D16 PortaSens III

Portable gas detector

with hydrogen peroxide (H_2O_2) smart vapour sensor

User Guide

ATi ANALYTICAL TECHNOLOGY

Solutions for a Smarter Future

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This training document has been specifically written around the use in the Medical & Pharma industry and has been designed to assist with protecting those who require investigation work when using hydrogen peroxide (H_2O_2) with:

- Re entrance of 'decontaminated' area when using vaporised hydrogen peroxide
- Efficacy of a successfully decontaminated area when using hydrogen peroxide
- Checking hydrogen peroxide levels in and around isolators and equipment
- Monitoring for residual/off gassing of enclosure containing PPE
- Pin pointing leaks around flanges/seals
- General H&S where staff and hydrogen peroxide gas could be present

PLEASE NOTE:
The information in this handout is specific to the monitoring of hydrogen peroxide (H_2O_2). The assumption is that the device is to be used in a clean environment.

What's in the case?

When you receive your D16 Portable Gas Detector (Fig: 1), open the carrying case and inspect the contents to be sure that no shipping damage has occurred. The following items should be included inside the case:

1. **D16 PortaSens III**
   Portable Gas Detector Unit
2. **Sampling Wand**
   This clips onto the inlet fitting on manifold lid
3. **Sensor Keeper**
   Used to store sensors/spare sensors in between use
4. **D-cell, NiMH Batteries x2**
   Insert into base of D16 (these are rechargeable)
5. **Charging Unit**
   Assists with future charge of battery
6. **USB Data Cable**
   Used to download data, no software required
7. **Flow T Adaptor**
   Not required as calibration completed at ATi
8. **Filter Discs**
   Not required as working in a clean environment
9. **RotaMeter**
   Not required as unit will alarm if issue with flow rate

Sensor

The sensor is shipped in a white pot. Keep this pot for returning when calibration is required.

- The sensor for low range H_2O_2 detection is 00-1042 and is clearly stated on the sensor
- Sensor will last 2 to 3 years (depending on use and storage)
- Sensor is required to be returned to ATi Head Office for calibration every 6 months from initial use

For calibration details see back of this handout

Calibration Certificate

Calibration certificate comes with the sensor.

- The Calibration certificate shows details of the sensor. Keep for auditing and paper trail
- ATI can provide an electric copy of this if needed

1. Insert 'fully charged' battery into sleeve of the D16 as shown (Fig 1).
2. Insert sensor into D16 by removing the manifold lid as shown (Fig 2) - make sure the membrane faces out and the chip clips in correctly when pin is aligned. Rotate to establish connection.
3. Insert wand into inlet fitting on the manifold lid as shown (Fig 2).

Polarization – this is the most important part of initial setup

The H_2O_2 sensor requires charging for 6 hours when brand new. This can be done by:

- Pushing the sensor into the sensor keeper provided.
- Pushing the sensor into the D16 when there is sufficient battery to last up to 6 hours.

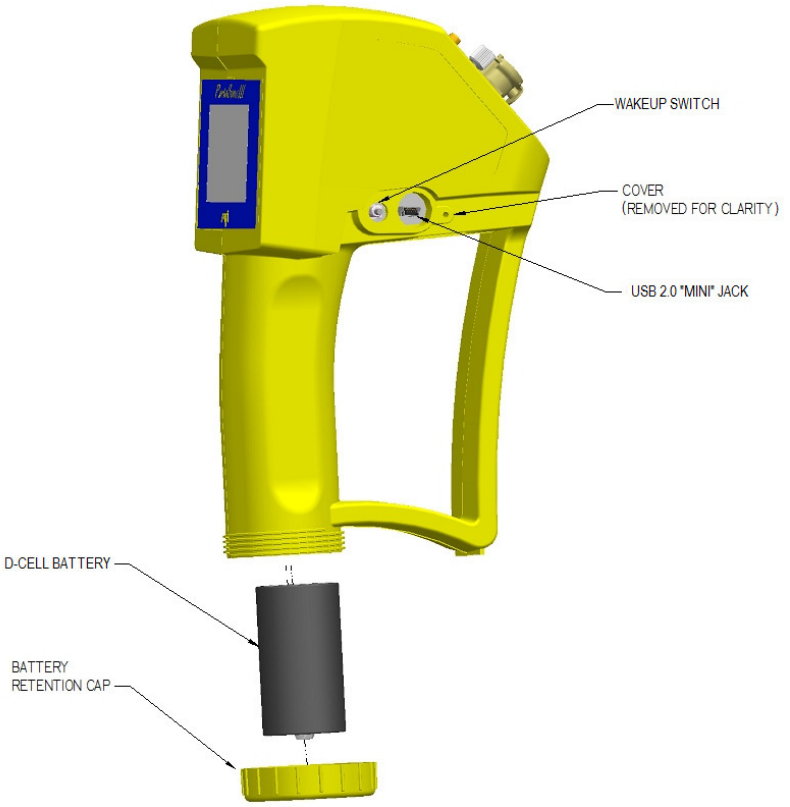


Figure 1: PortaSens III, left side view.

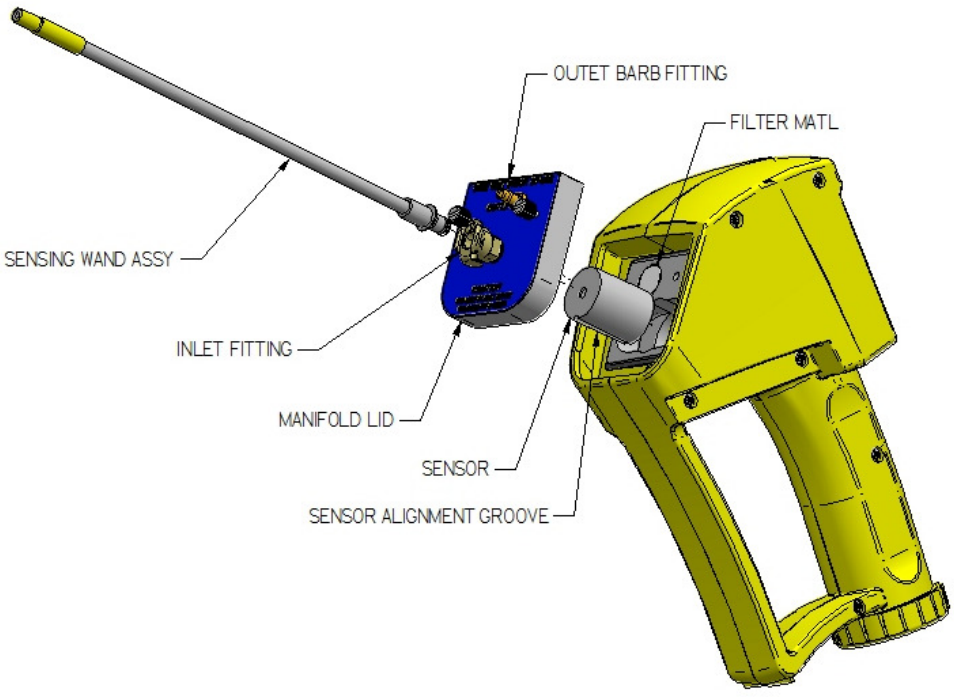


Figure 2: PortaSens III, right side view.

How the sensor fits into the sensor keeper

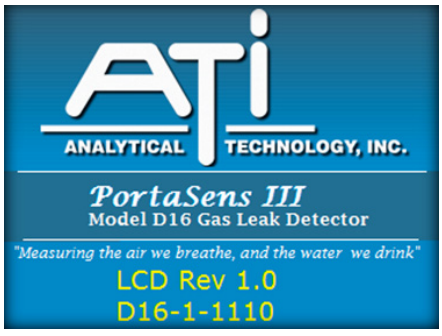
Make sure the battery inside is replaced every 6 months to guarantee a continuous charge to the sensors installed! Write the date at the side of the keeper

The battery is charged and installed, and the sensor is polarized and is fully responsive as per the specification. You are now ready to use the unit to protect you and your colleagues and to provide evidence of efficacy of a clean

Understanding the D16 PortaSens III screens

Start up

Press the wake-up switch as shown in the 'getting started' section of this document, the display on the D16 will look like the below image.



Shortly afterwards, the display will change, this display shows the sensor information.

The D16 can measure over 70 different gases with the various optional sensors. Therefore, this information allows you to be sure you have the correct sensor, the correct range chosen and model.

Once the D16 has run through this display, the last shown screen allows the user to continuously monitor with actual readings, temperature and alarms (if triggered)

Alarm settings

The D16 is used to protect staff of high toxic levels of H_2O_2. It is therefore important to set alarms at levels that are regarded as 'safe'. For hydrogen peroxide (H_2O_2) the level is less than or equal to 1 PPM (for 8 hours Work Exposure Limit), less than 2 PPM (for 15 minutes Work Exposure Limit). It is best practice to therefore set a level as per this advice.

Press **'MENU'** on the touch screen display

Press **'Alarms'** on the touch screen display

Press **'Warning'** to set the first alarm, press the number in the 'level' column to 1 PPM & ENTER

Press **'Danger'** to set the second alarm, press the number in the 'level' column to 2 PPM & ENTER

The above levels are recommendations

If the levels hit or exceed either alarm, the D16 will beep to alert the user.

Please see HSE Guidance EH40/2005 for further information on Work Exposure Limits (WEL) at:
www.hse.gov.uk/pubns/books/eh40.htm#

Range changes

The low range H_2O_2 sensor can be ranged 0-10 PPM (by punching in 10 PPM, this is the min range). If required, the range can be programmed higher, anywhere from 11 to 99 PPM in the same way.

We recommend that you leave blanking and averaging (in the sensor menu) as these are factory settings.

Cal History offers the zero and span details if required by an auditor.

System menu

If you use the D16 to 'log' information, the correct date and time is required for efficacy of the testing. You can check that these stamps are correct by going into the 'System' menu pressing 'Date' and adjusting by pressing the required weekday, month, date and year and changing if needed.

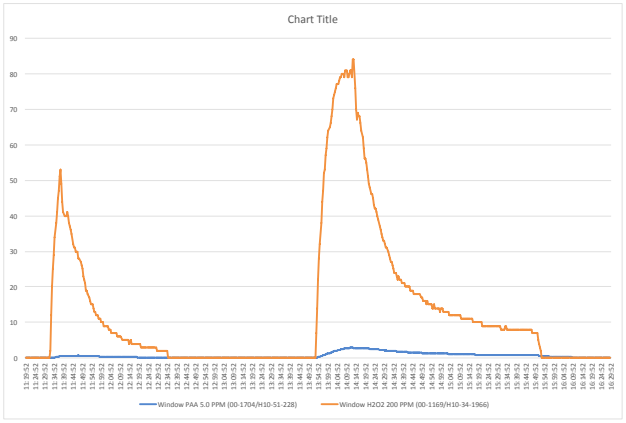
'Time' can also be adjusted in a similar way and then by pressing 'Enter'.

Sampling

For recording 'average' measurements over 5 minutes, the 'sampling' feature can be used to demonstrate 'background' toxicity. For this option, choose 'Timed Sampling' from the main menu and program the 'Sample time' and 'Measure time' as required.

Logging

The D16 has many uses. For evidence collection and reporting, there is a **'logging'** feature that can be selected with 1-minute logging up to 1-hour logging intervals.



Simply select **'logging'** off the main display and select the interval required to program. You can choose to start straight away OR you can set the logging up and press **'Log'** from the display once you are ready. There is 4GB of data storage available. To download the data, simply use the **'data cable'** provided to connect to a PC or Laptop for data transfer into Excel. When transferring data to the PC/laptop, the below image will be displayed on the D16.

Calibration

Electro chemical sensors require **'calibration'** and **'zeroing'** to keep within their specification which includes **'accuracy'**, **'repeatability'**, **'sensitivity'** and general **'state of the sensor'**.

The sensor used in the D16 is to monitor when levels are acceptable to re enter afer decontamination with vaporised hydrogen peroxide. The operator cannot re-enter until the levels have decreased to 1 PPM/2 PPM (depending on WEL).

If the levels are higher than this, the user cannot re-enter until it drops below this number.
In reality, gas sensors weren't made to be used as often and with such levels of vapour so the level of vapour the sensors see (saturation) for the amount of time it sees it (duration) means that more calibrations are requried to allow for a quick and accurate response so the area that has been decontaminated can be used as soon as possible. Therefore, ATi recommends that the sensor ought to be calibrated every 6 months.

How?

Simply contact ATi Head Office by email at **pharmasafe@atiuk.com** to receive a returns note for the sensor to be returned. Once this has been completed, pop out the sensor, place it in the white tub (that the sensor comes in) and ship it to our Head Office address;

ATi UK
Technology House
Unit 1, Gatehead Business Park,
Delph New Road, Delph,
OL3 5DE

Once received, ATi will calibrate the sensor with H_2O_2 and ship it back with a new calibration certificate which will be good for 6 months after use.

What do we do without a sensor in the mean-time?

ATi are one of a handful of sensor manufacturers in the world, supplying dozens of large accounts and hundreds of end users with their sensors. There is a stock of sensors stored at ATi Head Office that are regularly turned around so if spare sensors are needed, we can ship one out to be used prior to shipping ATi the sensor for calibration. The calibrated sensor will be back with you within weeks where it can be stored by you and rotated every 6 months

Best practice when using the D16 PortaSens III

- Calibrate the sensor every 6 months (from date of first use)
- Keep sensors in sensor keeper to maintain charge/polarisation in between use.
- Replace the battery in the sensor keeper every 6 months and stamp the date
- Insert the wand when walking into a post decontaminated area (for safer use incase of high levels)
- Store spare sensors in a cool place (preferable a fridge)
- There is no maintenance required other than sensor calibration (unless the unit is damaged)
- H_2O_2 sensors are 'cross sensitive' to IPA vapour. Keep away to reduce poisoning the sensor
- Keep sensor away from damp areas. If the membrane gets wet or damp, it will not work well

Help us to help you, with our Service Reminder System

ATi offer a unique system to remind you (the user) to keep on top of calibrations. This added service will protect you against sensor failure, allow for better accuracy and to help you to stay on top of calibrations without having to create a new system or employ added resource.

Simply send an email with your contact details to:

pharmasafe@atiuk.com

ATi will then add you to our service reminder system, which will automatically send you a reminder when the sensor requires re-calibration. We appreciate that you may not use the sensor immediately so there is no time constraint with this initial contact.

We look forward to working with you to maximise your safety needs and to provide an effective tool for proving efficacy of decontamination with a certified audit trail.

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