upper section of the measuring screen displays the current date and time, currently selected product number, product name and product measuring mode.

After each measurement perfomed in either **Manual spot** or **Auto spot** mode the section will display the text **Press here to mark measurement as invalid** on an orange background. Pressing anywhere on the screen will subsequently save the recent measurement as invalid in the data log.
Function can be disabled - see *"Data log setup" on page 38* for details.

2 Yellow bar

Shows the functions available from the measuring screen:

Pressing the ● key takes you to the **Last used products** screen (see *"Selecting a product for measuring" on page 23* for details).

Pressing the ▶ key takes you to the **Main menu** screen (see *"Main menu" on page 31* for details).

3 Measurement section

This section displays the result of the recent measurement.

Only values selected for display in the product set-up are displayed - see *"Edit product" on page 33* for details.

Text colors indicate whether or not a value has exceeded an alarm limit:

Black indicates that the result is either within limit or that no limit is defined for this gas.

Red indicates that the gas concentration has exceeded an alarm value. The arrow symbol in front of the value indicates whether it is an upper or lower alarm.

During heating up the remaining heating time is also displayed in this area.

4 Bottom

Shows required user operation or measuring status f.ex. “Data required. Press ” or “Measuring”.

When display shows the measuring screen you can use the ▲ and ▼ keys to adjust screen contrast.

Measuring modes

Four different measuring modes are available:

Manual spot Press key to start the measuring.
The measuring stops automatically after the set-up product measuring time.

Auto spot The measuring starts automatically when the measured gas is different from 20.9% O_2 +/- 1.5%.
When the gas measuring is stable, it stops automatically.
To stop measuring manually press key.

Intermittent Press key to start the measuring.

The device will now perform continuous measurements at fixed intervals until it is stopped again by pressing the key.

The measurement time for each measurement and the time interval between measurements are set up in the product set-up menu.

Continuous Press key to start the measuring.

The unit will now perform continuous measurements until it is stopped again by pressing the key.

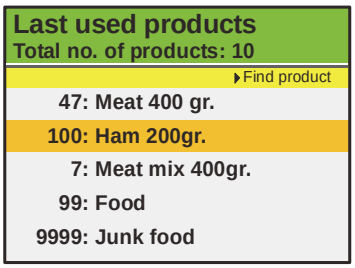
NOTE! Even though the pump is high quality, it is recommended to stop Continuous/Auto spot measurements when not used for longer periods.

The various measuring mode parameters are set up in the product set-up menu.
See *"Edit product" on page 33* for details.

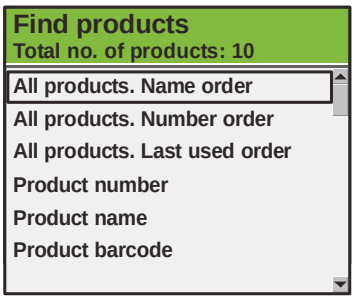
NOTE! During intermittent and continuous measurement, the ambient pressure can not be measured.
Performing intermittent and continuous measurements during fluctuating ambient pressure will impact the accuracy.
Stop measurement and place sample needle at ambient pressure for a couple of minutes to obtain correct ambient pressure.

Selecting a product for measuring

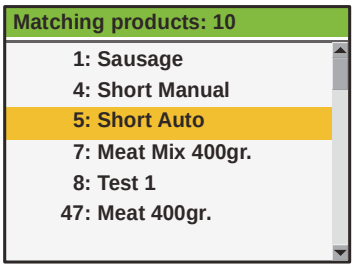
1. From the measuring screen press the ● key to bring up the **Last used products** screen.



   This screen holds a list of the recently used products.
2. Use ▲ and ▼ keys to select the appropriate product then press ● to confirm and return to the measuring screen.
   If the required product is not listed press the ▶ key to bring up the **Find products** screen.

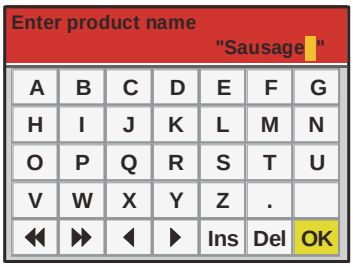


3. Use ▲ and ▼ keys to select the appropriate product search method then press ● or ▶ key to confirm.
4. Selecting one of the **All products....** methods brings up a list of all the products sorted in the order as selected (ex. **Number order**).

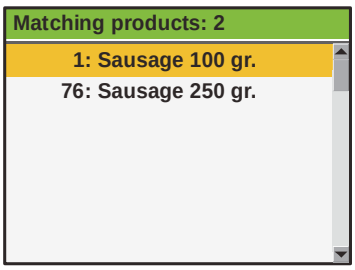


5. Use ▲ and ▼ keys to select the appropriate product then press ● to confirm and return to the measuring screen.

6. Selecting one of the **Product....** methods (ex. **Product name**) brings up an appropriate touch screen keyboard for keying in the product data.



7. Key in the product name (ex. **Sausage**) and confirm by pressing the **OK** key.
The **Matching products** screen will appear showing a list of all products a name starting with **Sausage**.



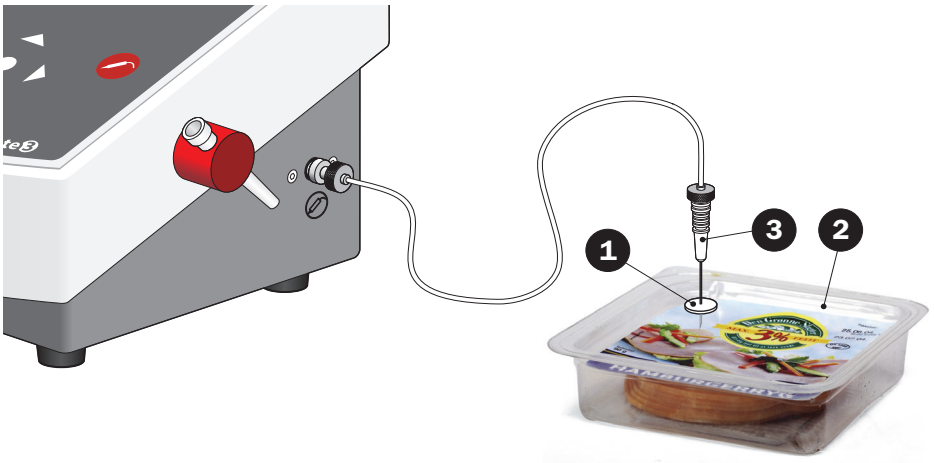
8. Use ▲ and ▼ keys to select the appropriate product then press ● to confirm and return to the measuring screen.

TIP!
When selecting the **Product name** search method keying in only an "S" will bring up a list of all products starting with "S".

When selecting the **Product number** search method keying in "1" will bring up only product no. 1 and not a list of all product numbers starting with "1" (ex. 1, 17, 134).

Performing a measurement

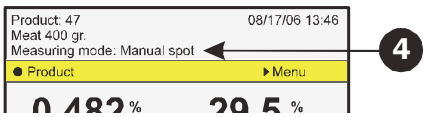
1. Make sure that the device is in **Ready mode** - see *"Modes" on page 15*.
2. Select appropriate product - see *"Selecting a product for measuring" on page 23*.



3. Place a septum ❶ on the product/package ❷ to be measured/analysed. This ensures leak-free gas extraction and thus accurate measuring.
4. Penetrate the septum ❶ with the needle ❸ so that the gas can be sucked in from the package through the tip.

CAUTION! Do not let the needle tou17ch the product, fluid or anything else in the package, as this could soil the needle, hose or filter.
If this happens, the needle, hose and filter must be replaced to avoid destroying sensors or other items inside the unit.

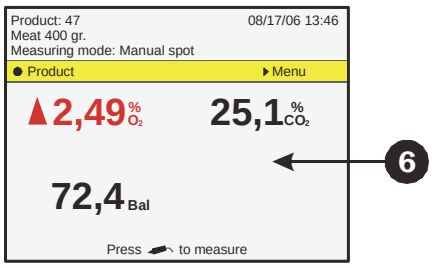
5. The measuring method is displayed at the top of the screen ❹.



6. If selected product requires keying in of data before measurement (see *"Edit product" on page 33* for details) **Data required. Press** will be displayed in the bottom of the measuring screen ❺.

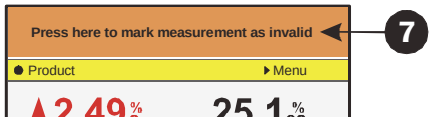
7. Pressing the key will bring up the appropriate touch screen keyboard for keying in of the required data. Key in the data and confirm by pressing the **OK** key, which will either bring up the next data request screen if required or return to the measurement screen ready for measuring.
8. Now start the measurement as required - see *"Measuring modes" on page 22* for details.

9. When measuring finishes (or in case of periodic measuring, after each measuring) the recent result is shown on the screen ❻.

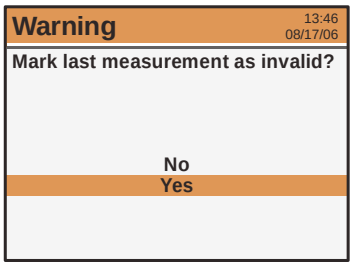


For continuous measurements the measuring results are displayed continuously on the screen during the measuring.
If any alarm limits have been defined, the results are shown in different colours - see *"The Measuring screen" on page 21* for details.

10. If device has been set up to use the **Mark measurement as invalid** function (only for **Auto spot** and **Manual spot** measurements) the screen becomes touch sensitive for a short while (5 sec.), while the upper section displays the text **Press here to mark measurement as invalid** on an orange background ❼.



If you wish to invalidate the recent measurement, press anywhere on the screen. This will bring up a confirmation screen.



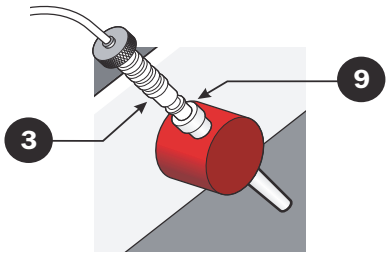
Select **Yes** and press ● to confirm.

NOTE! If you want to save measurement as invalid, make sure to confirm this before entering any notes for the measurements if required (see item 11). Otherwise measurement will automatically be saved as valid.

11. If selected product requires keying in of notes after the measurement (only for **Auto spot** and **Manual spot** measurements) (see *"Edit product" on page 33* for details) **Note required. Press** ● will be displayed in the bottom of the measuring screen ❽.

12. Pressing the ● key will bring up the appropriate touch screen keyboard for keying in of the required note data. Key in the data and confirm by pressing the **OK** key to return to the measurement screen ready for another measuring.

13. When finished the needle ❸ should be removed from the product package and placed in the needle holder ❾ on the side of device.



Daily Shut-down

At the end of the working day you have various options to shut the device down:

Switch device off	Simply switch off the main switch on the backside of the device.
Set the device to Standby mode	Select **Standby** from the **Main menu**. The device switches into **Standby mode**. If a time has been set for **Sleep mode** in "General setup" (see *page 37*) the device will automatically switch from **Standby mode** to **Sleep mode** when set time is reached.
Set the device to Sleep mode	Select **Sleep** from the **Main menu**. The device switches into **Sleep mode**.

For a detailed description of the various modes - see *"Modes" on page 15*.

Error messages

Four types of error messages may occur in CheckMate 3:

- **Information**
- **Warnings**
- **System error**
- **System failure**

In case of an error an error number and an error message for identification of the error is displayed.
The error must be acknowledged by pressing ●.

The error number may be reported to a Service Technician to correct any errors.

A list of the most recent errors is available from the **Diagnostics menu** - see *"Diagnostic menu" on page 36* for details.

Cleaning and Maintenance

General

Performing cleaning and maintenance regularly reduces the chances of equipment failure.

CAUTION! Personnel performing any maintenance or cleaning must familiarize themselves with the *"Safety Instructions" on page 9* before attempting any of these procedures.

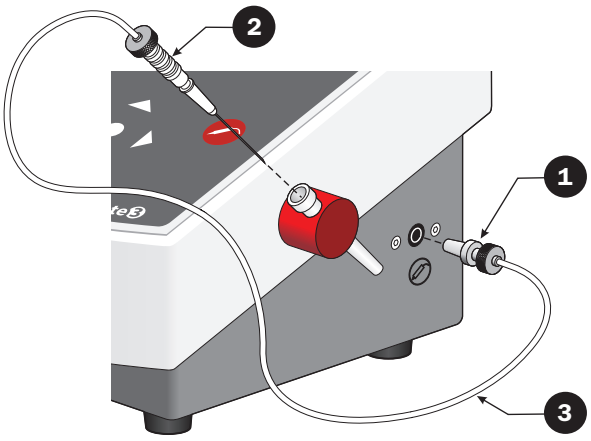
Cleaning

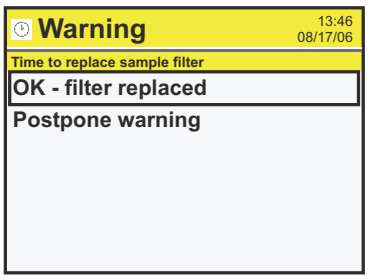
All of the device's surfaces should only be cleaned using a mild soap solution and a wrung cloth.

CAUTION! Never use hard tools or abrasive materials when cleaning any part of the device.

WARNING! Never use cleaning agents containing chlorinated solvents or acetic or phosphoric acid. These constitute a health hazard and could damage the instrument.

Replacing filter, measuring gas hose and needle





For every 10 hours of measurements a filter replacement warning will appear.
You now have two options:

1. Replace the filter ❶ and select **OK - filter replaced**. This will reset the counter for another 10 hours of measurements.
2. Select **Postpone warning**. This will postpone the warning for 1 hour. This continues until you select **OK - filter replaced.**

NOTE! Since the actual filter replacement cannot be checked by the instrument, selecting "OK - filter replaced" will reset the 10 hour measurement timer even if filter has not been replaced.

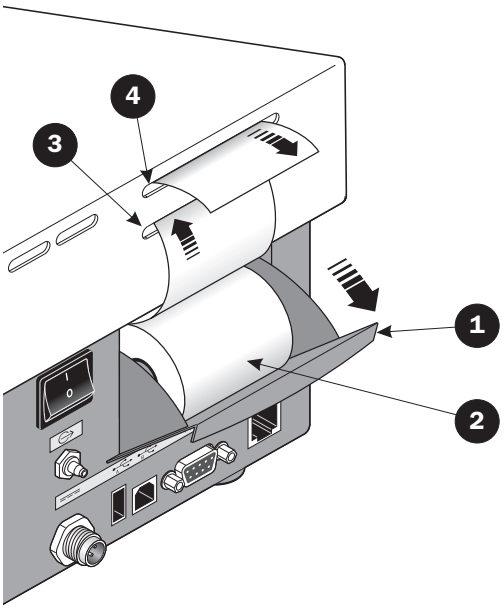
The needle ❷ may sometimes touch the product being measured or the needle may suck fluid from the packaging from which the measurement is taken. If this happens, it will be necessary to replace both the needle and the filter.

If there is any dirt or fluid in the measuring gas hose ❸, it should be replaced or cleaned using dry compressed air.

All of the parts can be ordered (and replaced) separately or as a complete kit.
See *"Consumable parts and options" on page 56*.

Replacing printer paper

(Only models with printer)



To replace printer paper roll do the following:

1. Open the paper roll tray ❶ by pulling it outwards, then remove the empty paper roll.
2. Place new paper roll ❷ in the tray and lead the paper into the lower paper slot ❸ until the printer catches it.
3. Press the key a couple of times until paper is led out through the upper paper slot ❹.
4. Close paper tray ❶.

CAUTION! Do not touch the paper tear-off mechanism located at the top of the upper paper slot ❹ as there is a risk of cutting your fingers.

3. Menus and Settings

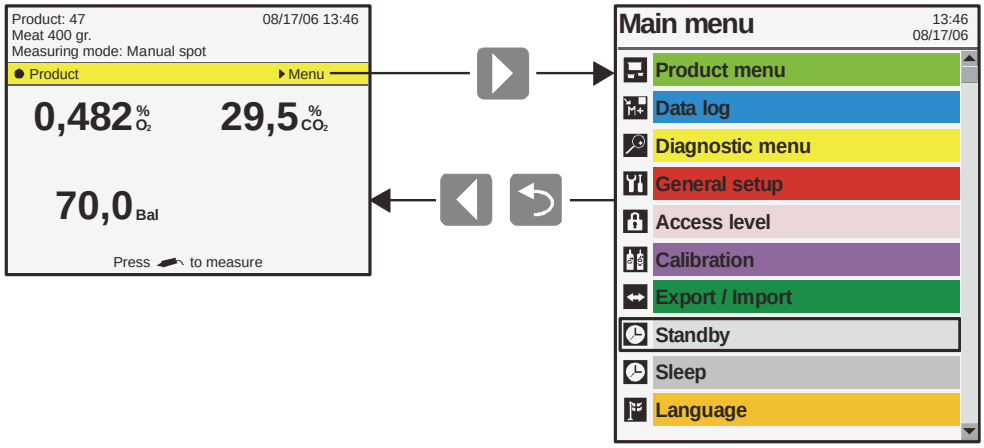
General

When device is switched on (after power off) it is locked in **User** access level. In **User** access level the operator has access to a limited number of functions only and is not allowed to perform parameter set-up.

To obtain full access you have to change the device to **Supervisor** access level.
See *"Access level" on page 45* for details.

Main menu

Pressing the ▶ key from the measuring screen brings up the **Main menu**



From the **Main menu** you can select the following submenus:

Menu items marked with an asterisk (*) are not available in **User** access level.

Product menu* — Create, edit and delete products.
Display and delete logged product data.
See *"Product menu" on page 33* for details.

Data log — View logged data for currently selected product.
See *"Data log" on page 36* for details.

Diagnostic menu — Display device's internal parameters and error diagnostics.
See *"Diagnostic menu" on page 36* for details.

General setup* — Setting of various device parameters.
See *"General setup" on page 37* for details.

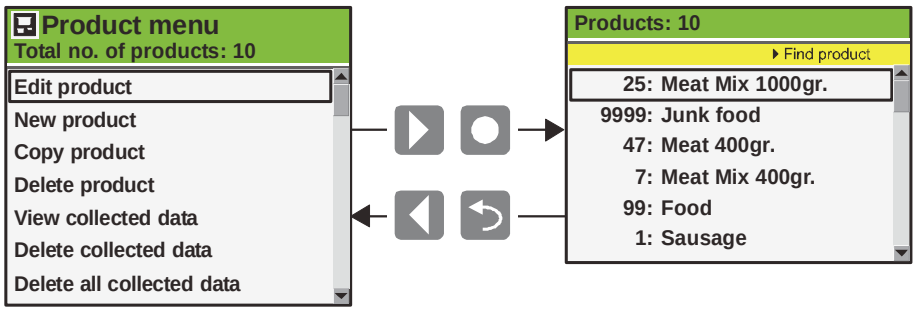
Access level — Selection of access level for User, Supervisor and Service.
See *"Access level" on page 45* for details.

Calibration* — Calibration of sensors - for Service Technicians only.

Export / Import*	Export of product log data, export/import of products, users and device settings. Requires connection of a USB memory key. See *"Export/Import" on page 49* for details.
Standby	Log off and switch the device into **Standby mode**. See *"Standby" on page 49* for details.
Sleep	Log off and switch the device into **Sleep mode**. See *"Sleep" on page 50* for details.
Language	Change language of screens and menus. See *"Language" on page 50* for details.

Product menu

Selecting **Product menu** from the **Main menu** will display a menu with available product options.



Selecting a function will display all products in the last used order. To find a product by sorting all products in a different order press ▶ key.

Up to 1000 different products can be stored.

Edit product

This function allows you to edit the set-up of a product. The following parameters can be set for each product:

Product name — A unique product name of up to 40 characters

Product number — A random product number (0 to 999999)

Barcode ID — Unique product barcode. Used to perform a quick product selection using the barcode reader (option)

Measure mode — Select between the following 4 measuring modes: **Manual spot**, **Auto spot**, **Intermittent** and **Continuous**. See *"Measuring modes" on page 22* for details. For the **Manual spot** and **Intermittent** modes you must set the required sample and delay times.

Display gasses — Select whether or not a value should be displayed on the measuring screen. The number of potential gasses depends on the CheckMate 3 type and the sensors installed. Up to 4 gasses/values can be displayed on the measuring screen.

Concentration alarms 1 - 6 — Setting of the alarms. You have the following options for each alarm:

- Inactive (Off), High alarm or Low alarm
- The limit value that must be exceeded to activate the alarm.
- The gas/value to be used for the particular alarm.

continues...

Customer fields

Select whether or not keying in of customer data before and/or after the measurement is required.

Note data must be entered after the measurement if required. In these cases **Note required. Press** ● will be displayed in the bottom of the measuring screen.

You have the following options for **Note** settings:
(Only applies to products set to Auto spot or Manual spot measurement)

Off	Keying in of data will not be required.
If alarm	Keying in of data will be required if measurement raises any type of alarm.
If no alarm	Keying in of data will be required if measurement raises no alarms.
Always	Keying in of data will be required after each measurement.
Free	Keying in of data is possible, but not required. In these cases **Press ● to enter note** will be displayed in the bottom of the measuring screen. Press ● key to enter the data or press key to skip.

Custom field 1-5 data must be entered before start of the measurement if required. In these cases **Data required. Press** will be displayed in the bottom of the measuring screen.

You have the following options for each of the **Custom field 1-5** settings:

Off	Keying in of data will not be required.
Always	Keying in of data will be required before each measurement.
Once	Keying in of data will be required only before the first of a series of measurements for the same product.

Each of the **Custom fields** can be named to show the operator the type of data to be entered.
See *"Custom fields" on page 42* for details.

New product

This function creates a new product with standard set-ups. The values can then be adjusted to the desired product (see *"Edit product" on page 33*).

Copy product

This function copies an existing product to a new product. The values can then be adjusted to the desired product (see *"Edit product" on page 33*).
This function can be used to create a new product that is similar to an existing product.

Delete product

Unused products can be deleted. When deleting a product both the product and the product's logged data are deleted.
The action must be confirmed before deletion is performed.

View collected data

This function enables the operator to display logged data for any of the existing products.

(Selecting **Data log** from the main menu displays logged data for the currently selected product only.)

Delete collected data

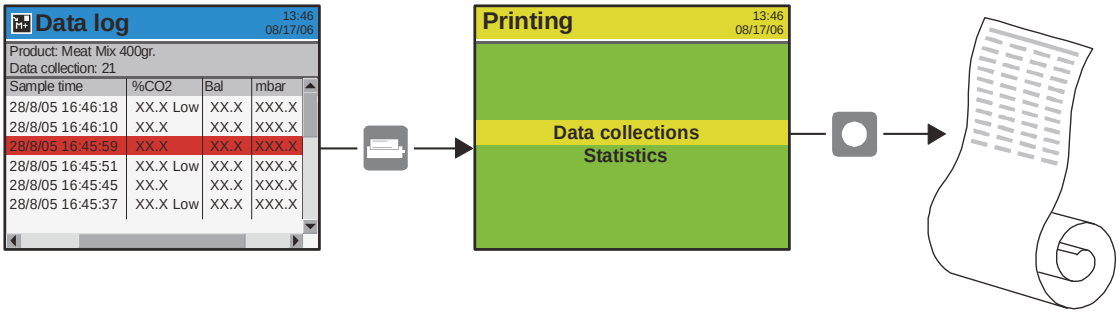
Use function to delete the logged data for an existing product.
The action must be confirmed before the data is deleted.

Delete all collected data

Use function to delete the logged data for all products.
The action must be confirmed before the data is deleted.

Data log

Selecting **Data log** from the **Main menu** will display a screen with a list of all the logged data for the currently selected product.
Measuments which have been interrupted or marked as invalid are displayed on a red background.



From here the logged data can be printed by pressing the key (devices with built-in printer only).

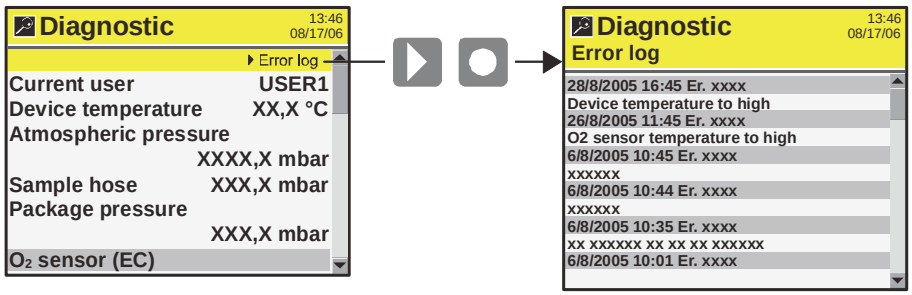
Logged data can be exported (see *"Export/Import" on page 49* for details) or deleted (see *"Product menu" on page 33* for details).

Data log memory full

If data log memory is full an error will occur (Error code: 2679, No free space on flash).
In this case you must empty data log by using the functions for deleting of data collections - see *"Product menu" on page 33* for details.
Please note that new measurements will not be logged until current data logs have been deleted.

Diagnostic menu

Selecting **Diagnostic menu** from the **Main menu** will display a screen showing the internal parameters of the device.



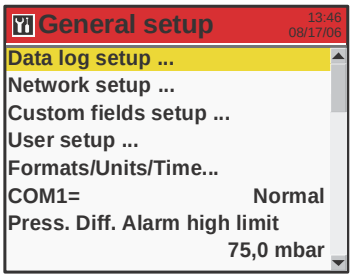
These are values such as current user, device's internal temperature, the pressure in the sensors, the sensor's conditions, serial numbers for main components, day/hour counters, time to calibration, and software versions, etc.

Pressing the ▶ key brings up an **Error log** screen with a list of all errors for the selected product.

The parameters can only be read and not changed.

General setup

Selecting **General setup** from the **Main menu** will display a menu with available set-up parameters.



Menu items followed by **...** brings up a submenu with available set-up parameters for the selected item.

The **General setup** menu holds the following items:

Data log setup ...
Opens the **Data log setup** screen
See *"Data log setup" on page 38* for details.

Network setup ...
Opens the **Network setup** screen
See *"Network setup" on page 42* for details.

Custom fields setup ...
Opens the **Custom fields setup** screen
See *"Custom fields" on page 42* for details.

User setup ...
Opens the **User setup** screen
See *"User setup" on page 43* for details.

Formats/Units/Time ...
Opens the **Formats/Units/Time** screen
See *"Formats/Units/Time" on page 44* for details.

COM1=
Select intended use of the COM-port.
Normal Use as serial data dump port
OEM Use for special applications

Press. Diff. Alarm high limit
Press. Diff. Alarm low limit
The settings control the window for the sample system's operating pressure. Default setting is 25.0 mbar (low limit) and 75.0 mbar (high limit).
Special applications may require adjustment of these values.

NOTE! As changing the values may impair measurements, a warning is displayed when you attempt to change the values.

Back light
Adjust display background light (1-5)

Contrast
Adjust display contrast (1-10)
When display shows the measuring screen you can use the ▲ and ▼ keys to adjust screen contrast.

Brightness
Adjust display brightness (1-10)

Measure delay
Time before measurement starts after pressing the key. (1.0 - 999.9 sec.)

DST

Select whether or not the DST (Dynamic Sample Time) function should be enabled - see *"Dynamic Sample Time (DST)" on page 18* for details.

NOTE! Do not disable DST function on the device without consulting an authorised Dansensor Service Point. Disabling DST has great influence on the measuring accuracy!

Standby after

Time before device switches into **Standby** mode when not in use.
(0 = Off) (1-100,000,00 min.)

Please note that even though function is set to 0 (Off) the device can still be forced into **Standby** mode by selecting **Standby** from the **Main menu** - see *"Standby" on page 49* for details.

Sleep mode after

Time before device switches into **Sleep** mode when not in use.
(0 = Off) (1-100,000,000 min.)

Please note that even though function is set to 0 (Off) the device can still be forced into **Sleep** mode by selecting **Sleep** from the **Main menu** - see *"Sleep" on page 50* for details.

Printer header

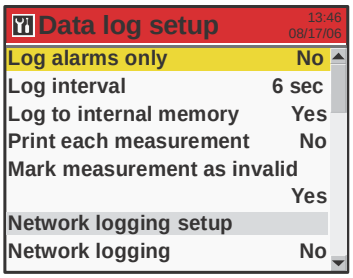
Select header text for printouts (ex. company name).

Supervisor pin code setup

Setting up the pin code required for changing from **User** access level to **Supervisor** access level.
(See *"Access level" on page 45* for details).

Data log setup

Selecting **Data log setup ...** from the **General setup** menu will display a screen showing the data logging parameters.



This is where you make all settings for logging of data.

As most of the parameters are self-explanatory only items requiring for further clarification are described below:

Log to internal memory

Select whether or not log data should be saved in the internal memory of the device to be displayed and printed from the **Data log** menu (see *"Data log" on page 36*).

Yes Log data is saved internally and send to COM-port/LAN-server.

No Log data is send only to COM-port/LAN-server.

Print each measurement	**Yes**	Printer will print a header and subsequently each logged measurement will be printed automatically line by line
	No	Function deactivated
Mark measurement as invalid	**Yes**	After each measurement performed in either **Auto spot** or **Manual spot** mode you will be asked if you want to mark measurement as invalid.
	No	Function deactivated
Network logging setup	**Network logging**	Select whether or not network logging is required.
	Server IP	Set up an IP-address to be used for collecting log data for each measurement via LAN. This requires for setting up of a **Server Port** number as well.
	Server Port	See above.
	If **Server IP** or **Server Port** or both are set to **0** the function is deactivated and data will only be send to the COM-port.	
	Acknowledge	Acknowledge byte can be used if a "handshake" is required for each measurement between device and server, each to be set up to same value. If value is set to **0** function is deactivated.
	Function can be used together with the **TCP Wedge** or **TCP File** from **Taltech**, **TCP File** from **Fogsoft** or a proprietary setup TCP/IP server. Data is send out in same format and setup as for the COM-port.	
Data out format	**Format**	Select between **ASCII** or **UNICODE**
Data out	Select which parameters are required for the data output. Selected data is always send to the device's COM-port and if a server has been set up in **Network logging** (see above) data is send here as well.	

When using RS-232 COM port setting must be: **57600,N,8,1**

Serial data dump specification

Each measurement is on one line terminated with a Carriage Return + Line Feed characters (ASCII 0x0D, 0x0A).

The line consists of data separated by semicolons (";"). Last parameter is also followed by a semicolon.

In the "Data log setup..." (see *page 38*) it can be selected whether the output format should be ASCII or UNICODE.
When set to ASCII some international characters might come out as wrong ASCII characters.

The table on the next page shows which data is presented and the order of the data.

NOTE! For this function to work properly you must ensure that the "COM1=" parameter in "General setup" is set to "Normal".

Serial data dump specification					
Column	**Start pos.***	**Length ****	**Type**	**Description**	**Note**
1	1	8	Numeric	O2 [%]	Fixed decimal point, eg. "020.9465"
2	10	8	Numeric	CO2 [%]	Fixed decimal point, eg. "020.9465"
3	19	8	Numeric	Balance [%]	Fixed decimal point, eg. "020.9465"
4	28	8	Numeric	(Not used)	Fixed decimal point, eg. "020.9465"
5	37	1	Numeric	O2 alarm [0=No alarm 1=High Alarm 2=Low Alarm]	
6	39	1	Numeric	CO2 alarm [0=No alarm 1=High Alarm 2=Low Alarm]	
7	41	1	Numeric	(Not used)	
8	43	6	Numeric	Product number [Integer]	No decimal point (e.g. "000032")
9	50	8	Text	Date [MM/DD/YY] / [DD/MM/YY]	Variable according to set-up
10	59	8	Text	Time [HH:MM:SS]	
11	68	40	Text	Product name [Text]	Left alligned
12	109	40	Text	Product barcode [Text]	
13	150	24	Text	CheckMate II S/N [Text]	
14	175	40	Text	User ID [Text]	
15	216	37	Text	User field 1 [Text]	
16	254	37	Text	User field 2 [Text]	
17	292	37	Text	User field 3 [Text]	
18	330	37	Text	User field 4 [Text]	
19	368	37	Text	User field 5 [Text]	
20	406	100	Text	Note [Text]	
21	507	14	Text	SW version [Text]	
22	522	1	Numeric	Measure mode [0=Continuous, 1=manual spot, 2=auto spot 3=intermitted]	
23	524	6	Numeric	Sample time [seconds]	Fixed decimal point plus sign, eg. "+005.0"
24	531	6	Numeric	Measure delay at intermitted [minutes]	No decimal point
25	538	1	Numeric	Alarm 1 type [0=Off, 1=high, 2=Low]	
26	540	1	Numeric	Alarm 1 gas [0=O2, 1=CO2	
27	542	8	Numeric	Alarm 1 concentration [%]	Fixed decimal point, eg. "020.9465"
28	551	1	Numeric	Alarm 2 type[0=Off, 1=high, 2=Low]	
29	553	1	Numeric	Alarm 2 gas [0=O2, 1=CO2	
30	555	8	Numeric	Alarm 2 concentration [%]	Fixed decimal point, eg. "020.9465"
31	564	1	Numeric	Alarm 3 type[0=Off, 1=high, 2=Low]	
32	566	1	Numeric	Alarm 3 gas [0=O2, 1=CO2	
33	568	8	Numeric	Alarm 3 concentration [%]	Fixed decimal point, eg. "020.9465"
34	577	1	Numeric	Alarm 4 type[0=Off, 1=high, 2=Low]	
35	579	1	Numeric	Alarm 4 gas [0=O2, 1=CO2	
36	581	8	Numeric	Alarm 4 concentration [%]	Fixed decimal point, eg. "020.9465"
37	590	1	Numeric	Alarm 5 type [0=Off, 1=high, 2=Low]	
38	592	1	Numeric	Alarm 5 gas [0=O2, 1=CO2	
39	594	8	Numeric	Alarm 5 concentration [%]	Fixed decimal point, eg. "020.9465"
40	603	1	Numeric	Alarm 6 type[0=Off, 1=high, 2=Low]	
41	605	1	Numeric	Alarm 6 gas [0=O2, 1=CO2	
42	607	8	Numeric	Alarm 6 concentration [%]	Fixed decimal point, eg. "020.9465"
43	616	1	Numeric	Note [0=Off, 1=At alarm, 2=At no alarm, 3= Always, 4=Always]	
44	618	1	Numeric	User field 1 required [0=no, 1=Always, 2=Once]	
45	620	1	Numeric	User field 2 required [0=no, 1=Always, 2=Once]	
46	622	1	Numeric	User field 3 required [0=no, 1=Always, 2=Once]	
47	624	1	Numeric	User field 4 required [0=no, 1=Always, 2=Once]	
48	626	1	Numeric	User field 5 required [0=no, 1=Always, 2=Once]	
49	628	6	Numeric	Device temperature [°C]	Signed value and fixed point (eg. "+023.0" or "-003.2")
50	635	6	Numeric	Atmospheric pressure [mbar]	No decimal point
51	642	1	Numeric	Invalid measurement [0=No, 1=Yes]	
Total:	644	Chars in ASCII (x4 in UNICODE) +CRLF			

* Only when all elements are selected and format is ASCII.
** Length: Fixed length. When unicode length must be multiplied by 4.

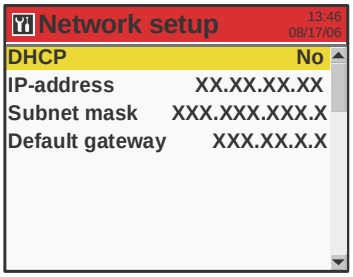
Fixed decimal placement. Leading zero in numbers. Gas concentrations are always in % buth with ppm resolusion (regardless of accuracy) e.g. "020.9465"

Example:

```
000,8395;000,3200;098,8405;000,0000;0;0;0;000002;27/02/08;16:43:39;Product 2;
```

Network setup

Selecting **Network setup ...** from the **General setup** menu will display a screen showing the network set-up parameters.



This is where you make the device's network (LAN) settings.

It is possible to choose between a fixed (static) IP-address or a DHCP (dynamic) IP-address, where the device's network settings are assigned from a DHCP server on the network.

Default setting is **DHCP (Yes)**.

Setting **DHCP** to **No** brings up following parameters for setting up a static IP-address:

IP-address

Subnet mask

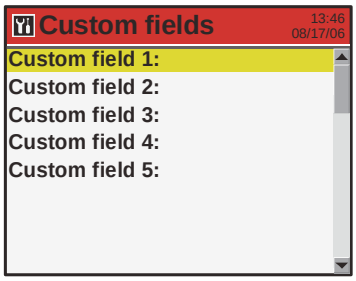
Default gateway

These parameters have to be set up to the existing network.

NOTE! Always consult your network administrator before making network settings, as incorrect settings can result in reduced or no network activity.

Custom fields

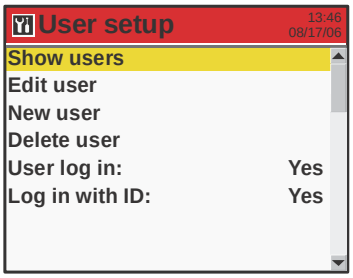
Selecting **Custom fields setup ...** from the **General setup** menu will display a screen showing the list of available **Custom fields (1-5)**.



This is where you key in the text (max. 40 characters) which will be displayed as the header on each of the appearing **Custom field** data input windows when used.

User setup

Selecting **User setup...** from the **General setup** menu will display a screen showing the User setup parameters.



From here the user database is maintained. You can see a list of existing users, edit the settings for an existing user, create new users or delete users.

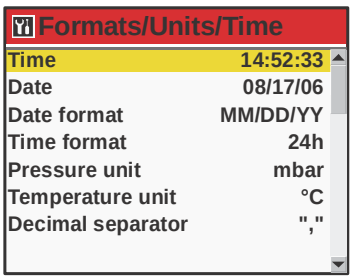
Users are created with a unique **User name** (max. 20 characters) and a unique login **User ID** (max. 40 characters).

The set-up of the login function is defined according to table below:

User log in	Log in with ID	Function
No	**No**	**No login required (default setting)** At start-up the device will automatically run the self-test and warm-up period and when finished it changes to show the measuring screen and will be ready for measuring.
Yes	**No**	**User login required** At start-up you are prompted to select user from appearing list and when done the device will run the self-test and warm-up period and when finished it changes to show the measuring screen and will be ready for measuring.
Yes	**Yes**	**Login with User ID required** At start-up you are prompted to enter User ID either by keying it in from the touch screen keyboard or by using a barcode scanner (option). When done the device will run the self-test and warm-up period and when finished it changes to show the measuring screen and will be ready for measuring.
No	**Yes**	**Not possible!** Setting **User login** to **No** will automatically change **Login with ID** to **No**.

Formats/Units/Time

Selecting **Format/Units/Time...** from the **General setup** menu will display a screen showing the various setup parameters for output formats and units.

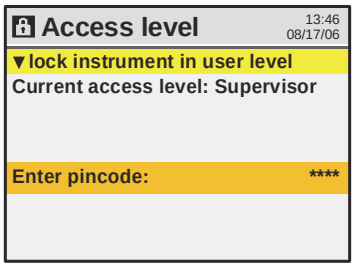


Time	Setting of current time (hh:mm:ss)
Date	Setting of current date (using “Date format”)
Date format	Setting of date format (DD/MM/YY or MM/DD/YY)
	"Time", "Date" and "Date format" are related to the real time clock setting in the device. The settings will have effect in all displays showing time and date.
Time format	Setting of time format (12h or 24h)
Pressure unit	Setting of gas pressure read-out unit (mbar or psi)
Temperature unit	Setting of temperature read-out unit (°C or °F)
Decimal separator	Selects whether decimal values are entered using “.” or “,” as decimal point.

Access level

When device is switched on (after power off) it is locked in **User** access level. In **User** access level you have only access to a limited number of functions and is not allowed to perform parameter set-up.

To obtain full access you have to change the device to **Supervisor** access level.
To do so select **Access level** from the **Main menu** menu to display the **Access level** screen.



Press ● key to open a touch screen keyboard and enter the pin code for **Supervisor** access level. From the factory the pin code is set to **"0"**.
The **Supervisor** pin code can be changed to one of your own selection - see *"General setup" on page 37* for details.

To return the device to **User** level access either press the ▼ key from the **Access level** screen or power the device off and on.

Calibration

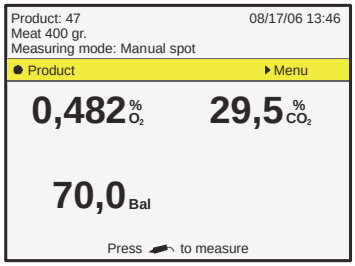
NOTE! Apart from the below described "Offset (20,9%) calibration" all calibration procedures must be carried out by Service Technicians only, as calibration requires for special skills and the access to certified calibration gasses.
Invalid calibration compromises measurement results.

Offset (20,9%) calibration

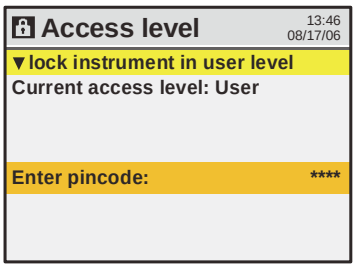
NOTE! Only applies to O_2 EC (Electro-chemical) sensors.

Follow procedure below to perform the calibration:

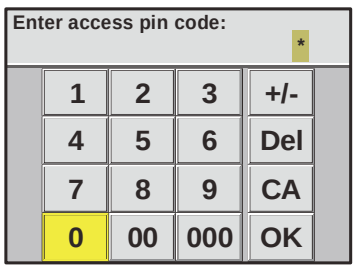
1. From the measuring screen push the ▶ key.



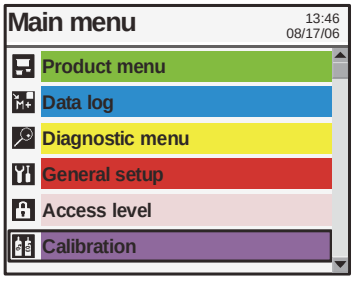
2. If you are not already in **Supervisor** mode select **Access level** from the main menu.
3. To enter the pin code push the ▶ or ● key.



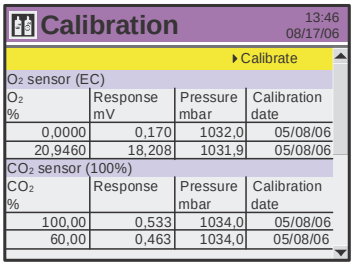
4. The standard code from the factory is "**0**", but it may have been changed.
   Use the appearing touch-screen keyboard to enter the appropriate code and push "**OK**".



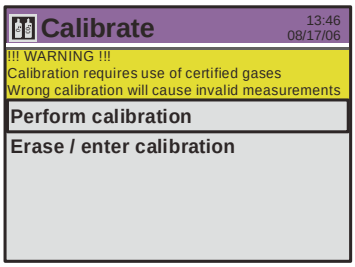
5. In the **Main menu** use ▼ key to scroll down to the **Calibration** menu item then push the ▶ key to enter the function.



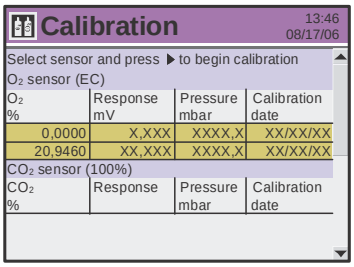
6. The appearing **Calibration** menu holds a list of the various sensors in the device.
   For each sensor there is a table showing the appropriate calibration parameters.
   To proceed with the calibration push the ▶ key.



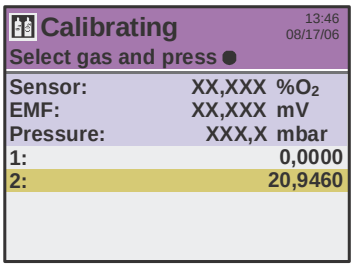
7. From this menu you can select between the following items:
   - Perform calibration
   - Erase/enter calibration
   Select **Perform calibration**, then push the ▶ key.



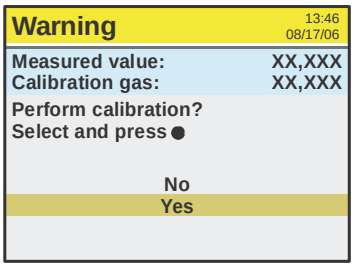
8. Use ▲ or ▼ key to select the calibration value fields for the **O_2 sensor (EC)**, then push the ▶ key.



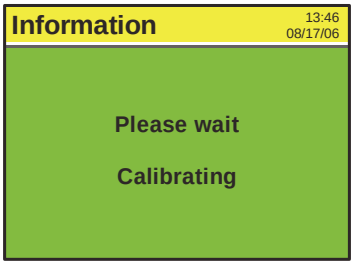
9. The pump starts and now make sure to expose the needle to a **20,946% O_2** gas.
   Let measurement run for **approx. 5 min.** then select the **20,9460** gas entry from the list and push ● key.



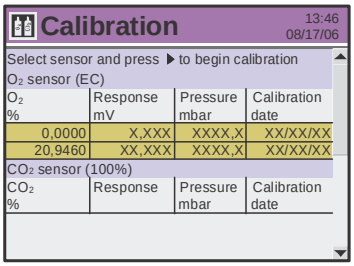
10. You will be asked to perform the calibration.
    NOTE! Existing calibration value, if any, will be overwritten.
    Select "**Yes**" then push ● key.



11. The calibration will be executed.



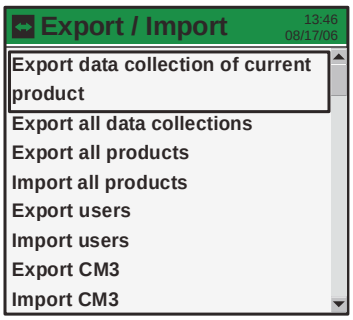
12. When calibration has finished, the pump stops and the display will return to the sensor menu.
Note that the fields for the **20,9460%** gas now have been updated with the values obtained during calibration.



13. Now the **O_2 sensor (EC)** has been calibrated.
To return to the start screen push the ↩ key 4 times.

Export/Import

Selecting **Export/Import** from the **Main menu** will display a screen listing the various functions for exporting and importing of data.



The functions cover export of product log data and export/import of product - and user data.

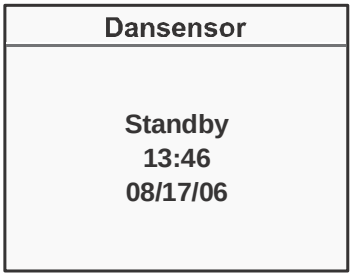
The **Export/Import CM3** functions exports/imports products, users, and all non-device specific settings.

The export and import functions requires for a USB memory key to be connected to the USB A connector (labelled) at the back of the device - see *"Connection of additional equipment" on page 13* for details.

NOTE! It is only possible to have one export file on a USB key. If a file is already on the USB key it will be overwritten.

Standby

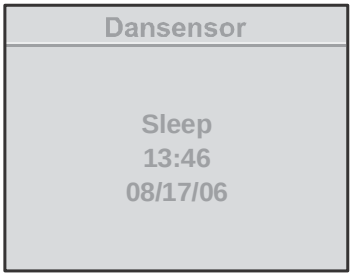
Selecting **Standby** from the **Main menu** will force the device into **Standby** mode.



See *"Modes" on page 15* for details.

Sleep

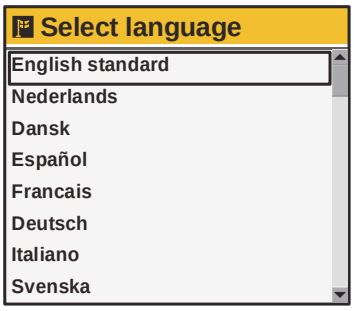
Selecting **Sleep** from the **Main menu** will force the device into **Sleep** mode.



See *"Modes" on page 15* for details.

Language

Selecting **Language** from the **Main menu** will display a screen listing the available languages.



When selecting a language all text throughout the menus will be displayed in this language.

4. Technical Information

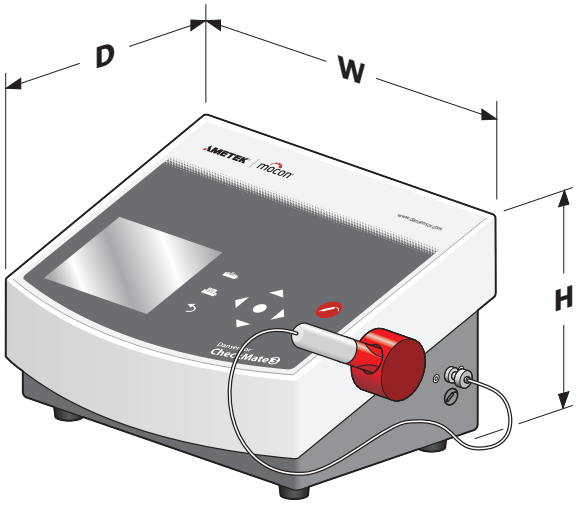
Technical specifications

Electrical connections

Mains	100-240V AC, 50-60 Hz
Power consumption	Zirconia O_2 sensor:max 40W Electrochemical O_2 sensor:max 30W

Mechanical data

Analyzer size	180 x 315 x 220 mm (H x W x D)



Analyzer weight	3,7 kg
Box of one analyzer	400 x 320 x 300 mm (H x W x D)
Box weight	5,8 kg
IP classification	IP 20

Connectivity

Network/LAN	Ethernet 10/100 mbit/s Base-T with DHCP client or fixed IP
RS232	D-SUB 9 DTE interface (male connedtor)
USB	Host, USB 2.0 Connector type A, max current 100mA Device, USB 2.0 Connector type B

Gas connection

Gas inlet	Sample hose: Sample type/connector: Filter/Water trap:	Length 60 cm, Ø0,5mm Needle 0,8x40mm or SmartPen 0,8x9mm 0,2 µ
Gas outlet	Connection for hose (inner diameter Ø 3mm)	

Basic specifications

Warm-up time	Operational after 10 min. [1] (60 minutes to full specifications)	
Measuring ranges	0-100 % O_2 and 0-100% CO_2	
Ambient temperature	Operational: Storage:	+0 to +45 °C, less than 95 %RH, non condensing -20°C to +60°C, less than 95 %RH, non condensing
Ambient pressure	Operational:900 hPa to 1050 hPa	
Measurement gas	Inert gasses (O_2, CO_2, N_2 or Ar), less than 95 %RH, non condensing.	
Measurement gas flow	27 to 40 ml/min. (Typical flow 34 ml/min.)	
Measurement gas temperature	5 °C to 35 °C	
Sample pressure range	Ambient +100 mbar -100mbar [2]	

[1] *Warm-up time is shortened at temporary power interrupts.*

[2] *The flow will be lower than 27 ml/min when sample pressure is lower than atmospheric pressure.*

Zirconia O_2 sensor

Measure time	Min. 3 sec. (incl. 1 sec. measure delay time) [1]
Sample volume	Min. 1,35 ml (with a 3 sec measuring time and a flow of 27 ml/min)
Typical sample volume	2,83 ml (with a 5 sec measuring time and a flow of 34 ml/min)
Reference gas	Ambient atmospheric air (20.9 % O_2)
Service calibration interval	12 months

[1] *This time should be increased when the sample pressure is lower than atmospheric pressure.*

Electrochemical O_2 sensor

Measure time	Min. 7 sec. (incl. 1 sec. measure delay time) [1]
Sample volume	Min. 3,15 ml (with a 7 sec. measuring time and a flow of 27 ml/min)
Typical sample volume	3,97 ml (with a 7 sec. measuring time and a flow of 34 ml/min) [2]
Response time (T_{95})	9 seconds
Service calibration interval	6 months

[1] *This time should be increased when the sample pressure is lower than atmospheric pressure.*

[2] *The sample time (and volume) can be increased by the DST function .*
See "Dynamic Sample Time (DST)" on page 18.

CO_2 sensor

Measure time	Min. 10 sec. (including 1 sec measure delay time) [1]
Sample volume	Min. 4,5 ml (with a 10 sec measuring time and a flow of 27 ml/min)
Typical sample volume	8,5 ml (with a 15 sec measuring time and a flow of 34 ml/min)
Service calibration interval	12 months

[1] *This time should be increased when the sample pressure is lower than atmospheric pressure.*

Accuracy specification (excl. calibration)

Zirconia sensor resolution	0,1 % absolute in range above 10 % 0,01 % absolute in range above 1 % 0,001 % absolute in range below 1 %
Zirconia sensor accuracy	±0,01 % absolute in range below 1 % ±1 % relative in range above 1 %
Electrochemical sensor resolution	0,1 % absolute
Electrochemical sensor accuracy	±(0.25% absolute + 2% relative)
CO_2 sensor resolution	0,1 % absolute
CO_2 sensor accuracy	±0,5 % absolute ±1,5% of reading **NOTE! High concentrations of Argon influences accuracy of CO_2 readings.** **The CO_2 value will appear to be slightly lower than actual value (app. -2-4%).**

Standard calibration specification

Calibration gasses (O_2)	Zirconia (Zr) sensor:	100ppm, 1000 ppm, 1%, 80% (balance N_2) 20.9 % (Compressed dried atmosphere air)
	Electrochemical (EC): sensor	0% (100% N_2) 20.9% (Compressed dried atmosphere air)
Calibration gasses (CO_2)	0%, 25%, 60%, 100% (balance N_2)	
Calibration gas accuracy	< 3 %	
System diffusion	< 25 ppm	
Measurement gas flow	34 ml/min ± 6 ml/min	
Ambient temperature	23 °C ± 2 °C	
Ambient pressure	1013 hPa ± 50 hPa	
Total calibration accuracy (RMS)	± (25 ppm + 4 % of reading) in the range 100ppm - 80%	

Specification conditions

Ambient temperature	+23 °C
Ambient pressure	1013 hPa
Measurement gas temperature	+23 °C
Measurement gas flow	34 ml/min

NOTE! All gas concentrations are specified in volume percent.

Conformity

- CE
- WEEE
- RoHS
- China RoHS Phase 1 compliance

Consumable parts and options

Ordering items

When ordering any of the below listed items please state carefully the item number, the item specification and the number of items wanted and send the order to your spare parts dealer.

Available User Guides

All user guides are available on:

- CD, User guides, CheckMate 3 cpl. . . . . P/N 300049

Consumable parts

- Kit, standard consumable, CheckMate 3, Ser. Cpl.. . . . . P/N 300436
  - 5 x Needle kit, Ø0.8mm (10 pcs.) cpl.
  - 1 x Sampling kit cpl.
  - 1 x Hose, Sample Gas (5 pcs. 600mm x Ø0.51mm)
  - 1 x Filter Kit 0.2µ (10 pcs.) cpl.
  - 3 x Septum Ø15mm (1000 pcs.) cpl.
- Kit, plugs, Ser. Cpl.. . . . . P/N 301135
  - 25 x Plug, USB B, dust cover
  - 25 x Cover, dust, USB A
  - 25 x Cover, dust, RJ45
- Printer paper 57mm x 25 m (2 pcs.) Ser. Cpl.. . . . . P/N 220076
- Hose, Sample Gas (5 pcs. 600mm x Ø0.51mm) Ser. Cpl. . . . . P/N 310677
- Filter Kit 0.2µ (10 pcs.) Ser. Cpl.. . . . . P/N 310335
- Filter Kit 0.2µ (100 pcs.) Ser. Cpl. . . . . P/N 310339
- Needle kit, Ø0.8mm (10 pcs.) Ser. Cpl.. . . . . P/N 220078
- Needle kit, Ø0.8mm (100 pcs.) Ser. Cpl.. . . . . P/N 280204
- Septum Ø15mm (100 pcs.) Ser. Cpl.. . . . . P/N 310336
- Septum Ø15mm (1000 pcs.) Ser. Cpl.. . . . . P/N 310337
- Septum Ø15mm (10000 pcs.) Ser. Cpl. . . . . P/N 220157

Options

- Option, CheckMate PC Software, Ser. Cpl. . . . . P/N 290142
- Option, Sampling Kit, SmartPen, CheckMate 3, Ser. Cpl.. . . . . P/N 300433
- Option, Barcode Scanner w. cable, Ser. Cpl.. . . . . P/N 301189
- Option, PC Software Data Collection, Ser. Cpl.. . . . . P/N 340370
- Kit, Small sample volume, Ser. Cpl.. . . . . P/N 350338
- Can Piercer, Ser. Cpl.. . . . . P/N 940247

Toxic and Hazardous Substances or Elements

(For China RoHS compliance)

See table on the next page.

CheckMate 3

Toxic or Hazardous Substances or Elements
有毒有害物质或元素

Component Name（组分名称）	Lead 铅 (Pb)	Mercury 汞 (Hg)	Cadmium 镉 (Cd)	Hexavalent Chromium 六价铬离子 (Cr6+)	Polybrominated Biphenyls 多溴化联苯 (PBB)	Polybrominated Diphenyls Ethers 多溴化二苯醚 (PBDE)
Metal enclosure（**金属外壳**）	0	0	0	0	0	0
Sensor O2 Zirconia（**氧化锆探头**）	0	0	0	0	0	0
Sensor O2 EC（电化学氧探头）	0	0	0	0	0	0
Sensor CO2 Infrared（红外线二氧化碳探头）	0	0	0	0	0	0
Display panel (LCD)（**LCD显示板**）	0	0	0	0	0	0
Printer unit（**打印单元**）	0	0	0	0	0	0
Power supply (PSU)（**供电**）	0	0	0	0	0	0
Printed circuit board assembly (Main PCB)（**印刷集成电路板**）	0	0	0	0	0	0
Heater Unit（**加热单元**）	0	0	0	0	0	0
Pump（**抽气泵**）	0	0	0	0	0	0
Fan unit（风扇）	0	0	0	0	0	0
Mounting hardware (screws, studs)（**螺丝等配件**）	0	0	0	0	0	0
Internal cables（**机内电缆**）	0	0	0	0	0	0
Sample hose kit（**采样气管**）	0	0	0	0	0	0

O: Indicates that the toxic substance contained in all the homogenous materials for this component is below the limit requirements in SJ/T11363-2006
代表在所有以同质材料做组分的有毒物质含量低于 SJ/T11363-2006 标准所要求的含量。

X: Indicates that the toxic substance contained in at least one of the homogenous materials for this component exceeds the limit requirments in SJ/T11363-2006
代表以至少一种同质材料做组分的有毒物质含量超过 SJ/T11363-2006 标准所要求的含量。

P/N 300042-I
05/2019

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