I-Test
User & Operator Manual

I-Test
Quick and simple in-field gas test and calibration solution

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M070002
Issue 5 Aug 2015

CROWCON
Detecting Gas Saving Lives

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NAVIGATION INSTRUCTIONS

The symbols in the left-hand margin of each page of the manual will enable you to carry out the following functions:

Contents Click on this button to display the Contents page.

Click on this button to display the previous page.

Click on this button to display the next page.

Click on this button to display the previous view (use it to return from a reference jump).

Click on this button to display next view (use it to return to a reference jump).

Click this button to print some or all of the document (specific pages can be chosen).

Exit Click this button to exit the user guide.

Press the Esc key to display normal Acrobat© Controls.

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Safety Information

- Read and understand all instructions in the operation section of this manual prior to use.
- Before use ensure that the equipment is in good condition, the enclosure is intact has not been damaged in any way.
- If there is any damage to the equipment or it is not working properly, do not use, contact your local Crowcon office or agent for repair/replacement.
- Observe all warnings and instructions marked on the unit and within this manual.
- Observe site health and safety procedures for gases being monitored and evacuation procedures.
- Understand the gas monitor's screen display and alarm warnings prior to use (see the relevant user & operator manual).
- Ensure maintenance, service and calibration is carried out in accordance with the procedures in the manual and only by trained personnel.
- Any gas monitor that is hazardous area certified must be operated and maintained in strict accordance with its instructions, warnings and label information included in the relevant user & maintenance manual.

Unpacking

Remove the I-Test from the packaging. The standard accessories are under the supporting trays. The following items will be included as standard:

Box contents

- I-Test
- Power Supply
- Pipe Fittings x 2
- Inlet Tubing 1m
- Exhaust Tube 3m
- USB Flash Memory Stick
- CD containing:
  User & Operator Manual
  I-Test Manager PC Application
- Packing check List
- Declaration of Conformity

Optional items in the box

- Demand flow regulators

I-Test Overview

I-Test is suitable for small and large fleet users alike and offers simple gas monitor bump testing and calibration, including full data management.

I-Test versions are available for both Gas-Pro and T4.

I-Test can quickly and simply undertake testing and store data either locally to the I-Test or allow download to a PC or USB memory stick, including download and storage of gas monitor log files.

I-Test provides data management allowing easy reporting of bump test and calibration results across the fleet.

I-Test can also offer simple updating of gas monitor details such as alarm levels with updates being managed within the fleet during regular bump tests.

Using minimal gas and managing sequencing the I-Test ensures sensors are gassed correctly every time.

Suitability

I-Test is suitable for testing and calibrating Gas-Pro and T4 units fitted with one or more of the following sensors: Oxygen, Carbon Monoxide, Hydrogen Sulphide, Carbon Dioxide IR or Methane Pellistor.

I-Test will be functional with Gas-Pro units configured with firmware versions 1V09 & 2V06 onwards. The firmware version of Gas-Pro can be seen as part of the start up screens when the monitor is powered up.

I-Test is functional with firmware versions of T4 from 1V01 upwards.

I-Test Functional Overview

I-Test offers the following main functions and features for the testing, calibration and management of gas monitors.

Speedy bump

A speedy bump will test the monitor sensors to the first alarm level.

Gas is presented across/over the sensors for a designated time (dependent on sensor gas type) during which alarm level one should be activated. This will be deemed a pass if the monitor goes into alarm or a failure if the monitor does not go into alarm.

Smart bump

A smart bump will test that the gas monitor responds correctly to a specified level of test gas.

Gas is passed over/across the sensors and a predicted response is expected within a time window dependant on the sensor response time.

The test is passed if the gas level indicated by the monitor is within pre-specified tolerance limits within this time window.

Calibration

I-Test can be configured to undertake the routine service calibration of a gas monitor. In this instance a calibration would be completed without a bump test being required.

I-Test is suitable for routine service calibration of monitors.

If a new sensor has been fitted to the monitor then Portables-Pro should be used to calibrate the monitor not I-Test, otherwise incorrect calibration may occur.

Calibration after bump fail

If any sensor fails a speedy bump or smart bump, I-Test can be configured to perform a ‘calibration after bump fail, immediately after the bump test failure.

Gas Monitor Field Configuration

During normal operation, whilst performing gas testing, I-Test can be configured to change aspects of the inserted gas monitor configuration, such as sensor alarm levels as well as other aspects of configuration.

Gas Monitor Log Download

During normal operation I-Test can be configured to download either event logs and/or data logs from the monitor under test. These log files are stored locally and can be extracted either via PC or USB flash drive.

Data Management & Reporting

I-Test in conjunction with its PC Application, I-Test Manager, can be utilised for full data management of the bump test and calibration data.

I-Test Manager allows the user to specify exception reports to quickly identify instruments, for example, that have not been bump tested or failed bump test. I-Test Manager will also allow a user to upload and view monitor log files from the I-Test. Bump test and calibration reports can also be created, printed and stored.

Gas Inlets/Exhaust

I-Test is available with 2 inlet ports and 1 exhaust port. One inlet is reserved for purge gas (fresh air), and the other inlet is the test gas inlet.

USB Input/Outputs

I-Test offers the ability to upload its configuration settings either via USB connection to a PC or via a USB Flash Drive inserted into a connector on the side of the I-Test.

DC Input/Battery Backup

I-test is capable of operating from a DC power supply but also able to operate for a short period of time on an internal backup batter pack should the DC supply fail.

Keypad interface

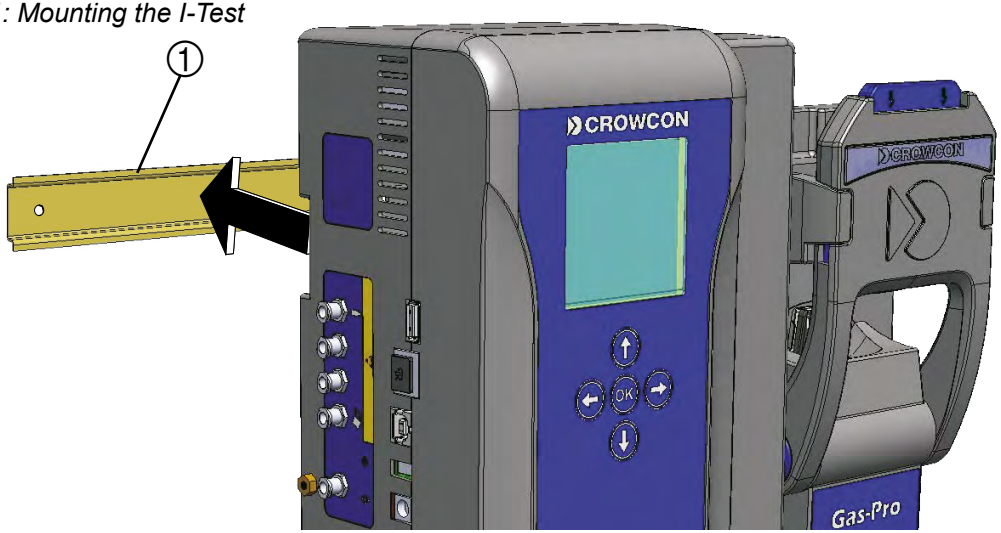
I-Test offers keypad interfaces that will allow a user to change many of the configuration settings without the need to connect a PC or insert a USB Flash Drive.

1. Physical Set-up/Installation of I-Test

1.1 Mounting

The I-Test can be used ‘standalone’ or (as recommended) mounted on a standard DIN rail type EN 50022 ① (see below).

Figure 1: Mounting the I-Test



The recommended length of DIN rail if an I-Test is to be mounted on its own, is 140mm.

If the I-Test is to be used in conjunction with a cylinder holder, the DIN rail should be 250mm minimum.

1.2 Inlet/exhaust connections

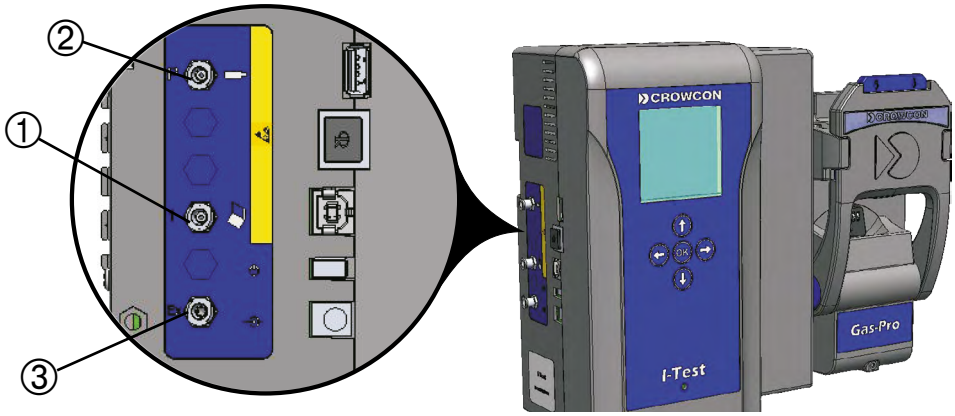
I-Test has three gas ports: the test gas is connected to inlet ①, the purge inlet ② should be connected to fresh air, and the gas exhaust outlet ③ should be connected to a suitable length of pipe that vents to outside air.

Gas cylinders must be used with demand flow regulators.

To ensure accurate bump testing and calibration the purge inlet must be connected to fresh air.

Figure 2: Inlet/exhaust connections

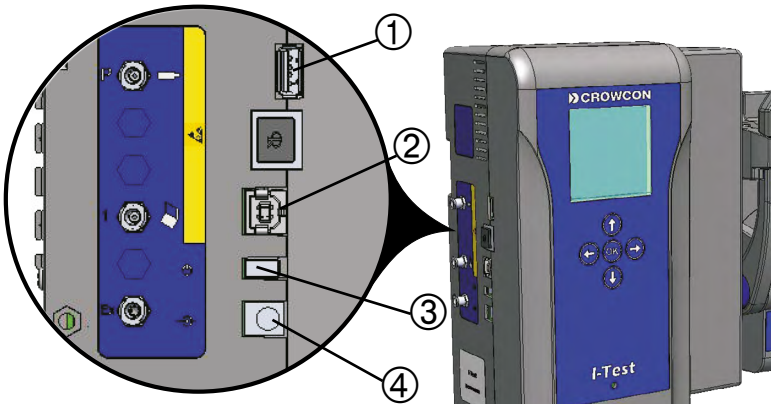
① Test gas inlet
② Purge inlet
③ Exhaust outlet



1.3 Electrical connections & controls

Figure 3: Electrical connections & controls

① Memory stick connector
② USB interface connector
③ On/off pushbutton
④ Power input socket



1.4 Prior to use

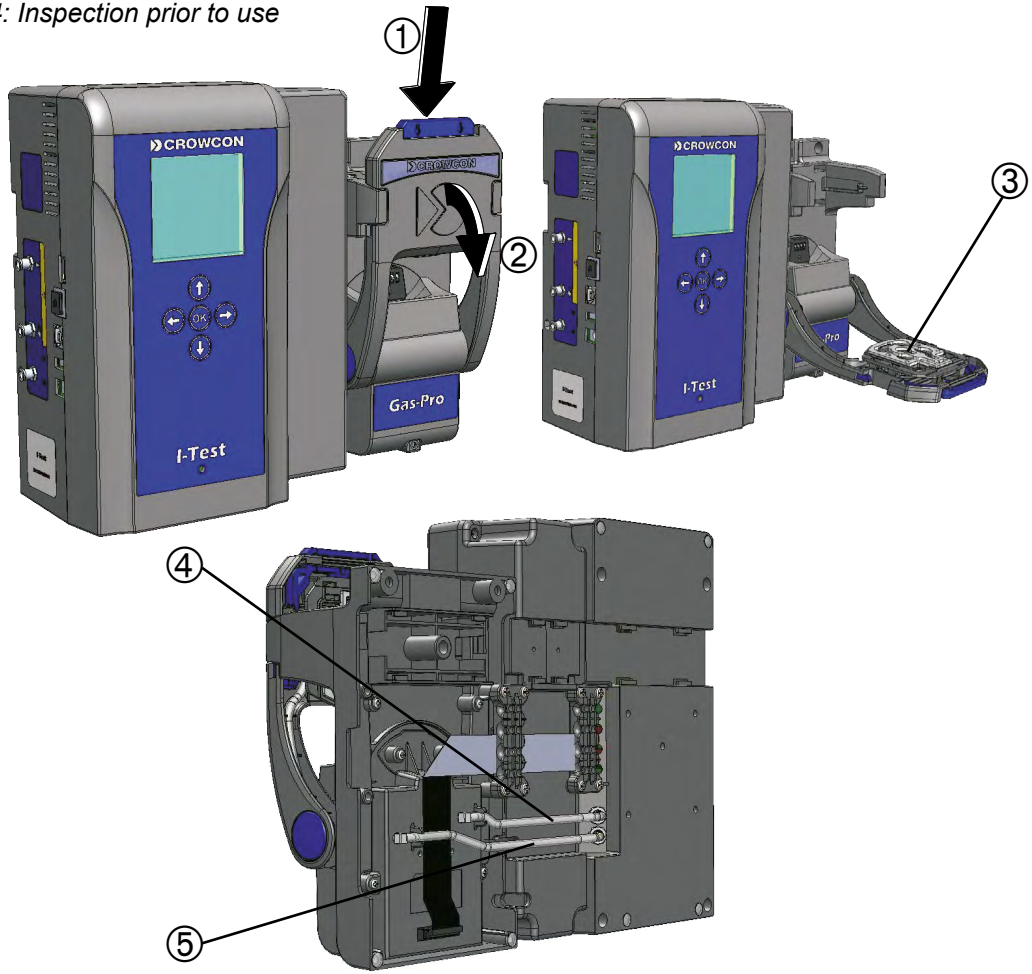
1.4.1 Inspection

Before use, the I-Test should always be checked for any signs of physical damage. Press the release button ①, lower the module's front flap ② and check the flow gasket ③. Also check the gas inlet pipe ④ and gas exhaust pipe ⑤.

It is recommended that the flow gasket is replaced at regular intervals dependent upon regularity of use.

A damaged or incorrectly fitting seal may cause I-Test to incorrectly test/calibrate a gas monitor.

Figure 4: Inspection prior to use



1.5 Charging

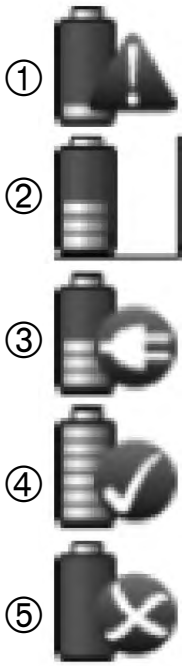
Before using the I-test it should be charged for 7 hours as follows:

- ▶ Connect the power adapter to a suitable mains outlet and connect its DC connector to the power input socket on the I-Test (see *Figure 3*).
- ▶ Turn the I-Test on by pressing the on/off pushbutton (see *Figure 3*). The charging indicator will be displayed (see below).

When connected to the power adaptor I-Test will be charged even if powered off.

Figure 5: Charging indications

① Battery low
② Battery discharging
③ Battery charging
④ Battery charged
⑤ Battery fault



I-Test must be charged between 0°C and 40°C for correct charging operation.

2. Operating I-Test

This section details how to operate I-Test to perform the desired testing after I-Test has been fully configured via I-Test Manager (see *page 25*) or via I-Test Front panel Keypad (see *page 90*).

Ensure I-Test is installed correctly and that the test gas cylinder is attached as detailed on *page 12*.

Before operating the I-Test it must be configured via I-Test Manager PC Application and must then be disconnected from the PC USB connection. If I-Test is not disconnected from the PC it will not operate.

Before a test can be undertaken ensure the I-Test display screen is showing the home screen. If the home screen is not shown the configured test will not be initiated.

Ensure the test gas cylinder connected to the inlet, has the same gas mix and concentration as configured in the I-Test (see *page 40* or *page 94*).

When manufactured I-Test is configured with a default gas cylinder and a default expiry date. This expiry date must be changed to that of the actual cylinder to be attached or I-Test will not function correctly as it will report that the cylinder has expired.

To ensure accurate bump testing and calibration the purge inlet MUST be connected to fresh air.

When I-Test is initially powered it will perform a purge cycle for approximately 30 seconds, before I-Test can be used.

2.1 Gas Monitor Testing Overview

Once I-Test has been configured to carry out a test or a sequence of tests, proceed as follows:

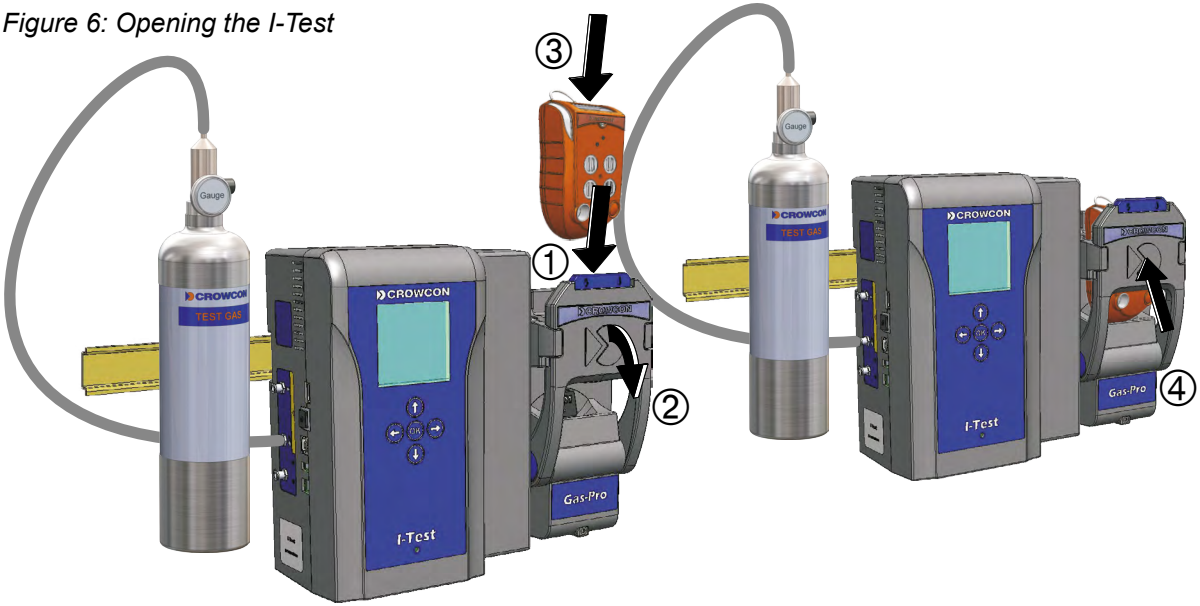
- Ensure the I-Test is either fully charged and/or connected to a suitable power source (see *page 14*).
- Ensure the I-Test is NOT connected to the PC via the USB socket.
- Connect the required gas cylinder to the appropriate inlets (see *page 12*).
- Ensure the purge inlet is connected to fresh air.
- Ensure a suitable length of pipe that vents to outside air is connected to the exhaust outlet.
- Turn the gas monitor on and wait for it to finish its start up routine.
- Turn on I-Test and wait for the start up purge sequence to complete
- Insert the gas monitor into I-Test (see *page 16*).
- The configured test or test sequence will automatically be performed and I-Test will indicate the success or failure of the test (see *page 18*).

2.2 Loading a monitor into an I-Test

Before inserting the gas monitor ensure it is not in fault mode.

Turn the gas monitor on, wait for it to finish the start up process and then press the release button ①, lower the module's front flap ②, place the gas monitor into it's holder ③ and close the front flap ④ (see below):

Figure 6: Opening the I-Test



Once I-Test has been configured to carry out a test or sequence of test (e.g. bump test or calibration) this will start as soon as the door is closed.

Do not remove the gas monitor from I-Test until the test sequence has completely finished.

The gas monitor audible alarm will be muted for the duration of the test, at the end of the test the audible alarm will be reinstated.

Once a test has completed allow the monitor sensors to recover to ambient levels before a retest. Failure to do so may cause the monitor be tested/calibrated incorrectly.

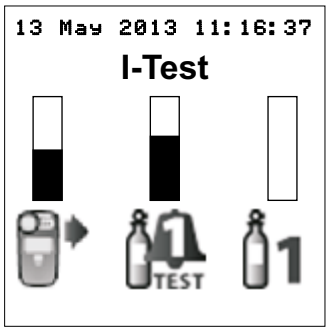
The first gas test after a prolonged period of inactivity may not be successful as I-Test will need to be primed with the test gas, the test should be repeated.

Gas cylinders must be used with demand flow regulators.

2.3 Test Progress Status Indication

I-Test displays a set of progress indications whilst a test is being performed, an example of which can be seen in *Figure 7*.

Figure 7: Progress indications



The first status bar indicated by the icon , indicates the progress through the full test sequence

The second status bar status bar indicates the current test being performed, in this example a speedy bump test. .

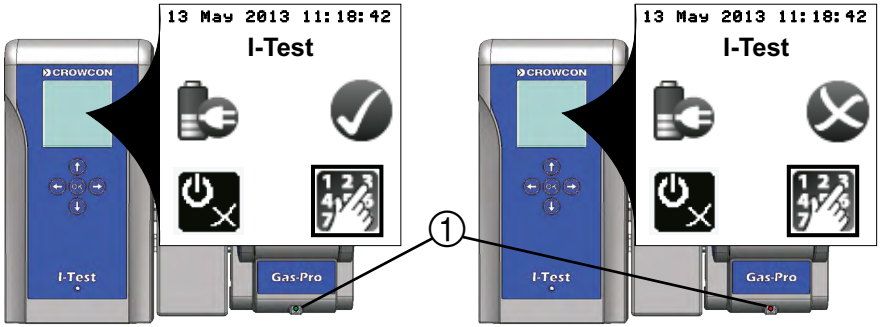
The third status bar shows further detail of the current test, in this example that inlet 1 is being operated. .

See *page 120* for details of all icons.

2.4 Test Result Status Indication

During the process of the test the LED will flash amber. If the test is passed I-Test will display the following icon and the LED ① on the I-Test gas monitor pod will be illuminated green. If the test is failed I-Test will display the following icon and the LED on the I-Test gas monitor pod will be illuminated red (see below).

Figure 8: Result indications



I-Test will also display the icon if I-Test was unable to perform the configured test.

This may occur for example if a monitor is inserted with an unsupported sensor/gas fitment or if the attached cylinder does not contain a suitable test gas for a specific sensor type in the monitor.

If the monitor is not correctly inserted in the gas monitor pod it may not be recognised by I-Test. This will be indicated by the I-Test gas monitor pod LED red and the icon flashing for a period of approximately 30 seconds. The monitor must be removed from the I-Test and reinserted.

Note:
If a monitor is inserted into I-Test with a specific sensor due bump test (not all sensors may be due a bump test on the same date) and the attached cylinder does not contain the required gas, I-Test will display the icon and not perform a bump test on any sensors.

If a monitor is inserted into I-Test with a specific sensor(s) ***not*** due a bump test and the attached cylinder does not contain that required gas(s) but the cylinder does contain the gas for remaining sensors due a bump test. I-Test will continue to bump test the sensors due and will not bump test the sensor(s) not due.

2.5 Main menu status icons

At certain times (e.g. after bump tests) a status icon ① is displayed on the Main menu as shown in *Figure 9* below.

Figure 9: Status Icon

These status icons have the following meanings:

- Action successful
- Action failed
- Gas monitor needs calibration
- Gas monitor unidentified/Sensor unidentified

2.6 Replacing an empty gas cylinder

If a cylinder connected to the inlet is completely exhausted I-Test will recognised this and the icon will be displayed on the screen.

It will be necessary to physically replace the cylinder and enter the new gas concentrations, Cylinder Lot Number, and Cylinder Expiry Date via either I-Test front panel (see *page 97* and *page 98*) or via I-Test Manager (see *page 40* and *page 40*).

If the cylinder was exhausted during a calibration the monitor may indicate a service fault which must be cleared. Remove the monitor from I-Test and cancel all fault indications. Once the cylinder has been replaced the monitor can then be reinserted and test can be repeated.

If I-Test detects an exhausted cylinder and the cylinder is physically changed, a new Cylinder Lot number and Cylinder Expiry Date must be entered. If this process is not followed, I-Test will not allow gas testing to continue and will indicate this on the screen.

2.7 I-Test Safe Shutdown

If it is required to remove power from I-Test either by removing the power lead or switching off via the on/off push button then the safe shutdown process must be followed.

Please refer to *Section 4.1.2* on *page 91* for full details.

3. I-Test Manager Software

3.1 Introduction

Before I-Test can be used for the first time it must be configured using the I-Test Manager PC software supplied. This allows I-Test to be fully configured to perform bump test or calibration as per user requirements.

I-Test Manager should now be installed.

3.2 I-Test Manager system requirements

The following are the minimum system requirements that will enable the I-Test Manager software to run efficiently:

- **Processor** Pentium 4 or equivalent
- **Processor speed** 2.2 GHz
- **Bus Speed** 400 mHz
- **Memory size** 1Gb
- **Hard Drive** 40 Gb
- **CD Rom** 48x (CD)
- **Monitor** 15 inch
- **Resolution** 800 x 600 minimum
- **Operating system** Windows XP or later
- **USB port** 2
- **Mouse & Keyboard** Yes

3.3 I-Test Manager installation & setup

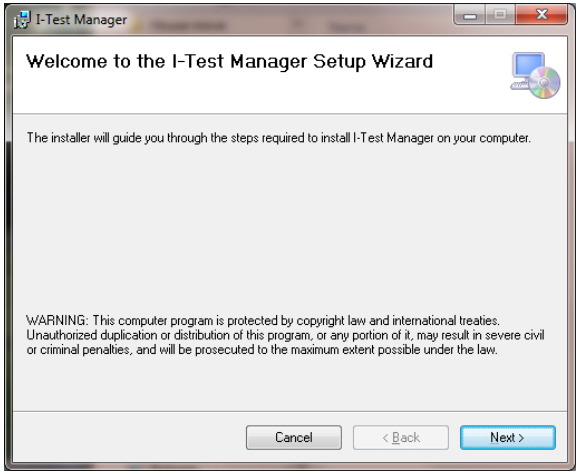
Ensure all previous versions of the software have been uninstalled before proceeding with the software installation.

- Insert the CD supplied into your PC's CD drive.
- If your PC is set not to allow AutoPlay of CDs, select **Run Setup.exe** from the dialogue box shown below.

Figure 10: AutoPlay dialogue box

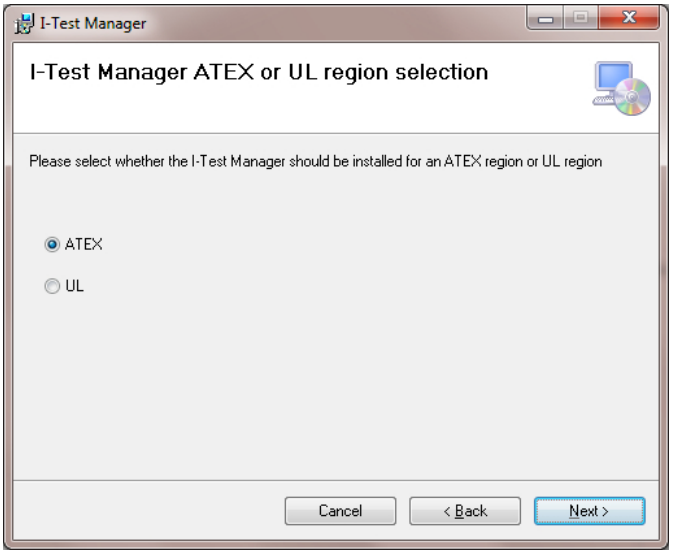
- The I-Test Manager installation screen will be displayed as shown below:

Figure 11: I-Test Manager installation screen



▶ Click on **Next** and follow the on-screen instructions and the following installation screen will be shown.

Figure 12: ATEX or UL Region screen



▶ I-Test Manager needs to be configured for the type of I-Test purchased, either ATEX region or UL region compatible. This is due to the calculation I-Test will undertake to convert a volume of flammable gas (%VOL) to a lower explosive limit value LEL, each region has a different conversion factor.

▶ Select the I-Test Manager region selection for either **ATEX** or **UL** as appropriate then click **Next** and follow the on-screen instructions (including the validation of any operating system notifications) until the software is fully installed

Once I-Test Manager is configured to either ATEX or UL region, a matching I-Test must only be used to calibrate or bump test that specific type of gas monitor. For example if I-Test and I-Test Manager are configured for ATEX then UL calibrated gas monitors must not be tested as they will be incorrectly tested or calibrated.

3.4 I-Test Manager Functional Overview

Refer to *page 8* and *page 9* for descriptions of the I-Test's main features.

I-Test Manager can be used to configure I-Test to undertake any of these functional aspects.

This section provides an overview of the main features and functions of I-Test Manager, more details can be found in the specific sections.

3.4.1 Manage Cylinders

Manage cylinders allows the user to setup and define cylinders of gas of predefined nominal values. Each cylinder can be assigned unique name and stored to a database such that it can be assigned to the inlet of an I-Test at a later date.

3.4.2 Inlet Configuration

Once a cylinder has been defined, Inlet Configuration will allow the cylinder to be assigned to a gas inlet on I-Test. This assumes a specific cylinder of gas will then be physically connected to that inlet and therefore allows the user to enter the actual concentration of gas, the lot number and the expiry date of the cylinder.

3.4.3 Actions

This section allows the user to configure the operation or sequence of operations that will be undertaken automatically when a gas monitor is inserted into the I-Test and the door closed. This sequence may include (amongst others) speedy bump, smart bump, calibration and download of log files.

3.4.4 Field Configuration

During normal operation I-Test can be configured to change aspects of the gas monitor configuration, this can occur as a stand alone activity or as part of a bump test or calibration. I-Test can change gas monitor sensor alarm levels, logging interval and confidence strategy as well as other aspects of configuration.

3.4.5 Reporting/Data Management

I-Test Manager offers the user a number of ways to manage the data collected by I-Test in normal use. I-Test Manger can be used to view gas monitor log files uploaded during gas testing.

Bump test and calibration reports can then be generated as appropriate to the tests I-Test was configured to undertake.

In addition, exception reporting can be utilised to allow the user to identify gas monitors that, for example, have passed or failed a bump test or calibration in the last 'x' days, or are due calibration.

3.4.6 I-Test Display Settings

There are a number of user display settings that can be configured such as date style, backlight control, and sounder control.

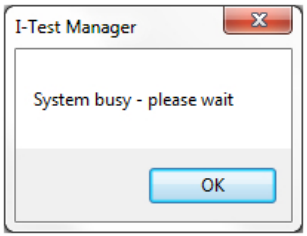
3.4.7 I-Test Configuration Upload/Download Options

I-Test configurations can be created within I-Test Manager and either saved directly to a connected I-Test, saved to a local database for upload at a later time or saved to a USB Flash Stick that can then be inserted to an I-Test to upload the configuration.

3.5 Starting the software

When I-Test is initially powered it will perform a purge cycle for approximately 30 seconds, during this time I-Test Manager cannot be used to connect to I-Test and the message below will be displayed.

Figure 13: System busy message



Double click on the I-Test Manager icon on your PC's desktop. The Home screen will be displayed (see below).

Figure 14: Home screen

3.6 Language selection

If necessary, select your preferred language from the **Select the language** drop down list in the centre of the screen.

I-Test Manager is now fully installed and ready to use.

3.7 Initial Configuration of I-Test

This section details how to configure and setup I-Test for initial use. This section steps through each stage required to fully configure I-Test prior to saving this configuration.

3.7.1 Manage cylinders

Prior to configuration of I-Test and assigning a cylinder to the inlet of I-Test, the cylinder profile must first be defined.

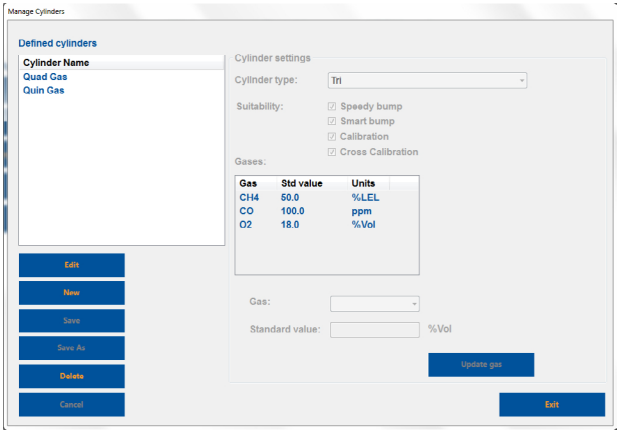
I-Test can configure a number of cylinder profiles for potential connection to a gas inlet. These profiles are detailed in Appendix A.

I-Test Manager will prevent any combination of cylinder being created other than those listed in Appendix A.

To create or alter a cylinder profile, proceed as follows:

▶ Select **Manage cylinders** from the Home page. The **Manage cylinders** dialogue box will be displayed (see below).

Figure 15: Manage cylinders dialogue box



3.7.1.1 Edit or create a new profile

To create a new profile or edit an existing one, proceed as follows:

- Click **New** to create a new profile.
- To edit an existing profile, click on the cylinder profile in the **Defined Cylinders** list so that it is highlighted and then click **Edit**.

Alter the following fields as required:

Cylinder type: To create a new cylinder profile select the required cylinder type from the drop down list.Cylinder options are tri, quad or quin.

Suitability: Select the use(s) for which this cylinder is suitable by clicking on the relevant tick boxes.
Suitability options are speedy bump, smart bump , calibration and cross calibration.
When calibration is selected speedy bump and smart bump are automatically selected.
When cross calibration is selected calibration, speedy bump and smart bump are automatically selected.
Note: Smart bump functionality is only applicable to Gas-Pro, T4 will only undertake a speedy bump test.

Crowcon recommend calibration standard gases are used for calibration functions to ensure accurate calibration of the gas monitor under test.

Two calibration options enable the flammable sensor in the gas monitor to be tested with either target gas or, if required, the C_5H_{12}, C_3H_8 and C_4H_{10} sensors can be tested with CH_4 when the cross calibration option is selected.

Unless the cross calibration option is selected gas monitors must only be bump tested or calibrated with target gas.

Calibration: This option should be selected if flammable sensors in all gas monitors to be tested by I-Test are to be calibrated with target gas only.
For example if flammable sensors in all the monitors are CH_4 and the cylinder to be used for testing contains CH_4, then this option should be selected.

Cross Calibration: This option should be selected when all the gas monitors to be bump tested or calibrated by an I-Test are not all configured with the same flammable gas sensor or if the target gas is not available for monitors containing C_5H_{12}, C_3H_8, C_4H_{10} sensors.
For example if the fleet contains a mixture of monitors with CH_4 and C_3H_8 sensors both requiring test by I-Test, then the cross calibration option should be selected when configuring the cylinder.
This will allow both the CH_4 and C_3H_8 gas monitors to undergo the desired bump or calibration test in the same I-Test unit.

If the cross calibration option is selected, cylinders must be configured with CH4 as the flammable gas. The concentration of CH4 must be 1.2% volume for ATEX/IECEx monitors and 1.5% volume for UL monitors.

For a list of cylinders available from Crowcon please refer to *Section 8*.
The gas cylinder for cross calibration must have a tolerance no greater than 5%.
If the Cross Calibration option is selected this will also allow gas monitors to be bump tested with non target gas in the same manner as described above for calibration.
Note: T4 must only be calibrated with a cylinder containing CH4, the cross calibration option is not applicable for T4 and will not operate in a T4 configured I-Test.

Gases: Click on a gas in the Gases list and then make a selection from the Gas drop down list, and enter the standard gas value in the Standard Value field.
Dependant upon cylinder type selected the gas options are CH_4, C_5H_{12}, C_3H_8, C_4H_{10}, CO, H_2S, CO_2 & O_2 (see *Appendix A: Allowable Cylinder Profiles*).
Dependant upon the suitability option chosen, I-Test Manager will restrict the gas value entered to ensure the gas value is appropriate for the Suitability selected.
When defining the standard value of the flammable gas selected, the gas value must be entered in units of %volume. The saved value will be converted to %LEL for internal use in I-Test.
Note: T4 must only be bump tested and calibrated with a cylinder containing CH_4. A T4 configured I-Test will not perform the configured test if any other cylinder is connected to I-Test.

- When the alterations have been made, click Update Gas. This will update the entry in the Gases list.
- Repeat this process for each gas to be defined in the cylinder profile.

Save As: Enables a new cylinder profile to be created.
Once saved the new cylinder profile will be stored to the database and will be visible in the Defined Cylinders list.
The saved cylinder profile name will also be the name shown on the screen of the I-Test when the configuration is transferred and the cylinder assigned to the gas inlet.

Save: Saves the alterations against the original cylinder profile (Edit profile only).

Cancel: Aborts any changes.

At this stage of I-Test configuration the cylinder profile will contain the standard gas concentrations; the actual level of gas in the cylinder is entered during 'Inlet Configuration' see *page 40*.

Once the cylinders have been defined in the Manage Cylinders section the I-Test can now be fully configured as detailed in the create new configuration section.

Note: When calibrating O_2 sensors I-test uses the purge inlet and calibrates on fresh air.

The O_2 sensor will then be bump tested with the cylinder O_2 gas to ensure correct operation (note this bump test will only be undertaken on Gas-Pro monitors configured with firmware versions 1V16 & 2V06 onwards).

3.7.2 Create a new configuration

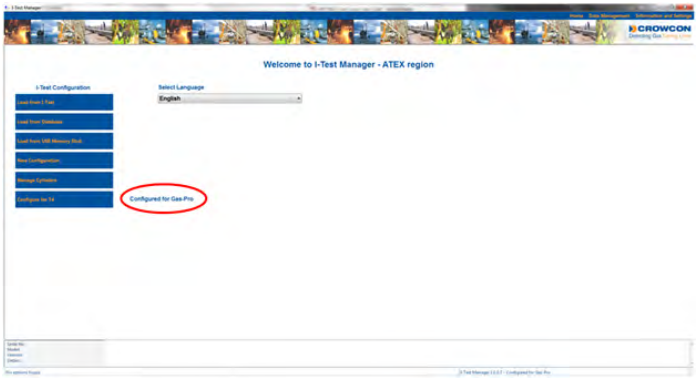
This option enables a configuration to be created from scratch. This configuration can then be saved directly from I-Test Manager to an I-Test connected by USB, given a unique name and saved to the database, or (with limited functionality) saved to a memory stick connected to a USB port.

It will be necessary to select if you are to create a T4 I-Test configuration or a Gas-Pro I-Test configuration before selecting the configuration options.

The home screen, as shown below, indicates which configuration is currently selected.

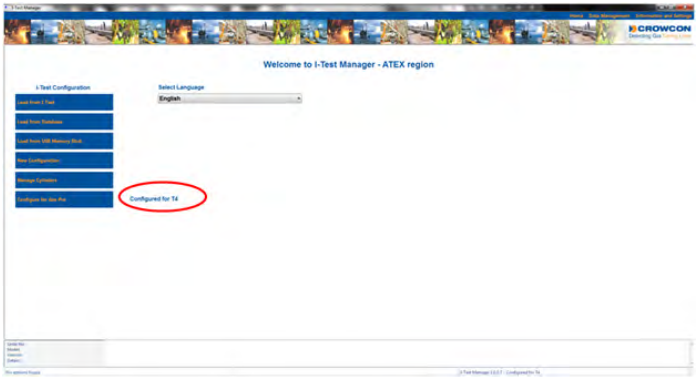
In the example below a Gas-Pro I-Test configuration would now be created.

Figure 16: Gas-Pro configuration



If a T4 I-Test configuration is required then select the ‘Configure of T4’ option and this will allow a T4 I-Test configuration to be created.

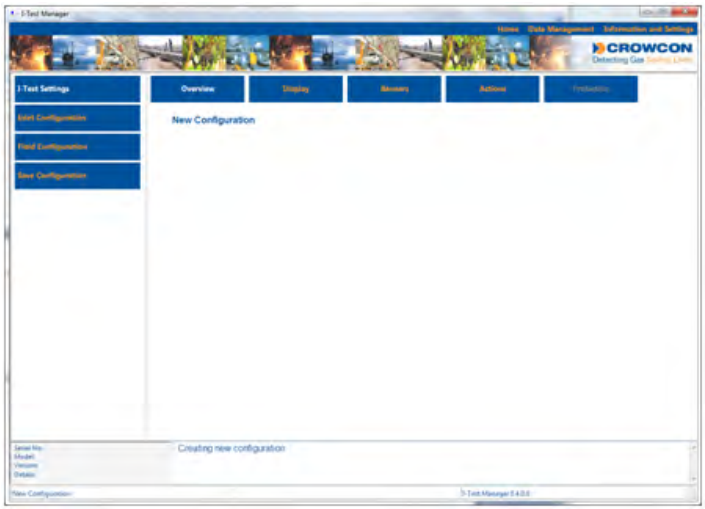
Figure 17: T4 configuration



Once the Gas-Pro or T4 configuration has been selected, to create a new configuration file, proceed as follows:

▶ Select **New Configuration** from the Home page. The New configuration overview screen will then be displayed (see below).

Figure 18: I-Test new configuration overview screen



From this screen the following functionality can be changed:

- I-Test settings (see *page 31*)
- Inlet configuration (see *page 40*)
- Field configuration (see *page 41*)

When all the required changes have been made, select **Save Configuration** to save the changes (see *page 47*).

3.7.3 I-Test settings

3.7.3.1 Overview

If I-Test is connected via USB, and Load from I-Test is clicked then this screen displays the serial number of the I-Test and the firmware version of I-Test.

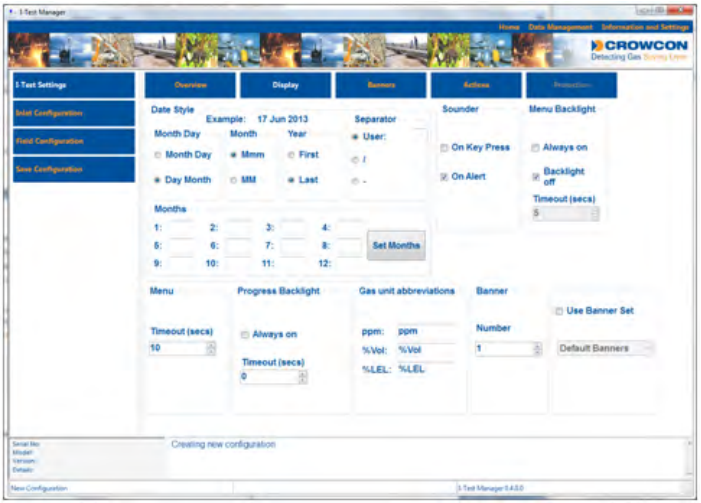
There are a number functions that can be configured under the I-Test Setting section:

- Display (see below)
- Banners (see *page 33*)
- Actions (see *page 34*
- Protection (see *page 39*)

3.7.3.2 Display

This screen shows the I-Test display screen settings, in the case of a new configuration the fields will either be at their default setting or blank.

Figure 19: Display screen



Any alterations will cause the relevant field background to turn yellow.

Alter the following fields as required:

Date Style: This group of fields changes the way the date is displayed on the I-Test screen. Any changes to these fields will be immediately reflected in the example above the fields.

Sounder: Click the appropriate tick box to activate (ticked) or deactivate (blank) the sounder operation for key presses on the I-Test keypad and/or alerts.

Menu Backlight: Click the tick box to set the I-Test screen backlight permanently on or off whilst in a menu function or set the required timeout in seconds.

Progress Backlight: Set the required timeout in seconds to set the I-Test screen backlight on whilst the test progress screen is shown on the display.

Months: There are two methods of changing the month abbreviations that will be displayed on the I-Test screen.
Either click Set Months to update the months to the default settings for the current language or enter directly into the selection boxes the desired month abbreviations.

Menu: Set the required timeout in seconds that will determine the time that the display will revert back to the password entry screen.

Gas Unit Abbreviations: Key in how the gas units will be displayed on I-Test for the standard units of ppm, %VOL & %LEL.

Banner Select: This selection determines which banner from the banner set will be displayed by the I-Test.
Use banner Number to select which of the 6 banners to be displayed on the I-Test screen.

Banner Set: This selection determines which predefined banner set will be uploaded to I-Test for the banner select to choose from.
Tick the Banner Set box and use the drop down box to select which banner set from the database will be uploaded to I-Test.
See *page 33* for creation of banner sets.

I-Test will need to be power cycled for the changes to take affect, ensure the USB connection to PC is removed before power cycle.

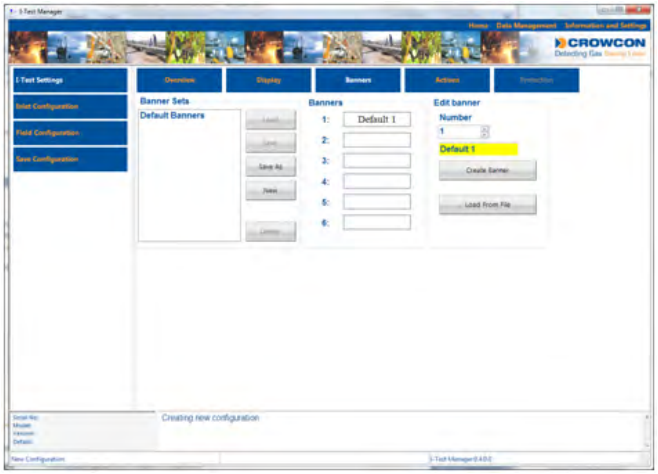
Date and Time: Click this button to synchronise I-Test time and date to that of the connected PC. **This function is only available if I-Test Manager is connected to an I-test via the USB port and unlike the settings above when Set date and time button is pressed, the action is implemented immediately.**
When selected Date and Time Set will be displayed at the base of the field.
Note: During testing I-Test will update the time and date of a monitor inserted. This feature could be used to ensure I-Test and all gas monitors are configured to the correct date and time, for example in the case of daylight saving time changes.

3.7.3.3 Banners

I-Test offers the ability to upload a banner to the I-Test display that can be used to identify the I-Test when in situ.

It is possible to define a maximum of 6 banners and store this Banner Set to the database; this allows multiple banner sets to be created which can then be uploaded to the I-Test.

Figure 20: Banners screen



Alter the following fields as required:

Edit Banners: This section allows the creation of banners.

Select the banner number to be created from Number selection and either type in text to the box or Load From File to upload an image file for the banner.

Banners: Shows the banners saved for selected Banner Sets.

Banners Sets: Shows the banner sets that are saved to the database.
New – Allows a new banner set to be created.
Load – Loads a previously stored banner set from the database.
Save – Saves initial banners set to the database.
Save As – Enables a new banner set to be created from a previously created banner set.
Delete – Deletes selected banner set.

3.7.3.4 Actions

This page is the heart of I-Test configuration and is used to define the test or the sequence of tests that I-Test will undertake in normal operation.

The selection of Actions will define the test or sequence of tests that I-Test will undertake when a gas monitor is inserted and the door closed. This sequence will be fully automated by the I-Test.

The action sequence specified in I-Test Manager will take precedent over the internal setting of Gas-Pro. For example if Gas-Pro is configured for a smart bump but I-Test is configured to undertake a speedy bump, a speedy bump will be performed. The Gas-Pro settings will remain unaltered.

The action options available for a Gas-Pro and a T4 monitor are as follows.

Gas-Pro offers the following action options

- Speedy bump
- Smart Bump
- Calibration if bump test fail (speedy bump and smart bump)
- Calibration (Standalone)
- Calibrate if expired

Whereas T4 offers the following action options

- Speedy bump
- Calibration if bump test fail (speedy bump only)
- Calibration (Standalone)
- Calibrate if expired

If **load from I-Test** is selected this screen shows the current actions and the cylinder expiry policy for the loaded configuration, the Gas-Pro and T4 action screens are shown.

Figure 21: Actions screen Gas-Pro Configuration

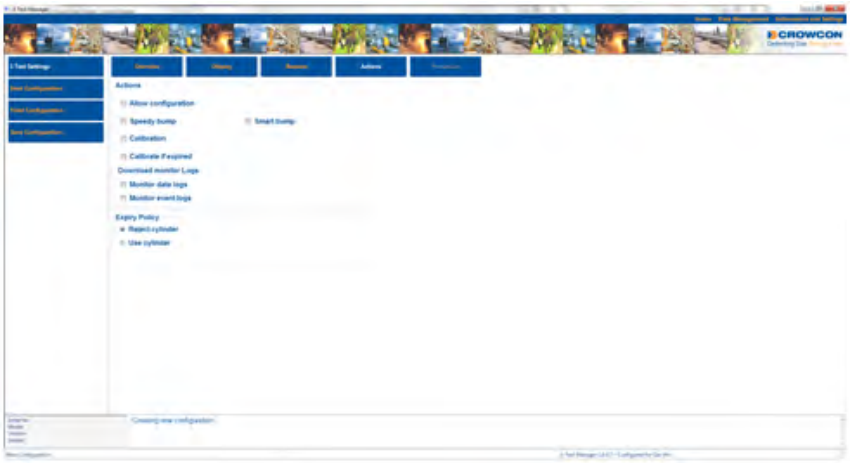
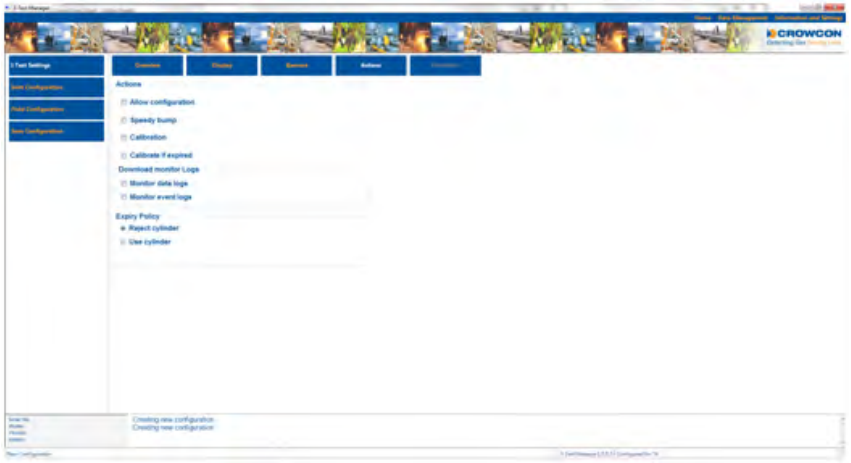


Figure 22: Actions screen T4 Configuration



Any alterations will cause the relevant field background to turn yellow.

Alter the following fields as required:

Allow configuration: I-Test can be configured to upload a new configuration file to the gas monitor when inserted into I-Test.
This allows settings such as sensor alarm levels to be altered.
Select the **Allow configuration** option to enable this functionality.
For details on the settings for the configuration file see **Field Configuration** on *page 41*.

Speedy Bump: Select this option to undertake a speedy bump on all sensors when the gas monitor is inserted into I-Test. A speedy bump will test the gas monitor sensors to the first alarm level.

Smart Bump:
(Gas-Pro only) Select this option to undertake smart bump on all sensors when the gas monitor is inserted into I-Test.
A smart bump will test that the gas monitor responds correctly to a specified level of test gas within a predefined time window. These parameters are set in the Inlet Configuration settings, see *page 40*.

Only one type of bump test can be selected, if speedy bump test is selected then smart bump will be disabled and vice versa.

I-Test will not check calibration before undertaking a bump test and will continue to bump test a gas monitor if calibration is due on a specific sensor (unless the Calibrate if Expired option is selected).

Calibration: I-Test offers thee calibration options dependant upon user requirements, Standalone Calibration, Calibration after Bump Test Fail and Calibrate if Expired.

Standalone Calibration: This option should be selected if I-Test is to be configured to undertake only a calibration function, on the gas monitor inserted.
This will be indicated in I-Test Manager by the text '(Stand alone)' appearing after the Calibration option when selected.
Standalone calibration will calibrate all sensors in the gas monitor, this will occur even if the sensor was not due a calibration.
Standalone calibration cannot be selected when a speedy bump is selected.
If standalone calibration is selected with smart bump this will change the functionality of the calibration process as described below in Bump Test Fail Calibration.
Standalone calibration can be selected with Allow configuration, Download event log, and Download event log.

Bump Test Fail Calibration: This option should be selected if there is a requirement to calibrate a sensor, should it fail a speedy bump or a smart bump test.
If Calibration and Speedy Bump or Smart Bump are selected together, I-Test will not perform a standalone calibration on any sensor that fails the selected bump test.
This will be indicated in I-Test Manager by the text '(Bump Test Fail)' appearing after the Calibration option when speedy bump or speedy bump or smart bump is also selected.
Only sensors that fail the selected bump test will be calibrated, this will occur even if the sensor was not due a calibration.
Bump Test Fail Calibration can be selected with Speedy Bump, Smart Bump, Calibrate if Expired, Allow configuration, Download monitor event log, and Download monitor data log.

Calibrate if Expired: This option should be selected if it is required that a gas monitor whose calibration has expired, when inserted into I-Test should be automatically calibrated if an appropriate cylinder is attached. This will override a bump test action if configured and only a calibration will be undertaken.

Download monitor event log: Select this option to configure the I-Test to download the event log of the monitor under test to the I-Test.

If download monitor event log is selected in the sequence it will extend the total test time while the log files are transferred.

If I-Test is configured to download the monitor event log the log will be deleted from the gas monitor after download.

Download monitor data log: Select this option to configure the I-Test to download the data log of the monitor under test to the I-Test.

If download monitor data log is selected in the sequence it will extend the total test time while the log files are transferred. This could cause the time taken for a speedy bump to be significantly increased.

If I-Test is configured to download the monitor data log file the log file will be deleted from the gas monitor after download.

Expiry Policy: Expiry policy allows the user to determine how the I-Test should function should the gas cylinder expiry date be exceeded (see *page 40* for the entry of cylinder expiry dates).
Reject Cylinder – Select this option if I-Test should reject an expired cylinder and not use the cylinder for the tests.
Use Cylinder - Select this option if I-Test should continue to use the cylinder after the expiry date.

It should be noted that I-Test will order the sequence of tests in the following order where appropriate if selected:

Configure, Bump Test (either speedy or smart), Calibration, Log Download.

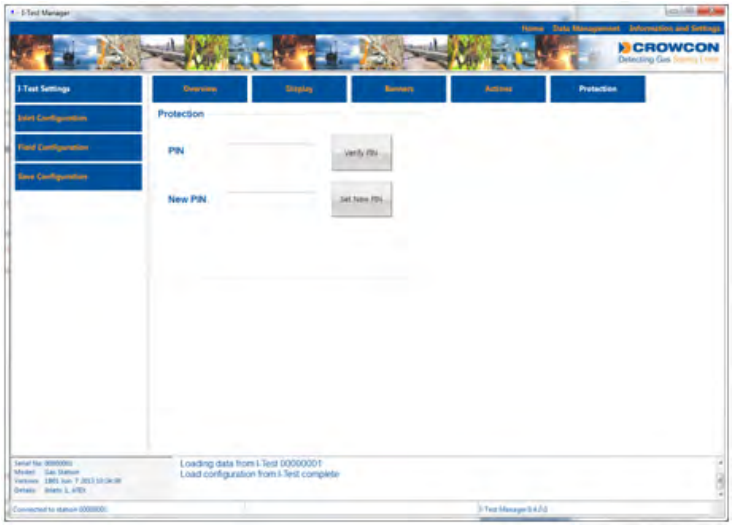
3.7.3.5 Protection

This screen enables the current PIN code to be verified and/or a new one set. The factory default PIN code is set to 000000.

This PIN code is entered via the front panel to gain access to the main menu, see *Section 4.2* on *page 93*.

This option is only available if I-Test Manager is directly connected to I-Test via the USB port.

Figure 23: Protection screen



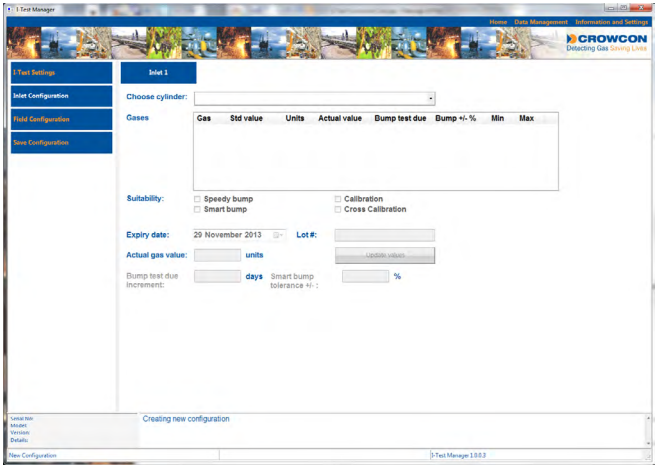
- To verify the current PIN, key it in to the **PIN:** field and click **Verify PIN**. If the PIN code is correct, **Pin matched** will be displayed. If incorrect, **No match** will be displayed.
- To change the PIN code, key the required code into the **New PIN:** field and click **Set New PIN**. The message **Pin set ok** will be displayed.

3.7.4 Inlet Configuration

Inlet configuration allows the predefined cylinder profile, configured via the Manage Cylinders functionality (see *page 25*), to be assigned to the gas inlet.

The screen shown below will enable the user to fully define the physical cylinder to be connected to I-Test including actual gas values, Lot number and expiry date.

Figure 24: Inlet screen



Any alterations will cause the relevant field background to turn yellow.

Choose Cylinder: Select the required cylinder profile from the drop down list.
This list will show all cylinder profiles previously saved to the database

Gases: The gas or gases for a multi-gas cylinder profile will be displayed in the **Gases** list along with the standard value(s).

Actual Gas Value: The actual gas value is the concentration of the gas in the physical cylinder to be connected to I-Test. This should be read from the label on the cylinder
Click on each gas in turn, enter the actual gas values in the **Actual Value** field and click **Update Value**. The entered value will be displayed in the Gases list.

Lot #: This is the Lot number of the physical cylinder to be connected to I-Test. This should be read from the label on the cylinder.

Expiry Date: This is the expiry date of the physical cylinder to be connected to I-Test. This should be read from the label on the cylinder.
Enter the correct date in the by clicking the calendar button to the right of the field.

Bump Test Due Increment:

If I-Test undertakes a successful bump test on the inserted gas monitor the bump test due date will be incremented within the gas monitor. This will ensure the gas monitor alerts the user when the next bump test is due.
Bump Test Due Increment is the increment in days that will be added to the current date in the gas monitor to indicate when the next bump test is due.
When entering the actual gas value also enter the bump test due increment then click on update gas value. The entered value will be displayed in the Gases list.
This option is only enabled if the selected cylinder is suitable for speedy bump or smart bump.

Smart bump tolerance +/-:

A smart bump will test that the inserted gas monitor sensors respond correctly to the applied level of gas. Smart bump will be deemed a pass if the sensors reach the applied level of gas with a given tolerance. This tolerance is the **Smart bump tolerance** and is a percentage band of the applied gas level.
The gases previously defined in the cylinder will contain the Crowcon default smart bump tolerance. This can be seen in the Gases list under 'Bump +/- %'.
If required this tolerance can be increased by entering a value in the Smart bump tolerance +/- field. This will be added to the default value.
The minimum and maximum pass values for the smart bump test per sensor can be seen in the Gases list under 'Min' and 'Max' respectively.
This option is only enabled if the selected cylinder is suitable for smart bump.

Actual gas values, expiry date & Lot number, bump test intermittent interval & bump test deviation can only be saved directly to an I-Test via the USB connector or to the database. If this configuration is to be saved to USB memory stick these values are not saved.

3.7.5 Field configuration

During normal operation, whilst performing gas testing, I-Test can be configured to change aspects of the inserted gas monitor configuration, such as sensor alarm levels as well as other aspects of configuration.

Field configuration defines the functionality of an instrument configuration file that can be uploaded to the gas monitor via the I-Test.

There are two main functional areas where gas monitor configuration can be changed; gas monitor and sensors. Gas monitor settings are specific to the specified type of gas monitor and sensor settings relate to specific gas sensors independent of gas monitor type.

3.7.5.1 Gas monitor

The screens shown below enable gas monitor functionality to be specified when configured by the I-Test.

Figure 25: T4 Monitor screen

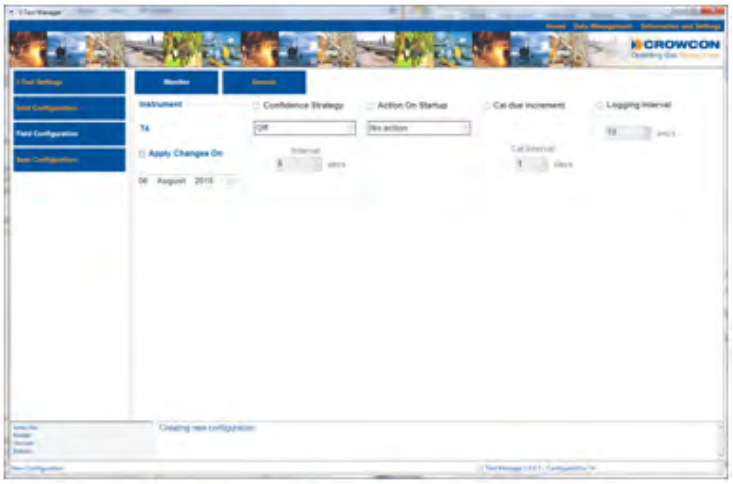


Figure 26: Gas-Pro Monitor screen

Select Instrument: To enable any field configuration update to be applied to the gas monitor the **Apply Changes On** check box must be ticked. If this tick box is not ticked no changes will be made to the gas monitor.

The 'Allow configuration tick box in the 'Actions' page must also be selected to perform a field configuration.

Apply Changes On: This allows the user to determine the date from which it is required to update the configuration on the gas monitor.
If a date in the future is chosen I-Test will continue to operate as normal until that date, at that point I-Test will then update the configuration each time the gas monitor is inserted.
Enter the required start date for the gas monitor configuration by changing each value in the field or clicking the calendar button to the right of the field.

Confidence Strategy: Confidence strategy is how the gas monitor indicates to the user that it is functioning normally.
If it is required to change the confidence strategy setting on the gas monitor activate the Confidence Strategy tick box and from the drop down box select one of the following options:
Off: No indications.
Sounder: The gas monitor sounder beeps at preset intervals.
LED: The gas monitor LED's flash at preset intervals.
Sounder + LED: The gas monitor sounder beeps and the confidence LED's flash at preset intervals.

T4 Configuration has two further options

Positive Safety: The gas monitor will activate positive safety (+ve safety) functionality which is an easy indication of operating status of T4 indicated by a front mounted LED. Please refer to the T4 User & Operator Manual for further details.

Positive Safety + sounder: The gas monitor will activate positive safety functionality plus the addition of the sounder when the positive safety LED is illuminated.

Interval: This field sets the time interval in seconds for the Confidence Strategy indications. Select the required interval from a minimum interval of 5 seconds to a maximum interval of 60 seconds.

Action On Startup: This field determines the functionality of the gas monitor when powered up with regard to the built in 'Clean air' zero function.
If it is required to change the Action on Startup setting on the gas monitor activate the Action on Startup tick box and from the drop down box select one of the following options:
No action: No 'Clean air' zero action at startup.
Confirm zero: This setting allows the 'Clean air' zero to be carried out at the user's discretion.
Always zero: This setting means a 'Clean air' zero will always be carried out at startup.

Logging Interval: This field determines the interval at which the gas monitor will record gas readings to its internal log file.

If it is required to change the logging interval activate the logging interval tick box and set the required time interval in seconds. Minimum interval 1 of second and maximum interval of 32400 seconds between log readings.

Calibration Due Increment: If a gas monitor is configured to undertake either a Bump Test Fail Calibration or a Stand alone Calibration, and the calibration is successful, the calibration due date will be incremented within the gas monitor.

The increment interval (in days) is preconfigured within the gas monitor at factory, typically 30 days.

It is possible to change this increment by uploading a new configuration file to the gas monitor.

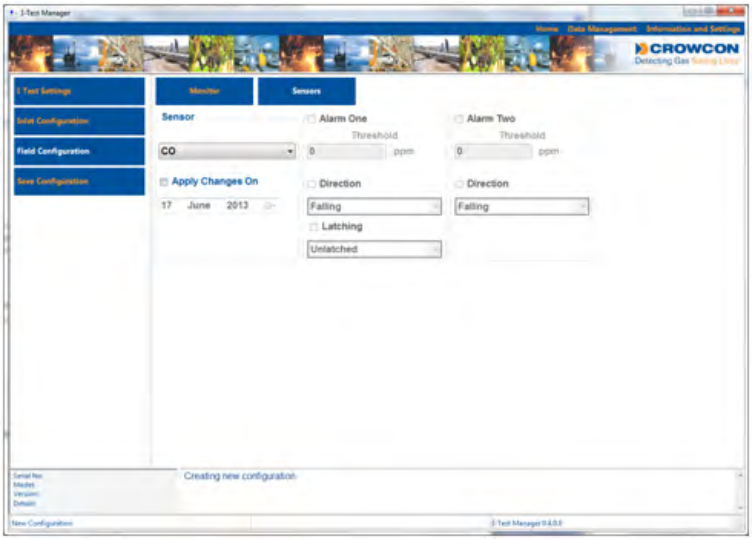
Activate the Calibration Due Increment tick box and set the required interval in days (minimum 1, maximum 720) between calibrating the monitor

Once I-Test has been configured to apply a monitor field configuration file, it will continue to do this to each and every monitor inserted into I-Test. If it is required to stop the configuration update it is necessary to deselect the 'Apply Changes On' tick box and save this configuration to I-Test.

3.7.5.2 Sensors

The screen shown below enables gas monitor sensors settings to be configured by the I-Test.

Figure 27: Sensors screen



Sensor: Use the drop down box to select the sensor to which the configuration will be changed.

Apply Changes On: This allows the user to determine the date from which it is required to update the configuration of the sensors of the gas monitor.
If a date in the future is chosen I-Test will continue to operate as normal until that date, at that point I-Test will then update the configuration each time the gas monitor is inserted.
Enter the required start date for the sensor configuration by changing each value in the field or clicking the calendar button to the right of the field.

Alarm One: Activate this tick box to change the alarm level one settings of a specific sensor.
Threshold: Enter the required gas level that will trigger alarm level one in the gas monitor.
Direction: Activate this tick box and then set the direction in which monitored gas should be changing in order to trigger the monitor into the Alarm one state.
Latching: Activate this tick box and then set this field to either Non-Latching, Latched or Latch Accept (only available for Gas-Pro configurations). Please see Gas-Pro and T4 User & Operator manuals for further details.

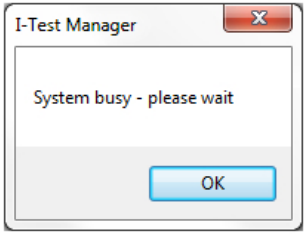
Alarm Two: Activate this tick box to change the alarm level two settings of a specific sensor.
Threshold: Enter the required gas level that will trigger alarm level two in the gas monitor.
Direction: Activate this tick box and then set the direction in which monitored gas should be changing in order to trigger the monitor into the Alarm two state.

Once I-Test has been configured to apply a sensor field configuration file, it will continue to do this to each and every monitor inserted into I-Test. If it is required to stop the configuration update it is necessary to deselect the 'Apply Changes On' tick box for each sensor and save this configuration to I-Test.

3.8 I-Test save configuration options

When I-Test is initially powered it will perform a purge cycle for approximately 30 seconds, during this time I-Test Manager cannot be used to connect to I-Test and the message below will be displayed.

Figure 28: System busy message



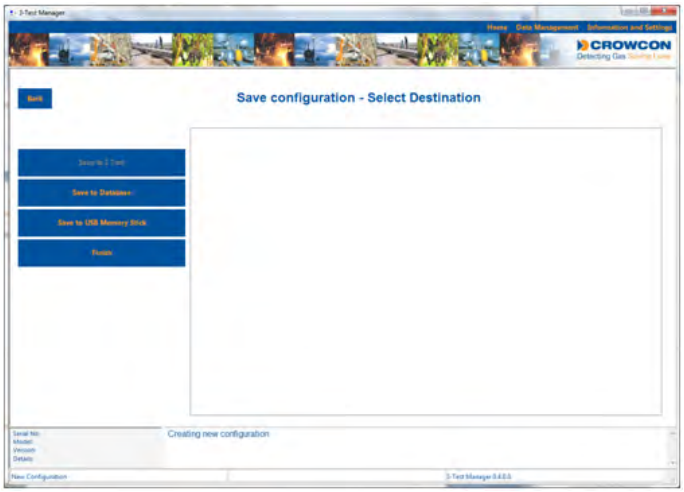
Once the full I-Test configuration has been created it can be saved by clicking on **Save Configuration**.

There are three save options available (see *Figure 29*):

- Save to I-Test (see *page 48*)
- Save to database (see *page 50*)
- Save to USB Memory Stick (see *page 52*)

At this point, clicking the Back button will revert back to the configuration file.

Figure 29: Save Configuration screen



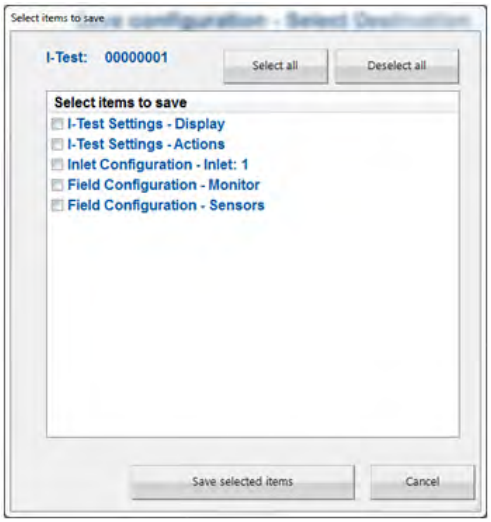
3.8.1 Save to I-Test

This option will allow the full configuration to be saved directly to an I-Test connected via the USB port (downloaded).

The save configuration screen will show an icon for the connected I-Test and also display the serial number.

- Click **Save to I-Test**. The **Select items to save** dialogue box will be displayed (see *Figure 30*).
- The user can then determine which configuration items should be saved to I-Test.
- If it is required to maintain some of the current settings in I-Test, this option will allow selected configuration items to be uploaded whilst preserving other settings.

Figure 30: Select items to save screen



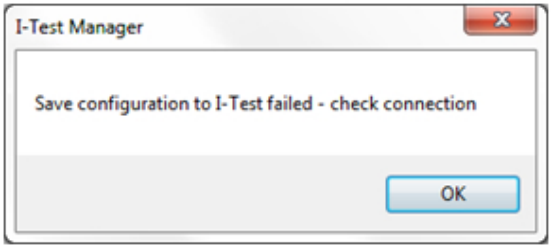
- The selectable items to save correspond to each of the I-Test configuration pages. Activate each tick box to select which configuration items are to be saved to I-Test.

De-select All: Will deselect all individual tick boxes.

Select All: Will select all individual tick boxes.

- When all selections have been made click Save Selected Items to download the configuration file to I-Test, or Cancel to abort the download. The Save Configuration screen will be displayed.
- If the save configuration process fails the following message will be displayed and the download must be repeated.

Figure 31: Save configuration to I-Test failed message



- If it is also required to save this configuration to the database, click Save to Database (see *page 50*).
- If it is also required to save this configuration to a USB Memory Stick connected to the I-Test USB port, click Save to USB Memory Stick (see *page 52*).
- Otherwise click Finish to return to the Home screen or click Back to return to the configuration file.

If the Save configuration to I-Test failed – check connection message is displayed at any point during a configuration download, the download MUST be repeated. If a successful download is not undertaken I-Test may not function correctly.

After a configuration upload before I-Test can be used it must be disconnected from the PC and restarted.

When an I-Test configuration is uploaded to I-Test Manager from an I-Test, not all configuration data is uploaded (see *page 56*). It is therefore strongly recommended that upon download of a configuration to I-Test a copy of this configuration is saved to the database and stored as the master configuration for the specific I-Test as a future reference of the configuration downloaded.

It should also be noted that a user has the ability to change a limited set of I-Test configuration settings via the I-Test keypad in the field. Therefore the master copy of the database configuration may not entirely match the configuration uploaded to I-Test Manager from I-Test at a later date, as changes may have been made directly on I-Test in the field (see *page 90*).

3.8.2 Save to Database

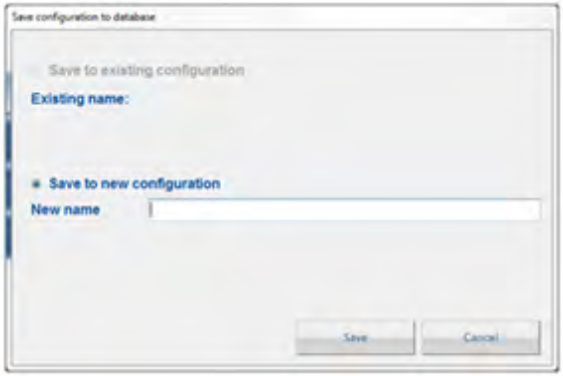
This option will allow the full configuration to be saved to the database, all configuration items will be saved to the database.

- Click **Save to Database**. The **Save Configuration to Database** dialogue box will be displayed (see *Figure 32*).

  If the original configuration file was loaded from the database, the option to **Save to existing configuration** will be accessible.

  If the original configuration file was loaded from an I-Test or USB Memory stick, only the **Save to new configuration** option will be accessible.

Figure 32: Save Configuration to Database screen



- Either select **Save to existing database** (if accessible) and click **Save**, or click **Save to new configuration** then enter the required configuration name in the New name field and click Save.

  This will save the configuration to the database and I-Test Manager will return to the **Save Configuration** screen.
- If it is also required to save this configuration to an I-Test connected via the USB port, click **Save to I-Test** (see *page 48*).
- If it is also required to save this configuration to a USB Memory Stick connected to the I-Test USB port, click **Save to USB Memory Stick** (see *page 52*).

▶ Otherwise click Finish to return to the Home screen or click Back to return to the configuration file.

When an I-Test configuration is uploaded to I-Test Manager from an I-Test, not all configuration data is uploaded (see *page 56*). It is therefore strongly recommended that upon download of a configuration to I-Test a copy of this configuration is saved to the database and stored as the master configuration for the specific I-Test as a future reference of the configuration downloaded.

It should also be noted that a user has the ability to change a limited set of I-Test configuration settings via the I-Test keypad in the field. Therefore the master copy of the database configuration may not entirely match the configuration uploaded to I-Test Manager from I-Test at a later date, as changes may have been made directly on I-Test in the field (see *page 90*).

3.8.3 Save to USB Memory Stick

This option will allow a restricted set of configuration items to be saved to the USB memory stick.

It is possible to save both a single Gas-Pro I-Test configuration and a single T4 I-Test configuration to one memory stick.

Note: for ease of use Crowcon recommend the use of individual USB memory sticks, one for Gas-Pro I-Test and one for T4 I-Test.

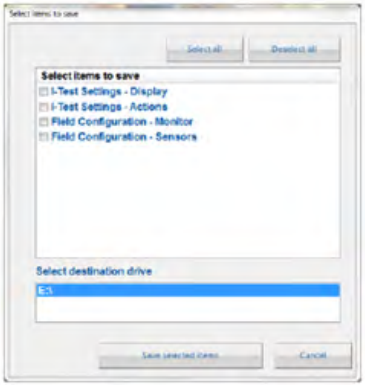
Gas-Pro I-Test will extract the Gas-Pro configuration whilst a T4 I-Test will extract a T4 configuration when the USB Memory stick is inserted into the I-Test.

It should be noted that 'Sensor' settings in the 'Field Configuration' options (refer to *Section 3.7.5.2*), the 'Display' settings (refer to *Section 3.7.3.2*) and the 'Banner' settings (refer to *Section 3.7.3.3*) are common to both types of I-Test. The 'Sensor' settings and the 'Display' settings for the last configuration to be saved to the USB Memory Stick will be used by both the T4 I-Test and Gas-Pro I-Test when the configuration is uploaded to the I-Test.

It is not possible to save the Inlet Configurations to the USB Memory Stick, it is only possible to upload Inlet Configuration files directly to an I-Test that is connected via the USB port

▶ Click **Save to USB Memory Stick**. The **Select items to save** dialogue box will be displayed (see *Figure 33*).

Figure 33: Select items to save dialogue box



▶ The user can then determine which configuration items should be saved to the USB memory stick If it is required to maintain some of the current settings in I-Test, this option will allow selected configuration items to be uploaded whilst preserving the other settings.
The selectable items to save correspond to each of the I-Test configuration pages (with the exception of the inlet configuration).

- Activate each tick box to select which configuration items are to be saved to USB memory stick.
  De-select All: Will deselect all individual tick boxes
  Select All: Will select all individual tick boxes
  Select destination drive: Specifies which USB memory connected to the PC will be utilised to store I-Test configuration.
- Select the appropriate drive letter for the USB memory stick from the Select destination drive list.
- When the selections have been made click **Save Selected Items** to upload the configuration file to the USB memory stick, or Cancel to abort the upload. This will save the configuration to the USB memory stick and I-Test Manager will return to the Save Configuration screen.

  If it is also required to save this configuration to the database, click **Save to Database** (see *page 50*).

  If it is also required to save this configuration an I-Test connected via the USB port, click **Save to I-Test** (see *page 48*).

  Otherwise click Finish to return to the Home screen or click Back to return to the configuration file.

Not all the I-Test configuration data is saved by this process.

The following items will not be saved to USB Memory Stick:

Banner Sets: The banner number (relating to the banner I-Test will display) is saved to the USB Memory Stick but the banner set will not be saved.

Inlet configuration: It is not possible to save Inlet configuration to USB Memory Stick

Inlet configuration can only be configured by a direct save to I-Test via I-Test Manager or via the I-Test front panel keypad.

When an I-Test configuration is uploaded to I-Test Manager from an I-Test, not all configuration data is uploaded (see *page 56*). It is therefore is strongly recommended that upon download of a configuration to I-Test a copy of this configuration is saved to the database and stored as the master configuration for the specific I-Test as a future reference of the configuration downloaded.

It should also be noted that a user has the ability to change a limited set of I-Test configuration settings via the I-Test keypad in the field. Therefore the master copy of the database configuration may not entirely match the configuration uploaded to I-Test Manager from I-Test at a later date, as changes may have been made directly on I-Test in the field (see *page 90*).

3.9 I-Test Manager Configuration Upload Options

There are a number of options for loading predefined I-Test configurations into I-Test Manager, these are:

- Upload an existing configuration from an I-Test (see *page 55*)
- Upload an existing configuration from the database (see *page 57*)
- Upload an existing configuration from a USB memory stick (see *page 59*)

Figure 34: I-Test Home page

3.9.1 Upload Configuration from I-Test

This option enables a configuration to be uploaded from an I-Test unit connected to the PC via a USB port.

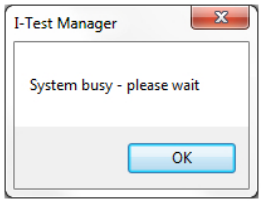
The configuration can then be altered as required and saved back to the original I-Test (see *page 48*), given a unique name and saved to the database (see *page 50*), or (with limited functionality) saved to a USB Memory Stick connected to a USB port (see *page 52*).

To upload a configuration file from an I-Test, proceed as follows:

Ensure the I-Test is turned on, connected to the PC via a USB port, and either fully charged (see *page 14*) or powered by the mains adapter.

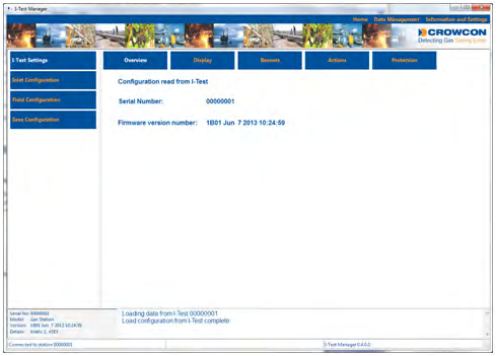
When I-Test is initially powered it will perform a purge cycle for approximately 30 seconds, during this time I-Test Manager cannot be used to connect to I-Test and the message below will be displayed.

Figure 35: System busy message



▶ Select **Load from I-Test** to upload the full configuration from the connected I-Test to I-Test Manager. The Overview screen will be displayed (see below).

Figure 36: I-Test overview screen



From this screen the following functionality can be changed:

- I-Test settings (see *page 31*)
- Inlet configuration (see *page 40*)
- Field configuration (see *page 41*)

▶ When all the required changes have been made, select **Save Configuration** to save the changes (see *page 47*).

It should be noted that not all the I-Test configuration data is uploaded by this process.

The following items will not be uploaded:

Banner & Banner Sets: The banner number (relating to the banner I-Test was displaying from the installed banner set) will be uploaded, but the banner set will not be uploaded. To determine the details of the specific banner from the banner set, review the copy of the I-Test configuration that was stored to the database.

Inlet configuration: Bump Test Due Increment and Smart bump tolerance will not be uploaded from the I-Test.
To determine the details of the Bump Test Due Increment and Smart bump tolerance review the copy of the I-Test configuration that was stored to the database.

It should also be noted that a user has the ability to change a limited set of I-Test configuration settings via the I-Test keypad in the field. Therefore the master copy of the database configuration may not entirely match the configuration uploaded to I-Test Manager from I-Test at a later date, as changes may have been made directly on I-Test in the field (see *page 90*).

It is important to note that the cylinder definitions, created in Manage Cylinders (see *page 25*), are stored in I-Test Manager's database, this is the master record for cylinder definitions. When a configuration is uploaded from an I-Test, the cylinder assigned to an inlet is cross referenced to the this database record to enable the correct cylinder to be displayed on the inlet within I-Test Manager.

When a configuration is uploaded from an I-Test, the cylinder assigned to an inlet is cross referenced to the this database record to enable the correct cylinder to be displayed on the inlet within I-Test Manager.

For the correct cylinder to be displayed in I-Test Manager following an upload from I-Test, the current database must same database from which the cylinder was originally defined otherwise the cylinder displayed may be incorrect.

3.9.2 Upload Configuration from Database

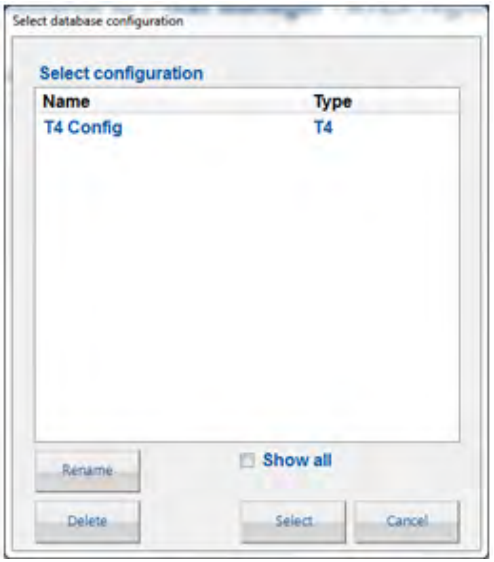
This option enables a configuration to be uploaded from the database.

This configuration can then be altered as required and saved to an I-Test (see *page 48*), renamed and then saved to the database or (with limited functionality) saved to a USB Memory Stick connected to a USB port (see *page 52*).

To load a configuration file from the database, proceed as follows:

▶ Select **Load from Database** from the Home page. The Select configuration dialogue box will be displayed (see below).

Figure 37: Select configuration dialogue box



▶ Click on the required configuration so that it is highlighted and then click **Select**. The Overview screen will then be displayed (see *Figure 38*).

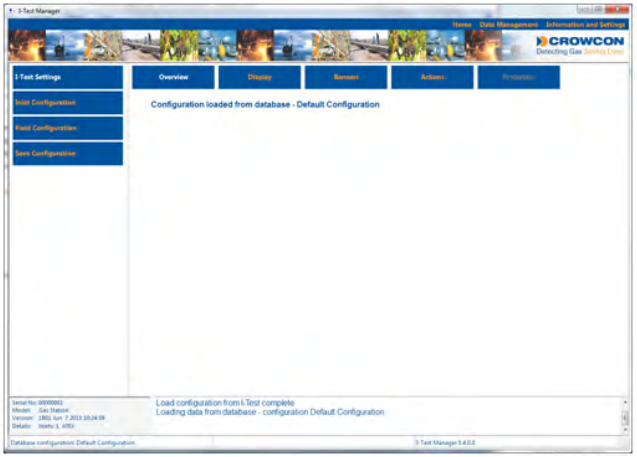
The dialogue box will show saved configurations for the monitor type I-Test manager is currently configured for. To see saved configurations for all monitors click the Show All tick box.

From this screen the following functionality can be changed:

- I-Test settings (see *page 31*)
- Inlet configuration (see *page 40*)
- Field configuration (see *page 41*)

▶ When all the required changes have been made, select **Save Configuration** to save the changes (see *page 47*).

Figure 38: Database overview screen



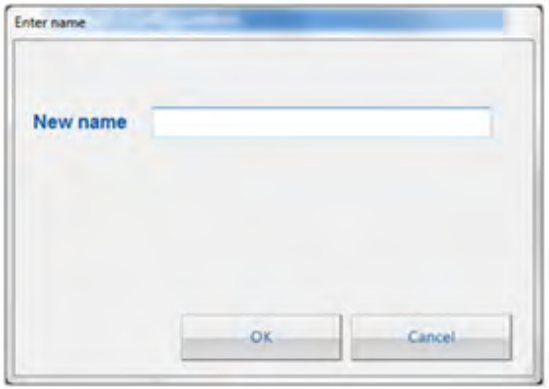
3.9.2.1 Rename

This option can be used to rename configurations already stored in the database.

▶ Click **Rename**, the **New Name** dialogue box will be displayed (see *Figure 39*).

▶ Enter the name you wish to change the saved configuration to and click **OK**.

Figure 39: Enter Name dialogue box



3.9.2.2 Delete

This option can be used to delete configurations already stored in the database.

3.9.3 Upload Configuration from USB Memory stick

This option options enables a configuration saved to a USB Memory Stick to be uploaded to I-Test Manager.

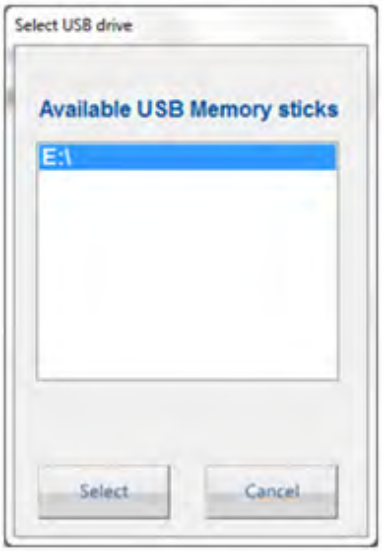
Gas-Pro I-Test will extract the Gas-Pro configuration whilst a T4 I-Test will extract a T4 configuration when the USB Memory stick is inserted into the I-Test.

It should be noted that 'Sensor' settings in the 'Field Configuration' options (refer to *Section 3.7.5.2*), the 'Display' settings (refer to *Section 3.7.3.2*) and the 'Banner' settings (refer to *Section 3.7.3.3*) are common to both types of I-Test. The 'Sensor' settings and the 'Display' settings for the last configuration to be saved to the USB Memory Stick will be used by both the T4 I-Test and Gas-Pro I-Test when the configuration is uploaded to the I-Test.

To upload a configuration file from the USB Memory Stick, proceed as follows:

- ▶ Select **Load from USB Memory Stick** from the Home page.
- ▶ The **Available USB Memory Stick** dialogue box will be shown (see *Figure 40*).

Figure 40: Available USB Memory Stick dialogue box

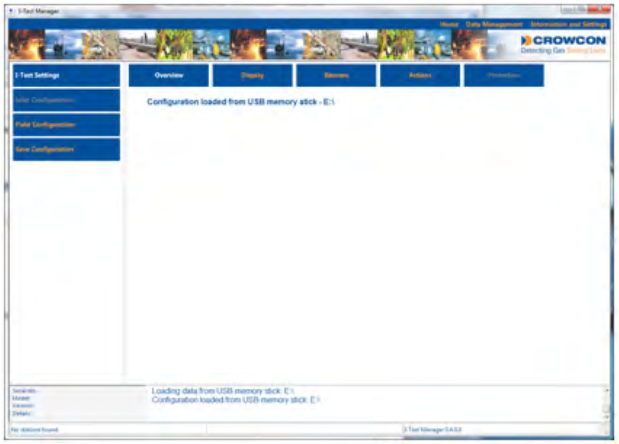


3.9.3.1 Select

This allows a specific drive to be selected.

▶ Click on the required drive so that it is highlighted and then click **Select**. The Overview screen will then be displayed (see *Figure 41*).

Figure 41: USB Flash Stick overview screen



▶ From this screen the following functionality can be changed:

- I-Test settings (see *page 31*)
- Field configuration (see *page 41*)

▶ When all the required changes have been made, select **Save Configuration** to save the changes (see *page 47*).

3.10 Data management

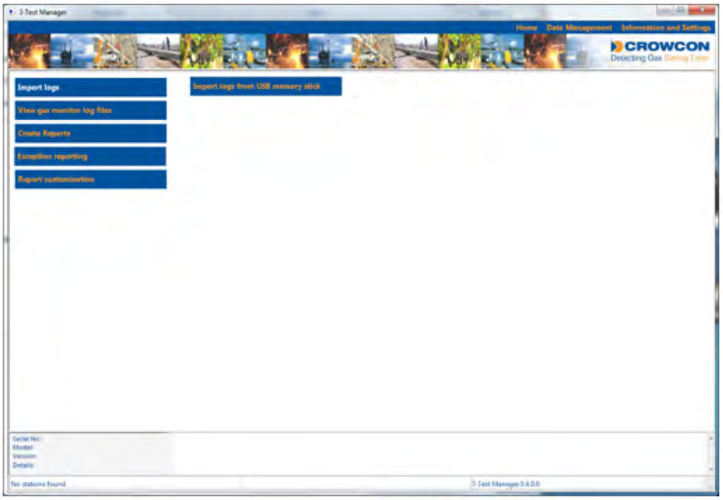
I-Test offers a number of data management options with regard to the data collected during normal operation of I-Test.

This allows full management of a fleet of gas monitors

Data Management is available from the Home screen as shown in *Figure 34*.

▶ Click on **Data Management** and the screen will be shown as can be seen in *Figure 42*.

Figure 42: Data Management Screen



The following Data Management functions can be selected from this screen:

- Import logs from USB Memory Stick (see *page 62*)
- View Gas Monitor log files (see *page 63*)
- Create Reports (see *page 70*)
- Exception Reporting (see *page 81*)
- Report Customisation (see *page 82*)

3.10.1 Import logs from USB memory stick

I-Test can be configured to allow gas monitor and I-Test activity log files to be downloaded to a USB Memory Stick, see *page 106*.

In order to create calibration or bump test reports, I-Test action logs must be imported to I-Test Manager.

Limited exception reports can be produced from importing I-Test action logs but for full exception report functionality gas monitor event logs must also be imported to I-Test Manager.

Once the required log files have been transferred to the USB Memory Stick they can be imported to I-Test by the following process.

- From the Data Management screen select **Import Logs > Import logs from USB memory stick**.
- When selected, this option will cause the following screen to be displayed:

Figure 43: Select USB drive screen

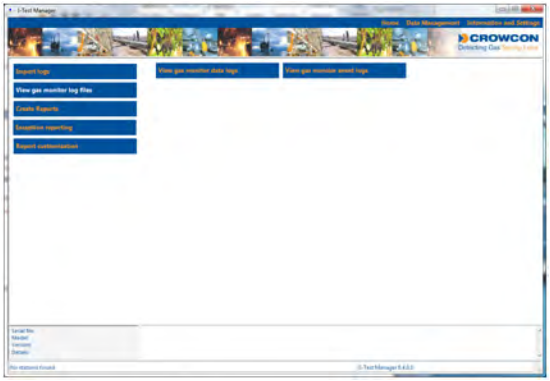
- Click on the appropriate drive letter and click on **Select**. A screen will be displayed as the log files are imported showing the import progress
- When the import is complete, the logs will be available in I-Test Manager for viewing/review.

3.10.2 View gas monitor log files

This option provides the functionality to view gas monitor log files that have been imported from the USB Memory Stick. This may be gas monitor data log files or gas monitor event log files, dependent upon the configuration setting of the I-Test from which the log files were downloaded (see *page 38*).

When selected, this option will cause the following screen to be displayed:

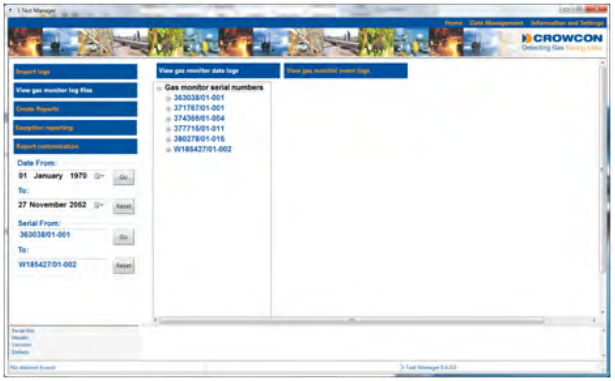
Figure 44: Gas monitor log files screen



3.10.2.1 View gas monitor data Logs

- ▶ Select **View gas monitor data logs** to view the imported gas monitor data log files
- ▶ When selected, this option will cause the following screen to be displayed:

Figure 45: View Gas Monitor Logs screen



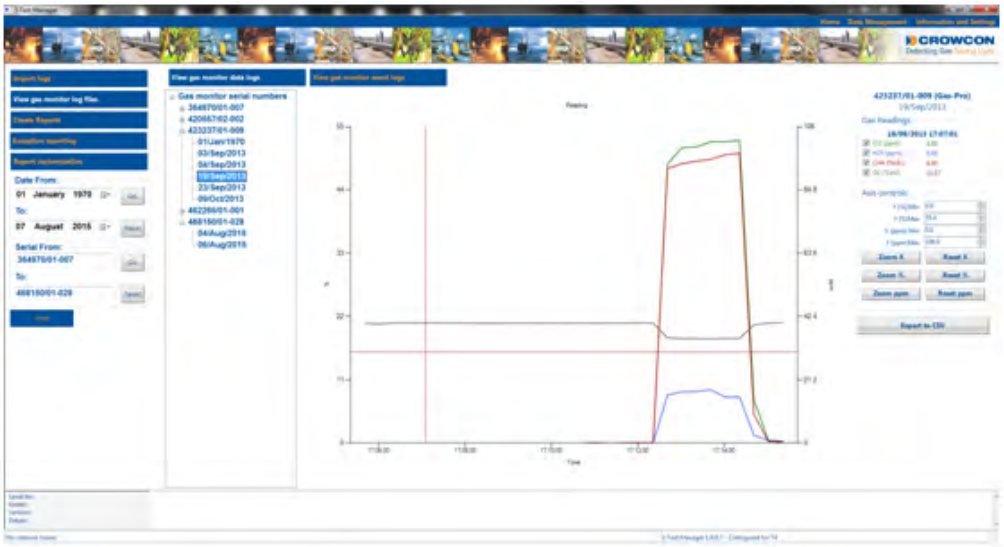
This screen offers the following functions:

3.10.2.2 Gas Monitor Serial Numbers

This shows the serial numbers of all gas monitors that have had data log files imported to I-Test Manager.

- To view the data log files available for a specific gas monitor click the appropriate serial number. This will then show all the log files available for this monitor by date reference.
- If the full data set is to be viewed then the serial number should be highlighted and the logged data will be show in the graph as shown in *Figure 46*.
- If it is required to view only the data from a specific date in the list highlight the appropriate data and the graph will be updated accordingly.

Figure 46: Gas data log graph



The graph shows all gas data which has been downloaded from the monitor.

The x-axis shows date and time, the left y-axis shows % (bundling together both LEL and VOL), and the right y-axis shows ppm.

To the top-right of the graph is the information area. This is headed with the serial number of the monitor, and the date/time that the data was retrieved from the device.

- The **Gas Readings** box enables individual data series to be shown or hidden by clicking the appropriate checkboxes. By moving the mouse pointer over the graph area, the gas readings for each data series will be shown in the gas readings box, along with the date/time.

▶ To zoom in on the data, click and drag a box over the required data area.

This will only zoom the x-axis; the y-axes must be zoomed using the axis controls area. Entering a value in any of the text boxes will adjust the graph immediately with your new values. Alternatively you may use the buttons in the axis controls area to zoom.

▶ To reset an axis, use the reset x / % / ppm buttons. This will effectively undo all zoom operations so all data can be viewed.

▶ To create a 'comma separated value' (CSV) file of the event data, click the **Export to CSV** button, name the file, navigate to the required destination and save it to disk.

For a full explanation of the data log screen, see *Appendix B: Graph Function Explained* on *page 118*.

3.10.2.3 Date From/To

This option allows the user to select by date the gas monitor log files to be shown, these can then be selected to view in the graphing function.

▶ Enter the required **Date From** and **To** by changing each value in the field or clicking the calendar button to the right of the field.

The field will be highlighted yellow to indicate a reduced set of available data is being displayed.

3.10.2.4 Serial From/to

This option allows the user to select by serial number the gas monitor log files to be shown that can then be selected to view in the graphing function.

▶ Enter the required **Serial From** and **To** by changing each value in the field.

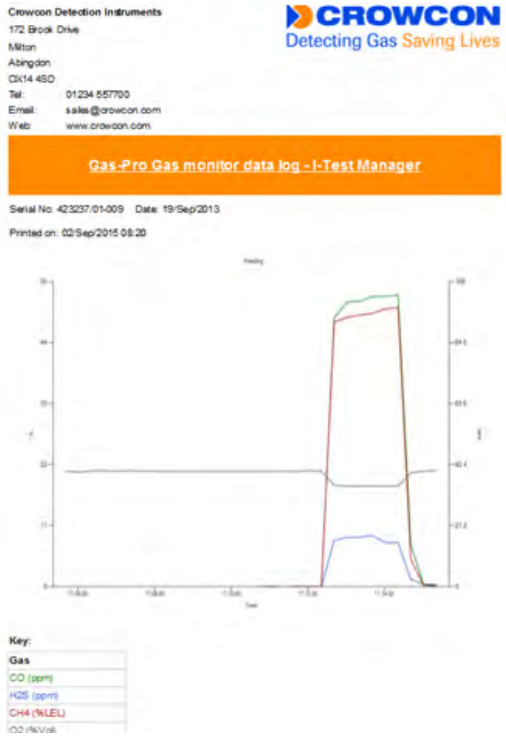
The field will be highlighted yellow to indicate a reduced set of available data is being displayed.

3.10.2.5 Print

The print option allows a report to be printed for the selected serial number.

▶ To print a report select **Print** and the following screen will be shown.

Figure 47: Data log print screen

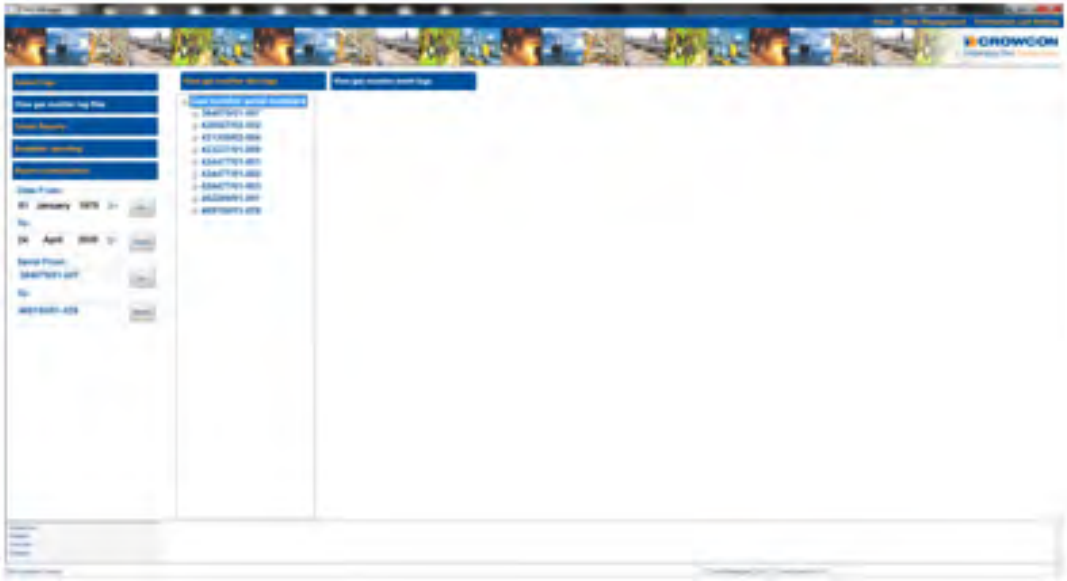


▶ It is now possible to print this report to a standard network printer by selecting the print icon.

3.10.3 View gas monitor event logs

▶ Select **View as monitor event logs** to view the imported gas monitor event files. The following screen to be displayed:

Figure 48: View gas monitor events logs Screen



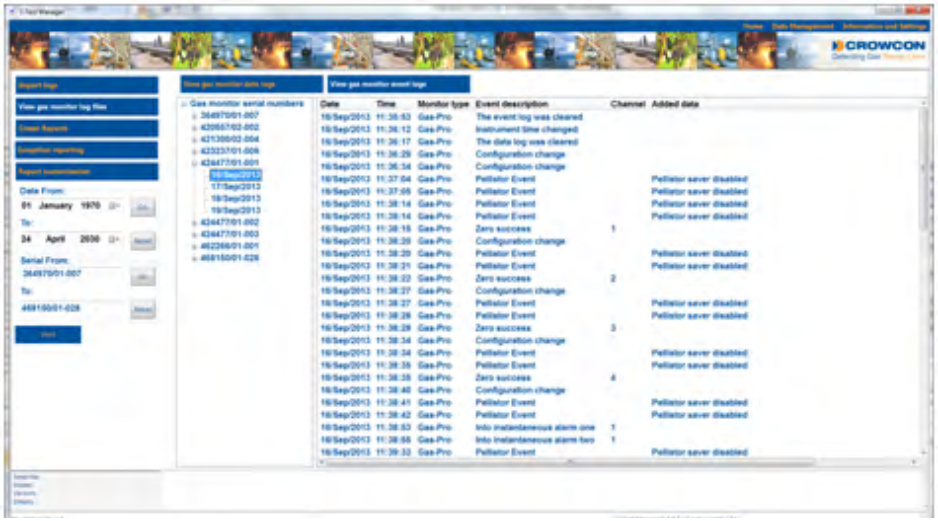
This screen offers the following functions

3.10.3.1 Gas Monitor Serial Numbers

This shows the serial numbers of all gas monitors that have had an event log file imported into I-Test Manager.

▶ To view the event log files available for a specific gas monitor click the appropriate serial number. This will then show all the events recorded for this monitor as shown in *Figure 49*.

Figure 49: Gas Monitor Event Log Screen



3.10.3.2 Date From/To

This option allows the user to select by date the gas monitor event files to be shown that can then be selected to view.

▶ Enter the required **Date From** and **To** by changing each value in the field or clicking the calendar button to the right of the field.

The field will be highlighted yellow to indicate a reduced set of available data is being displayed.

3.10.3.3 Serial From/To

This option allows the user to select by serial number the gas monitor event log files to be shown that can then be selected to view.

▶ Enter the required **Serial From** and **To** by changing each value in the field.

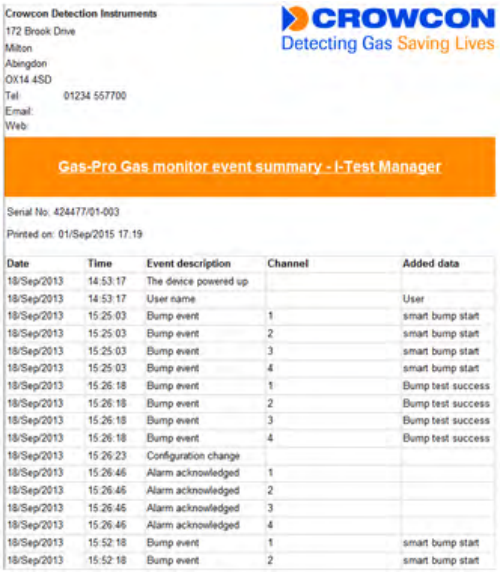
The field will be highlighted yellow to indicate a reduced set of available data is being displayed.

3.10.3.4 Print

The print option allows a report to be printed for the selected serial number.

▶ To print a report select **Print** and the following screen will be shown.

Figure 50: Gas monitor event log print



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Detecting Gas Saving Lives

Gas-Pro Gas monitor event summary - I-Test Manager

Serial No: 424477/01-003

Printed on: 01/Sep/2015 17:19

Date	Time	Event description	Channel	Added data
18/Sep/2013	14:53:17	The device powered up		
18/Sep/2013	14:53:17	User name		User
18/Sep/2013	15:25:03	Bump event	1	smart bump start
18/Sep/2013	15:25:03	Bump event	2	smart bump start
18/Sep/2013	15:25:03	Bump event	3	smart bump start
18/Sep/2013	15:25:03	Bump event	4	smart bump start
18/Sep/2013	15:26:18	Bump event	1	Bump test success
18/Sep/2013	15:26:18	Bump event	2	Bump test success
18/Sep/2013	15:26:18	Bump event	3	Bump test success
18/Sep/2013	15:26:18	Bump event	4	Bump test success
18/Sep/2013	15:26:23	Configuration change		
18/Sep/2013	15:26:46	Alarm acknowledged	1	
18/Sep/2013	15:26:46	Alarm acknowledged	2	
18/Sep/2013	15:26:46	Alarm acknowledged	3	
18/Sep/2013	15:26:46	Alarm acknowledged	4	
18/Sep/2013	15:52:18	Bump event	1	smart bump start
18/Sep/2013	15:52:18	Bump event	2	smart bump start

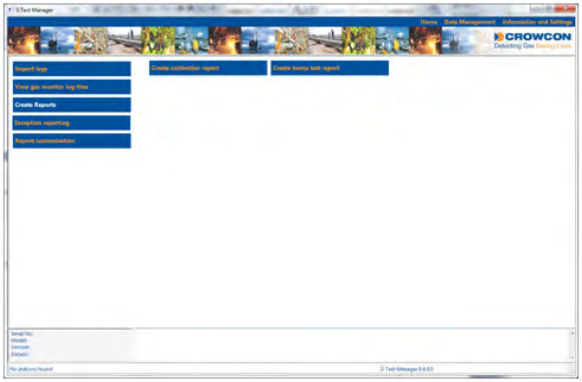
▶ It is now possible to print this report to a standard network printer by selecting the print icon.

3.11 Create Reports

This function allows calibration and bump test reports to be created from the data imported.

When selected, this option will cause the following screen to be displayed:

Figure 51: Create Reports Screen

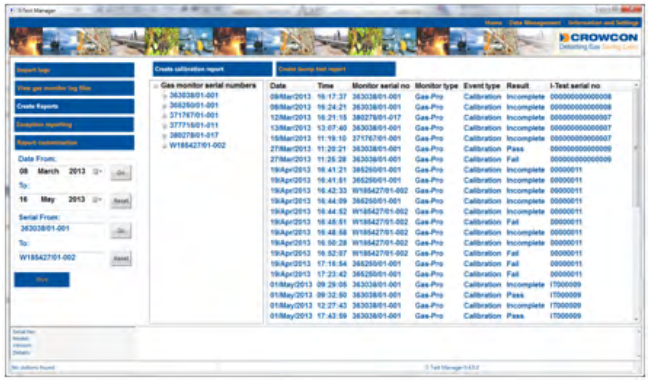


3.11.1 Create Calibration Report

▶ Select **Create calibration report** to view all calibration data imported from I-Test units.

When selected, this option will cause the following screen to be displayed:

Figure 52: Instrument Calibration Summary Screen



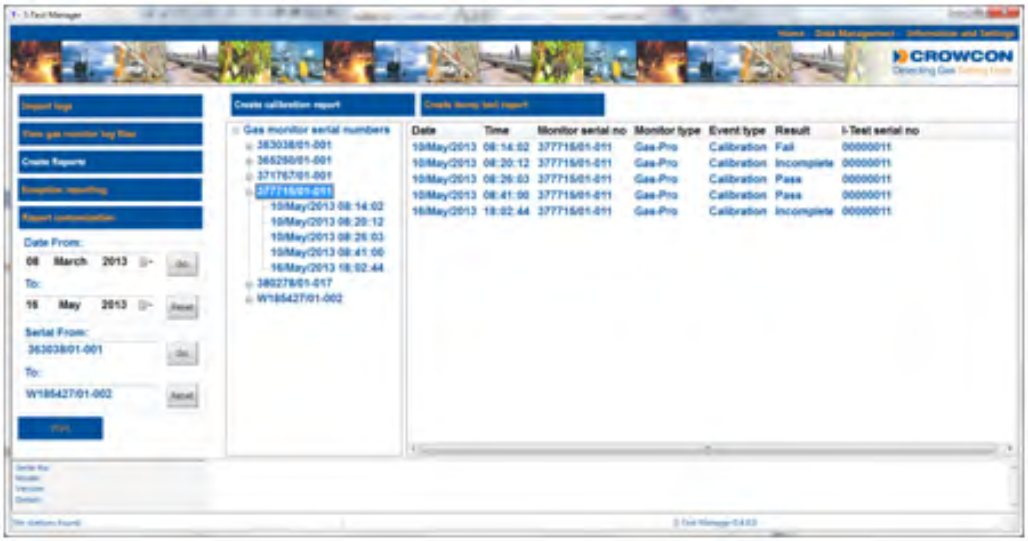
This screen offers the following functions

3.11.1.1 Gas Monitor Serial Numbers

This shows the serial numbers of all gas monitors that have had calibration data imported into I-Test Manager.

▶ To view all calibrations for a specific gas monitor click the appropriate serial number. This will then show a list of all the calibrations recorded for this monitor as shown in *Figure 53*.

Figure 53: Calibrations by serial number screen



3.11.1.2 Date From/To

This option allows the user to select, by date, gas monitors with calibration data such that these can then be selected and a calibration report created.

▶ Enter the required **Date From** and **To** by changing each value in the field or clicking the calendar button to the right of the field.

The field will be highlighted yellow to indicate a reduced set of available data is being displayed.

3.11.1.3 Serial From/To

This option allows the user to select, by serial number, gas monitors with calibration data such that these can then be selected and a calibration report created.

▶ Enter the required **Serial From** and **To** by changing each value in the field.

The field will be highlighted yellow to indicate a reduced set of available data is being displayed.

3.11.1.4 Print

There are three calibration report print functions:

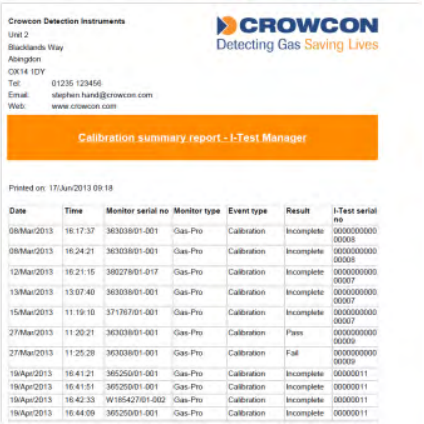
Calibration Summary Report: To print an overview of all calibrations performed on all the gas monitors selected as described above, ensure **Gas monitor serial numbers** is highlighted and press print and a screen showing a summary of all calibrations on all gas monitors will be displayed (see *Figure 54*):

The calibration summary report shows the following information for each calibration:

- Date of calibration
- Time of calibration
- Monitor Serial Number
- Monitor Type
- Event Type
- Overall Pass/Fail Result of Calibration
- I-Test Serial Number
- Print date of report

It is then possible to print this report to a standard network printer by selecting the print icon.

Figure 54: Calibration summary report



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Calibration summary report - I-Test Manager

Printed on: 17/Jun/2013 09:18

Date	Time	Monitor serial no	Monitor type	Event type	Result	I-Test serial no
08/Mar/2013	16:17:37	363038/01-001	Gas-Pro	Calibration	Incomplete	0000000000 00008
08/Mar/2013	16:24:21	363038/01-001	Gas-Pro	Calibration	Incomplete	0000000000 00008
12/Mar/2013	16:21:15	360278/01-017	Gas-Pro	Calibration	Incomplete	0000000000 00007
13/Mar/2013	13:07:40	363038/01-001	Gas-Pro	Calibration	Incomplete	0000000000 00007
15/Mar/2013	11:19:10	371767/01-001	Gas-Pro	Calibration	Incomplete	0000000000 00007
27/Mar/2013	11:20:21	363038/01-001	Gas-Pro	Calibration	Pass	0000000000 00009
27/Mar/2013	11:25:28	363038/01-001	Gas-Pro	Calibration	Fail	0000000000 00009
19/Apr/2013	16:41:21	365250/01-001	Gas-Pro	Calibration	Incomplete	00000011
19/Apr/2013	16:41:51	365250/01-001	Gas-Pro	Calibration	Incomplete	00000011
19/Apr/2013	16:42:33	W185427/01-002	Gas-Pro	Calibration	Incomplete	00000011
19/Apr/2013	16:44:09	365250/01-001	Gas-Pro	Calibration	Incomplete	00000011

Gas Monitor Calibration Summary Report

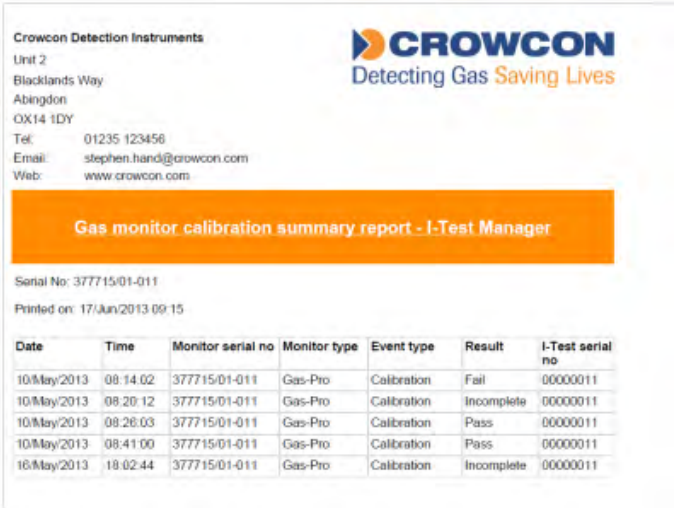
To print an overview of all calibrations performed on a specific gas monitor, ensure the required gas monitor serial numbers is highlighted and press print and a screen showing a summary of all calibrations on a specific gas monitor will be displayed (see *Figure 55*):

The gas monitor calibration summary report shows the following information for each calibration for the specified gas monitor.

- Date of calibration
- Time of calibration
- Monitor Serial Number
- Monitor Type
- Event Type
- Overall Pass/Fail Result of Calibration
- I-Test Serial Number
- Print date of report

It is then possible to print this report to a standard network printer by selecting the print icon.

Figure 55: Gas monitor calibration summary report



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Gas monitor calibration summary report - I-Test Manager

Serial No: 377715/01-011

Printed on: 17/Jun/2013 09:15

Date	Time	Monitor serial no	Monitor type	Event type	Result	I-Test serial no
10/May/2013	08:14:02	377715/01-011	Gas-Pro	Calibration	Fail	00000011
10/May/2013	08:20:12	377715/01-011	Gas-Pro	Calibration	Incomplete	00000011
10/May/2013	08:26:03	377715/01-011	Gas-Pro	Calibration	Pass	00000011
10/May/2013	08:41:00	377715/01-011	Gas-Pro	Calibration	Pass	00000011
16/May/2013	18:02:44	377715/01-011	Gas-Pro	Calibration	Incomplete	00000011

Gas Monitor Calibration Report: To print a calibration report for a specific calibration of a specific gas monitor on a specific date, ensure the required date for the specific gas monitor serial number is highlighted. The screen shown in *Figure 56* will be displayed automatically.

The calibration report shows the following information

- Monitor Type
- Monitor Date (internal monitor date when tested)
- Monitor Time (internal monitor time when tested)
- Monitor Serial Number
- Date of Calibration
- Time of Calibration
- Overall Pass/Fail Result of Calibration
- Next Calibration Due Date
- Sensors Types Tested
- Gas Level Applied
- Units of applied gas
- Cylinder Expiry Date
- Cylinder Lot Number
- Sensor Calibration Due Date
- Sensor Pass/Fail Result

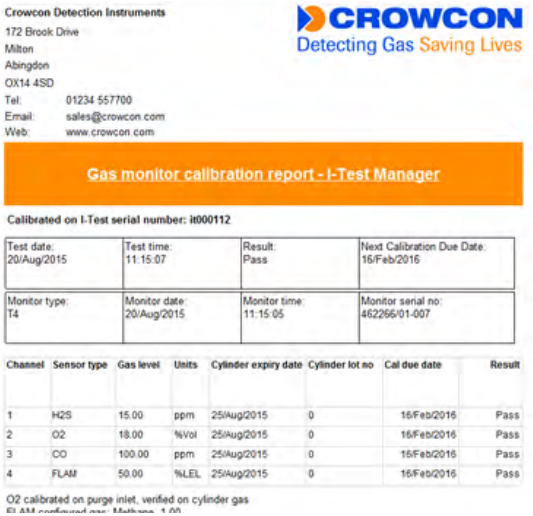
Note: If the gas cylinder used for the calibration had the cross calibration option selected (see *page 27*) two % LEL values will be shown in the calibration report for the flammable gas sensor. The first value is the equivalent % LEL level of the gas used to determine a pass or fail result, the second value is the actual % LEL level of CH4 in the cylinder.

It is then possible to print this report to a standard network printer by selecting the print icon.

A T4 gas monitor calibration report and a Gas-Pro gas monitor calibration report are shown on *page 75*.

Please note that theT4 gas monitor calibration report indicates FLAM gas configured and its correction factor, in this case ‘Methane, 1.00’. Please refer to Portables-Pro 2.0 User Manual for further details on configured gas types for T4.

Figure 56: T4 Gas monitor calibration report



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Gas monitor calibration report - I-Test Manager

Calibrated on I-Test serial number: it000112

Test date:	Test time:	Result:	Next Calibration Due Date:
20/Aug/2015	11:15:07	Pass	16/Feb/2016

Monitor type:	Monitor date:	Monitor time:	Monitor serial no:
T4	20/Aug/2015	11:15:05	462266/01-007

Channel	Sensor type	Gas level	Units	Cylinder expiry date	Cylinder lot no	Cal due date	Result
1	H2S	15.00	ppm	25/Aug/2015	0	16/Feb/2016	Pass
2	O2	18.00	%Vol	25/Aug/2015	0	16/Feb/2016	Pass
3	CO	100.00	ppm	25/Aug/2015	0	16/Feb/2016	Pass
4	FLAM	50.00	%LEL	25/Aug/2015	0	16/Feb/2016	Pass

O2 calibrated on purge inlet, verified on cylinder gas

Figure 57: Gas-Pro Gas monitor calibration report

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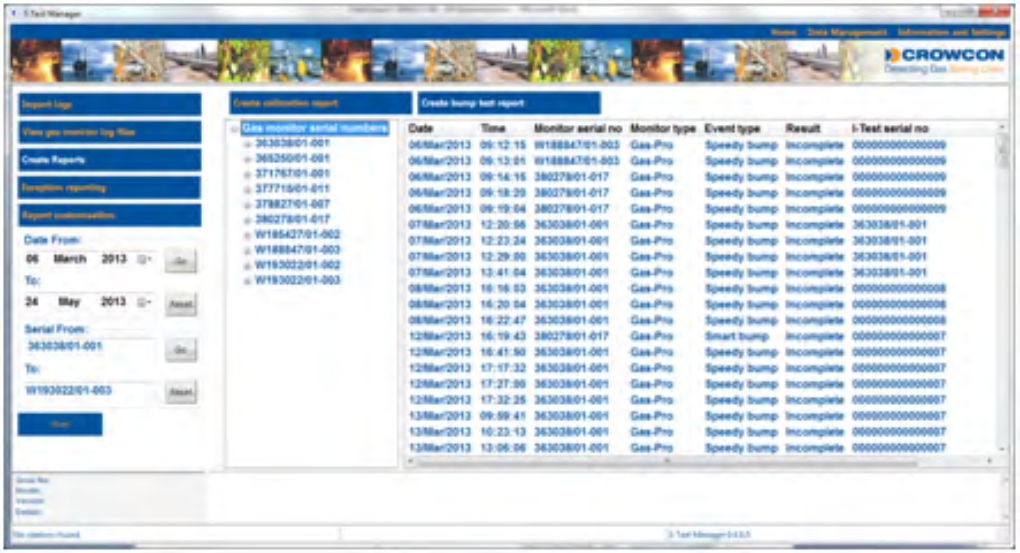
Gas monitor calibration report - I-Test Manager

3.11.2 Create Bump Test Report

▶ Select **Create bump test report** to view all bump test data imported from I-Test units.

When selected, this option will cause the following screen to be displayed:

Figure 58: Instrument Bump Test Summary Screen



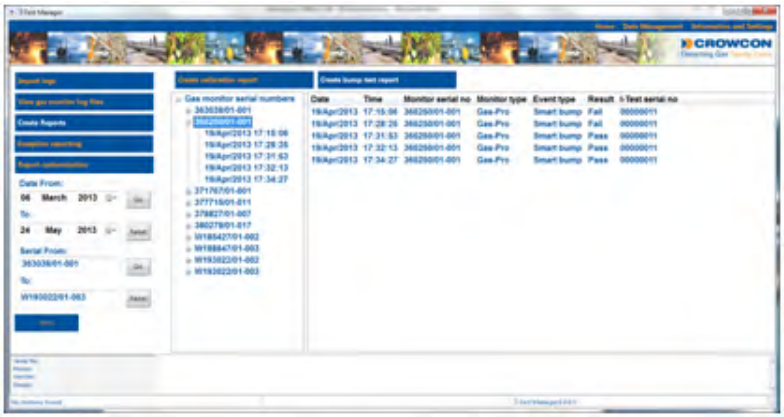
This screen offers the following functions:

3.11.2.1 Gas Monitor Serial Numbers

This shows the serial numbers of all gas monitors that have bump test data imported to I-Test Manager.

▶ To view all bump tests for a specific gas monitor click the appropriate serial number. This will then show a list of all the bump tests recorded for this monitor as shown in *Figure 59*.

Figure 59: Bump test by serial numbers screen



3.11.2.2 Date From/To

This option allows the user to select, by date, gas monitors with bump test data such that these can then be selected and a bump test report created.

▶ Enter the required **Date From** and **To** by changing each value in the field or clicking the calendar button to the right of the field.

The field will be highlighted yellow to indicate a reduced set of available data is being displayed.

3.11.2.3 Serial From/To

This option allows the user to select, by serial number, gas monitors with bump test data such that these can then be selected and a bump test report created.

▶ Enter the required **Serial From** and **To** by changing each value in the field.

The field will be highlighted yellow to indicate a reduced set of available data is being displayed.

3.11.2.4 Print

There are three Bump test report print functions:

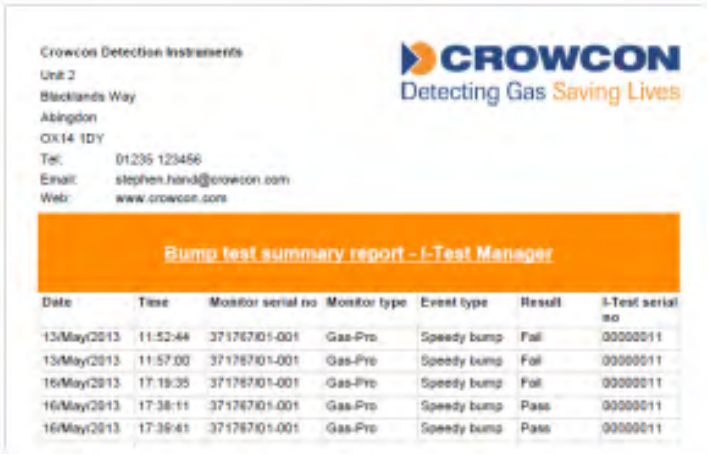
Bump Test Summary Report: To print an overview of all bump tests performed on all the gas monitors, selected as described above, ensure **Gas monitor serial numbers** is highlighted and press print. A screen showing a summary of all bump tests performed on all gas monitors will be displayed (see *Figure 60*):

The calibration summary report shows the following information for each calibration:

- Date of bump test
- Time of bump test
- Monitor Serial Number
- Monitor Type
- Event Type
- Overall Pass/Fail Result of bump test
- I-Test Serial Number
- Print date of report

It is then possible to print this report to a standard network printer by selecting the print icon.

Figure 60: Bump test summary report



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Bump test summary report - I-Test Manager

Date	Time	Monitor serial no	Monitor type	Event type	Result	I-Test serial no
13/May/2013	11:52:44	371767/01-001	Gas-Pro	Speedy bump	Fail	00000011
13/May/2013	11:57:00	371767/01-001	Gas-Pro	Speedy bump	Fail	00000011
16/May/2013	17:19:35	371767/01-001	Gas-Pro	Speedy bump	Fail	00000011
16/May/2013	17:38:11	371767/01-001	Gas-Pro	Speedy bump	Pass	00000011
16/May/2013	17:39:41	371767/01-001	Gas-Pro	Speedy bump	Pass	00000011

Gas Monitor Bump Test Summary Report:

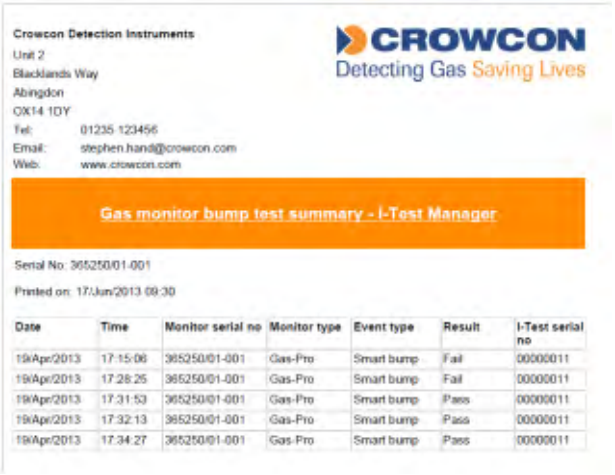
To print an overview of all bump tests performed on a specific gas monitor, ensure the required gas monitor serial number is highlighted and press print and a screen showing a summary of all bump tests undertaken on a specific gas monitor will be displayed (see *Figure 61*).

The gas monitor bump test summary report shows the following information for each bump test for the specified gas monitor:

- Date of bump test
- Time of bump test
- Monitor Serial Number
- Monitor Type
- Event Type
- Overall Pass/Fail Result of bump test
- I-Test Serial Number
- Print date of report

It is then possible to print this report to a standard network printer by selecting the print icon.

Figure 61: Gas monitor bump test summary report



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Gas monitor bump test summary - I-Test Manager

Serial No: 365250/01-001

Printed on: 17/Jun/2013 09:30

Date	Time	Monitor serial no	Monitor type	Event type	Result	I-Test serial no
19/Apr/2013	17:15:06	365250/01-001	Gas-Pro	Smart bump	Fail	00000011
19/Apr/2013	17:28:25	365250/01-001	Gas-Pro	Smart bump	Fail	00000011
19/Apr/2013	17:31:53	365250/01-001	Gas-Pro	Smart bump	Pass	00000011
19/Apr/2013	17:32:13	365250/01-001	Gas-Pro	Smart bump	Pass	00000011
19/Apr/2013	17:34:27	365250/01-001	Gas-Pro	Smart bump	Pass	00000011

Gas Monitor Bump Test Report: To print a bump test report for a specific bump test of a specific gas monitor on a specific date, ensure the required date for the specific gas monitor serial number is highlighted. The screen shown in *Figure 62* will be displayed automatically.

The bump test report shows the following information:

- Monitor Type
- Monitor Date (internal monitor date when tested)
- Monitor Time (internal monitor time when tested)
- Monitor Serial Number
- Date of bump test
- Time of bump test
- Overall Pass/Fail Result of bump test
- Next bump test Due Date
- Sensors Types Tested
- Gas Level Applied
- Units of applied gas
- Cylinder Expiry Date
- Cylinder Lot Number
- Sensor Pass/Fail Result of bump test
- Sensor Pass/Fail bump test

Note: If the gas cylinder used for the bump test had the cross calibration option selected (see *page 27*) two % LEL values will be shown in the bump test report report for the flammable gas sensor. The first value is the equivalent % LEL level of the gas used to determine a pass or fail result, the second value is the actual % LEL level of CH4 in the cylinder.

It is then possible to print this report to a standard network printer by selecting the print icon.

Figure 62: Gas monitor bump test report

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Gas monitor bump test report - I-Test Manager

Smart bump tested on I-Test serial number: 00000008

Test date:	Test time:	Result:	Next Bump Test Due Date:
18/Jul/2013	10:15:43	Pass	19/Jul/2013

Monitor type:	Monitor date:	Monitor time:	Monitor serial no:
Gas-Pro	18/Jul/2013	10:16:32	374366/01-002

Channel	Sensor type	Gas level	Units	Cylinder expiry date	Cylinder lot no	Bump due date	Result
1	CO	100.00	ppm	30/Jul/2018	832	19/Jul/2013	Pass
2	H2S	15.00	ppm	30/Jul/2018	832	19/Jul/2013	Pass
3	CH4	50.00	%LEL	30/Jul/2018	832	19/Jul/2013	Pass
4	CO2	1.00	%Vol	30/Jul/2018	832	19/Jul/2013	Pass
5	O2	18.00	%Vol	30/Jul/2018	832	19/Jul/2013	Pass

3.12 Exception Reporting

Exception reports provide the ability to review and co-ordinate data with regard to the management of a fleet of gas monitors.

Once the relevant data has been collected from I-Test and imported into I-Test Manager it is possible to produce a selection of exception reports with various criteria.

It is for example possible to create an exception report that will list all gas monitors that have passed a bump test, or produce a report that lists all gas monitors that have failed a calibration. There are many variants of exception report that can be produced, this section details this process.

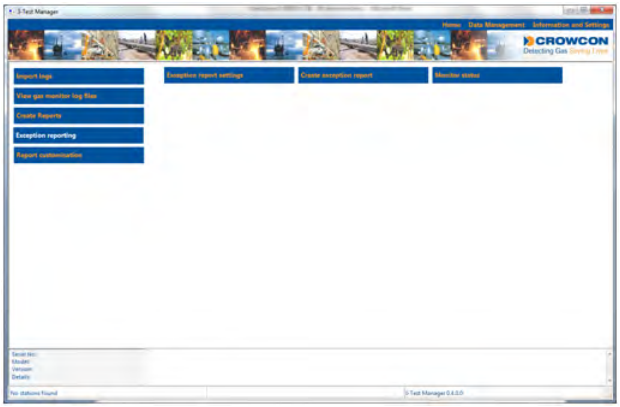
3.12.1 Creating an Exception Report

Exception reports can only be created for gas monitors that have been inserted into an I-Test and then (dependant upon requirements of exception report) had I-Test Action log and gas monitor event log, extracted from I-Test and imported to I-Test Manager.

▶ Select **Exception Reporting** to create an exception report.

When selected, this option will cause the following screen to be displayed:

Figure 63: Exception Reporting Screen



The following Exception Reporting Screen functions can be selected from this screen:

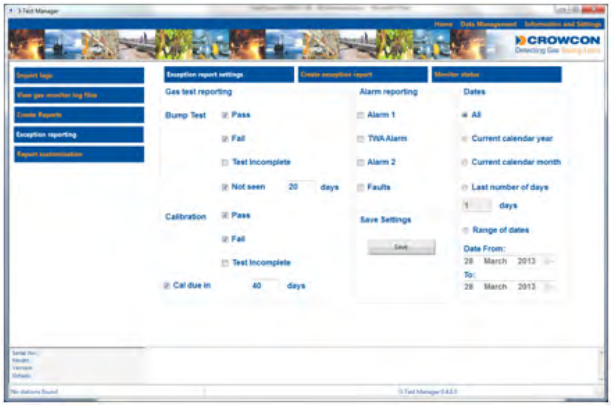
- Exception Report Settings (see *page 82*)
- Create Exception Report (see *page 85*)
- Monitor Status (see *page 86*)

3.12.2 Exception Report Settings

These settings control the parameters of the exception report produced.

▶ Select **Exception Report Settings** and the following screen will be displayed.

Figure 64: Exception Report Settings screen



These settings control the gas monitors that will appear in the report when the exception report is created.

3.12.2.1 Gas Test Reporting

For an instrument to appear in the exception report for the following settings the I-Test Action log files must have been downloaded from I-Test and imported into I-Test Manager.

Bump Test

Pass: If this tick box is selected gas monitors that have passed either a speedy or a smart bump will appear in the exception report.

Fail: If this tick box is selected gas monitors that have failed either a speedy or a smart bump will appear in the exception report.

Not Seen: Select this tick box and enter a value in the days field and any gas monitors that have not had a bump test in the specified number of days will appear in the exception report.

Calibration

Pass: If this tick box is selected gas monitors that have passed either a standalone calibration or a bump test fail calibration will appear in the exception report.

Fail: If this tick box is selected gas monitors that have failed either a standalone calibration or a bump test fail calibration will appear in the exception report.

Cal Due in

Select this tick box and enter a value in the days field and gas monitors that are due a calibration in the specified number of days will appear in the exception report.

Alarm Reporting

For an instrument to appear in the exception report for the following settings the I-Test Action log files, and gas monitor event log files must have been downloaded from I-Test and imported into I-Test Manager.

Alarm 1

If this tick box is selected gas monitors that have been exposed to a gas level exceeding the alarm level one threshold, will appear in the exception report.

TWA Alarm

If this tick box is selected gas monitors that have been exposed to a gas level exceeding the TWA threshold will appear in the exception report.

Alarm 2

If this tick box is selected gas monitors that have been exposed to a gas level exceeding the alarm level two threshold, will appear in the exception report.

Faults

If this tick box is selected gas monitors that have logged a fault will appear in the exception report.

Dates

All: If this tick box is selected all gas monitors that meet the requirements of the previous settings will appear in the exception report.

This year: If this tick box is selected all gas monitors inserted into the I-Test within the last year and that meet the requirements of the previous settings will appear in the exception report.

Last month: If this tick box is selected all gas monitors inserted into the I-Test within the last month and that meet the requirements of the previous settings will appear in the exception report.

Last number of days: If this tick box is selected all gas monitors inserted into the I-Test within the time period entered in the days box and that meet the requirements of the previous settings will appear in the exception report.

Range of dates: This option allows the user to select the date range over which date all gas monitors inserted into the I-Test and that meet the requirements of the previous settings will appear in the exception report.

Enter the required **Date From** and **To** by changing each value in the field or clicking the calendar button to the right of the field.

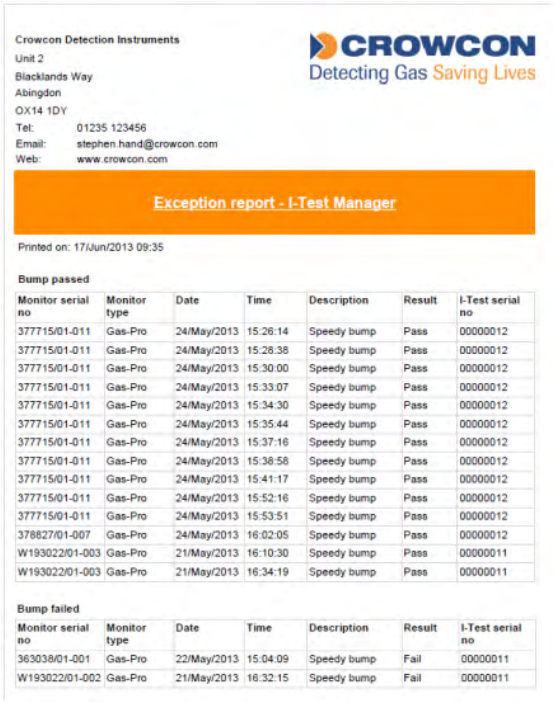
Save Settings

Save: Once all the required selections have been made the exception report button can be selected, however if it is required to save these settings such that future reports will implement the same selections press Save.

3.12.3 Create Exception Report

Once all the required selections have been made select create exception report to create the exception report. The following screen will be displayed dependant upon settings made.

Figure 65: Exception Report



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Exception report - I-Test Manager

Printed on: 17/Jun/2013 09:35

Bump passed

Monitor serial no	Monitor type	Date	Time	Description	Result	I-Test serial no
377715/01-011	Gas-Pro	24/May/2013	15:26:14	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:28:38	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:30:00	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:33:07	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:34:30	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:35:44	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:37:16	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:38:58	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:41:17	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:52:16	Speedy bump	Pass	00000012
377715/01-011	Gas-Pro	24/May/2013	15:53:51	Speedy bump	Pass	00000012
378827/01-007	Gas-Pro	24/May/2013	16:02:05	Speedy bump	Pass	00000012
W193022/01-003	Gas-Pro	21/May/2013	16:10:30	Speedy bump	Pass	00000011
W193022/01-003	Gas-Pro	21/May/2013	16:34:19	Speedy bump	Pass	00000011

Bump failed

Monitor serial no	Monitor type	Date	Time	Description	Result	I-Test serial no
363038/01-001	Gas-Pro	22/May/2013	15:04:09	Speedy bump	Fail	00000011
W193022/01-002	Gas-Pro	21/May/2013	16:32:15	Speedy bump	Fail	00000011

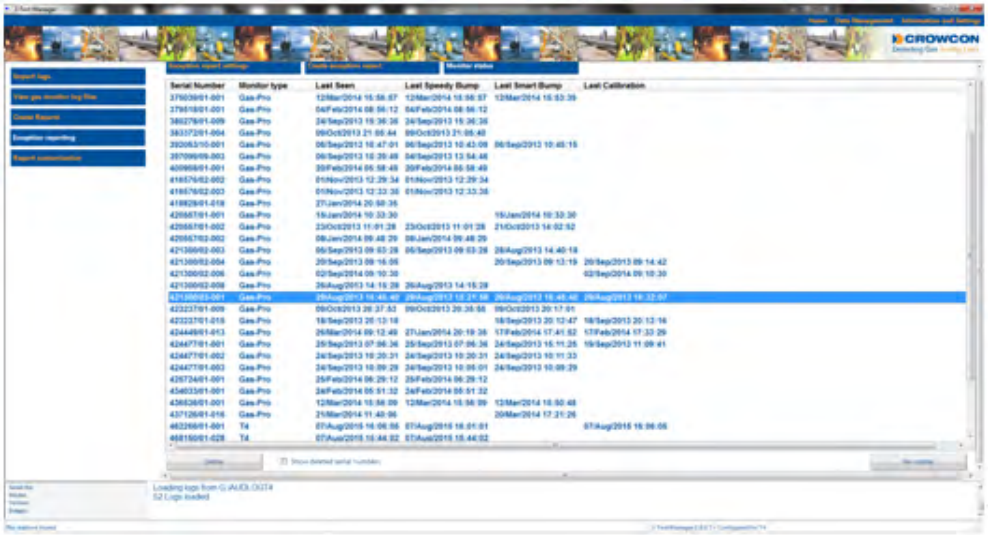
3.12.3.1 Monitor Status

These settings control the gas monitors that will appear in the exception report produced.

This function allows instruments to be removed from the exceptions reports, this may be necessary if for example instruments are lost or damaged and will prevent instruments not required being continually reported as not been bump tested or calibrated.

▶ Select **Monitor Status** and the following screen will be displayed:

Figure 66: Monitor Status



This will show a status summary of all gas monitors listed by serial number.

This list of serial numbers represents all instruments that if meeting the requirements of the exception reporting settings will appear in the exception report.

▶ To remove an instrument from appearing in the exception report simply highlight the required instrument and press delete. The following screen will then be shown.

Figure 67: Reason for Deletion Screen

This allows a reason for deletion to be inserted for future reference.

▶ Once a reason has been entered select **OK** and the screen will return to the Monitor Status screen and the selected serial number will now be removed.

Any further exception reports produced will now not include this monitor.

3.12.3.2 Show deleted serial numbers

If this tick box is selected then instruments previously deleted can be seen in the Monitor Status screen including the comment for deletion.

3.12.3.3 Re-instate

If a monitor is deleted but at a later date is required to be included once again in the exception reports, this can be achieved as follows:

▶ Select the serial number of the deleted device and press R**e-instate**.

▶ Click **OK** when asked to confirm re-instating the monitor.

3.13 Information and Settings

When the Information and settings function is selected, the following screen will be displayed:

Figure 68: Information and settings screen

The following functions can be selected from this screen:

- About (see below)
- Settings (see *page 89*)
- Support (see *page 89*)

3.13.1 About

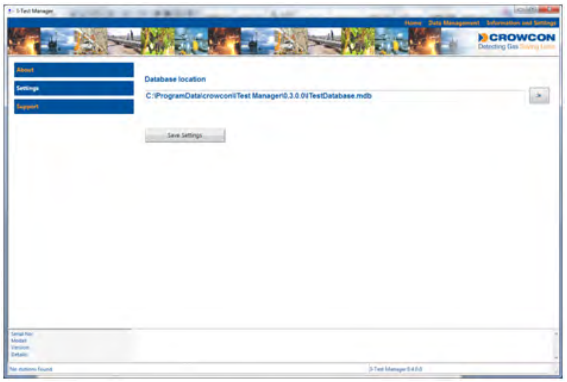
Selecting **About** will return the display to the screen shown above.

3.13.2 Settings

This function enables the database settings to be changed as follows:

▶ Select **Settings** from the menu. The screen shown below will be displayed.

Figure 69: Settings screen



3.13.3 Support

When this option is selected, the following screen will be displayed:

Figure 70: Support screen

4. Configuring I-Test via Front Panel Keypad

It is possible to configure I-Test to perform the desired test actions by creating a configuration in I-Test Manager and uploading to I-Test , either directly via the USB port (see *page 48*) or via a the USB Flash Stick (see *page 52*), or via the selections available via the I-Test keypad on the front panel.

This section describes the features and functions available to configure the I-Test via the I-Test keypad on the front panel

4.1 Front panel layout

Figure 71: Front panel

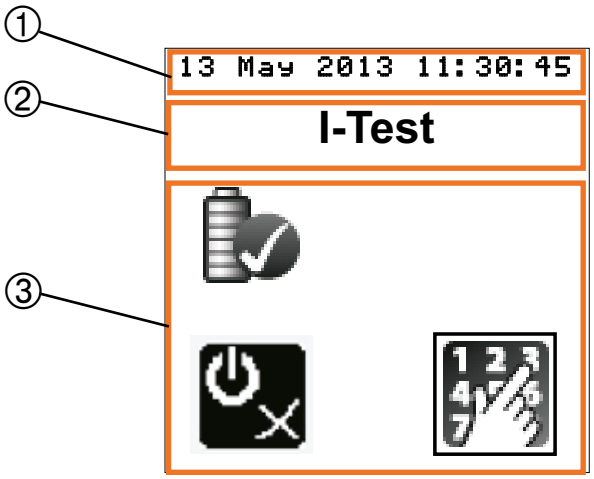
① Display screen
② Control buttons
③ Charging indicator
④ Test Status indicator

4.1.1 Home screen

The I-Test display screen is divided into the following areas:

Figure 72: Display screen areas

① Date & time
② Banner
③ Icon area



4.1.2 I-Test Safe Shutdown

If it is required to remove power from I-Test either by removing the power lead or switching off via the on/off push button, then the following process must be followed to safely power down I-Test.

The safe shutdown icon can be seen on the home screen

When the icon indicates a cross then I-Test should not be switched off or have power removed.

To switch off I-Test use the arrow keys to navigate to the safe shutdown icon.

Press the OK key and the icon will change to display a tick this indicates that I-Test can now safely have the power removed or be switched off (flashing tick indicates time out for safe shutdown about to expire).

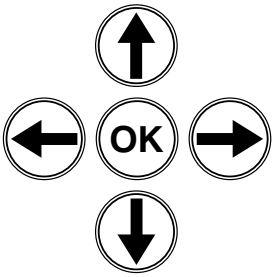
The icon will revert back to the after approximately 15 seconds if the OK is not pressed.

I-Test must not be switched off or have power removed whilst the is shown

4.1.3 Control buttons

The 5 control buttons (shown below) on the I-test front panel are used for navigation and the selection of functions, and are also used to increment and decrement values in certain contexts (e.g. entering the PIN code).

Figure 73: Control buttons



The icon will display the previous menu screen.

4.1.4 I-Test charging indicator

The charging indicator indicates the current charging status as follows:

- Solid green – Running on External Mains Power
- Solid Yellow - Running on internal battery
- Solid red - Internal battery low

4.1.5 Test Status indicator

The test status indicator shows the current state of the test in progress or the result of the last test undertaken

- **Solid green:** Test Passed
- **Flashing Yellow:** Test in progress
- **Solid red:** Test Failed

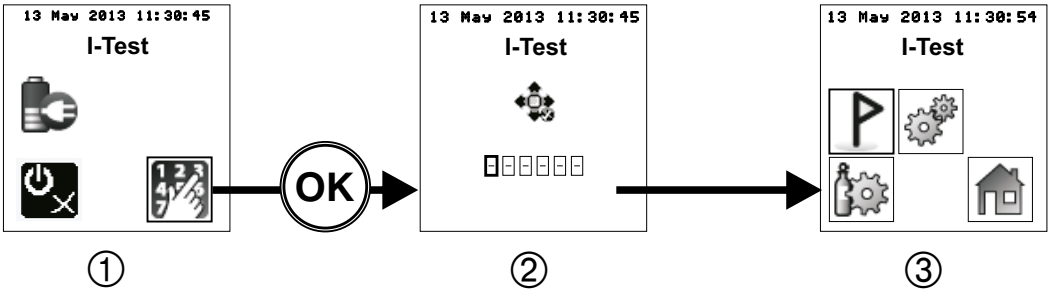
The status of the last test is also shown on I-Test front panel (see *page 18*).

4.2 Accessing the I-Test Main menu

To access the I-Test main menu, the PIN code has to be entered as follows:

- When the I-Test is turned on, the Home screen ① will be displayed.
- Press (OK) to enter the PIN code entry screen ②.

Figure 74: PIN entry



- Use the (↑) and (↓) keys to increment or decrement the first digit of the PIN code until the correct number is displayed.
- Press the (→) key to move to the next digit and repeat the above procedure until the next number is correctly displayed.
- Carry on until all 6 numbers are displayed correctly and press (OK). The Main menu ③ will be displayed.

Note: The default PIN code as manufactured is 000000, this can be changed if required please refer to *Section 3.7.3.5* on *page 39*.

If the I-Test is left idle, after a preset time (see *page 31*) the Home screen will be displayed.

4.3 Inlet setup

This functionality allows the user to select a specific predefined cylinder profile to be allocated to the gas inlet that will be used during normal operation of the I-Test,

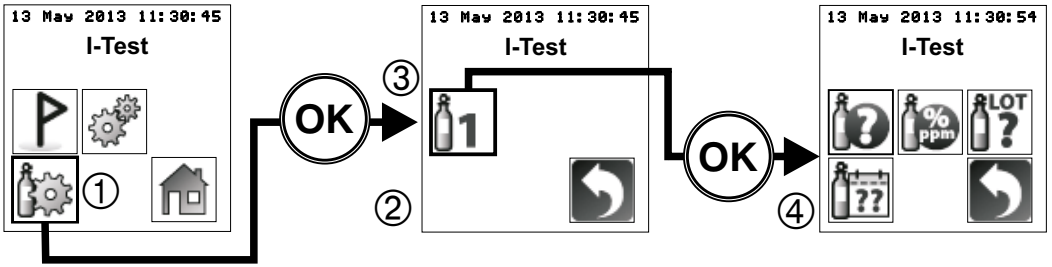
A cylinder profile can only created with the Manage Cylinders function in I-Test Manager (see *page 25*) but once uploaded to I-Test, a specific cylinder profile can be assigned to an inlet.

Before a gas monitor can be tested the predefined cylinder must be configured to be assigned to the inlet and have parameters defined such as actual gas value, Lot number and expiry date.

To fully define cylinder proceed as follows:

- ▶ Access the Main menu (see *page 93*).
- ▶ From the Main menu use the arrow keys to highlight the inlet setup icon ①.
- ▶ Press the OK key. The Inlet Function screen ② will be displayed.
- ▶ Use the arrow keys to highlight the required inlet to set up ③ and press OK . The Inlet Setup screen will be displayed ④.

Figure 75: Inlet setup functions

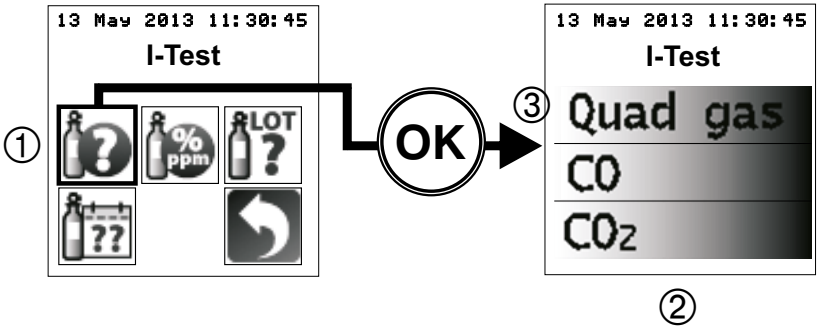


- ▶ The following options are available:
  - This function allows the cylinder profile to be selected from a list of predefined cylinders uploaded via I-Test Manager (see *page 95*)
  - This function enables the user to enter the actual concentration of the gas in the physical cylinder to be connected to I-Test. This should be read from the label on the cylinder (see *page 96*)
  - This function enables the user to enter the Lot number of the physical cylinder to be connected to I-Test. This should be read from the label on the cylinder (see *page 97*)
  - This function enables the user to enter to enter expiry date of the physical cylinder to be connected to I-Test. This should be read from the label on the cylinder (see *page 98*)

4.3.1 Select cylinder profile

- From the Inlet Setup screen use the arrow keys to highlight the cylinder type icon ①.
- Press the OK key. The Cylinder profile selection screen ② will be displayed.
- Use the ↑ and ↓ keys to highlight the required cylinder profile ③ (quad shown) and press OK. The cylinder type will be selected and the Inlet Setup screen will be redisplayed.
- If whilst the Cylinder profile screen is displayed the selection is to be aborted, press the ← key.

Figure 76: Cylinder profile selection



4.3.2 Setting Cylinder Gas Concentrations

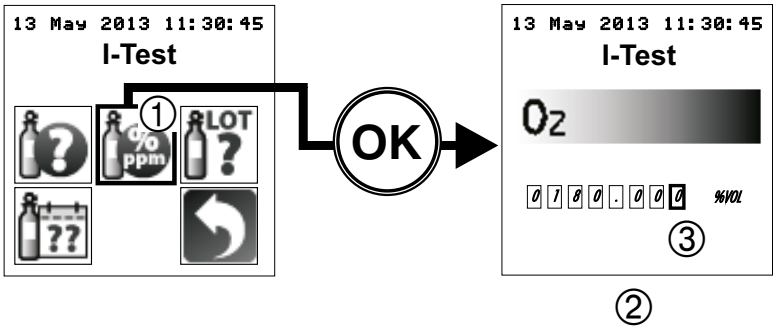
For the selected cylinder profile the actual gas concentration of each gas defined within the cylinder must be checked against the physical cylinder to be connected to I-Test and, if necessary, adjusted.

- From the Inlet Setup screen use the arrow keys to highlight the cylinder concentration icon ①.
- Press the OK key. The Gas Concentration setting screen ② will be displayed.

If a multiple gas cylinder has been set for the selected inlet, a choice of gases will be displayed. Use the selection process described on *page 95* to select the required gas and then continue.

- Use the ← and → keys to highlight the required value to adjust ③
- Use the ↑ and ↓ keys to increase or decrease the value.
- Repeat this to adjust all the relevant values and press OK when the adjustment is complete. The Gas concentration will be set and the Inlet Setup screen will be redisplayed or, if a multiple gas cylinder has been selected for the inlet, the choice of gases will be redisplayed.
- If whilst the Gas Concentration setting screen is displayed the adjustment is to be aborted, press the ← key.

Figure 77: Gas Concentration setting screen



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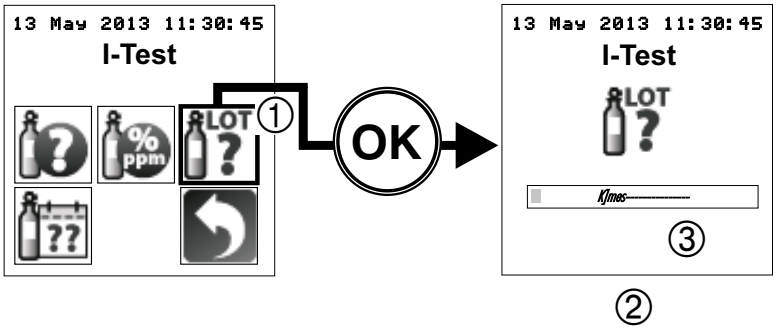
4.3.3 Setting Cylinder Lot Number

For the selected cylinder profile the cylinder lot number must be checked against the physical cylinder to be connected to I-Test and, if necessary, adjusted.

- From the Inlet Setup screen use the arrow keys to highlight the cylinder lot number icon ①.
- Press the OK key. The Cylinder Lot Number screen ② will be displayed.
- Use the ← and → keys to highlight the required number to set ③
- Use the ↑ and ↓ keys to select the desired number or letter.
- Repeat this to adjust all the relevant digits and press OK when the adjustment is complete. The lot number will be set and the Inlet Setup screen will be redisplayed.
- If whilst the Cylinder Lot Number setting screen is displayed the adjustment is to be aborted, press the ← key.

Figure 78: Cylinder Lot Number screen

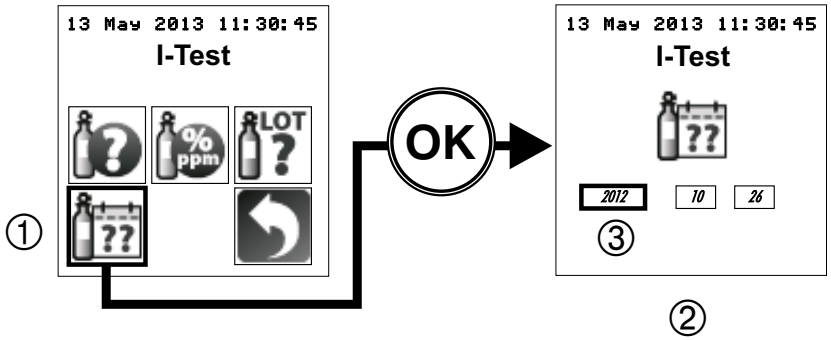


4.3.4 Setting Cylinder expiry date

For the selected cylinder profile the cylinder expiry date must be checked against the physical cylinder to be connected to I-Test and, if necessary, adjusted.

- From the Inlet Setup screen use the arrow keys to highlight the cylinder expiry date icon ①.
- Press the OK key. The Cylinder Expiry Date screen ② will be displayed.
- Use the ← and → keys to highlight the required number to set ③
- Use the ↑ and ↓ keys to increase or decrease the value.
- Repeat this to adjust all the relevant digits and press OK when the adjustment is complete. The expiry date will be set and the Inlet Setup screen will be redisplayed.
- If whilst the Cylinder Expiry Date screen is displayed the adjustment is to be aborted, press the ← key.

Figure 79: Cylinder Expiry Date screen



4.4 Configuring I-Test Test Sequence

This functionality allows the user to define the test, or the sequence of tests that I-Test will undertake in normal operation.

This selection will define the test or sequence of tests I-Test will undertake when a gas monitor is inserted and the door closed. This sequence will be fully automated by the I-Test.

I-Test can be configured via the front panel key pad to undertake the following tests:

- Speedy bump (see *page 100*)
- Smart bump (see *page 101*)
- Calibration (see *page 102*)
- Download Monitor log Files (see *page 104*)

To manually carry out a test and/or a calibration on a gas monitor mounted in the I-Test, proceed as follows:

▶ Access the Main menu (see *page 93*).

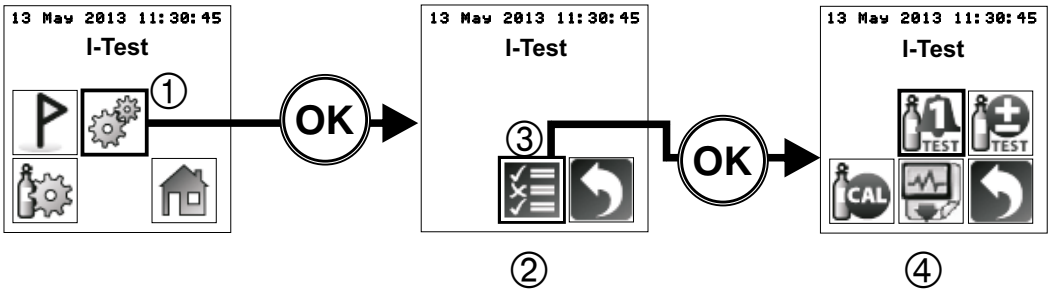
▶ From the Main menu use the arrow keys to highlight the Enable Test Stages icon ①.

▶ Press the OK key. The Enable Test Stages screen ② will be displayed.

▶ Use the ← and → keys to highlight the Test icon ③ and press OK. The Tests screen will be displayed ④.

Note: Smart bump functionality is only applicable to Gas-Pro, a T4 I-Test test screen will not display the smart bump icon .

Figure 80: Test Sequence Screen Selection



To select a test use the arrow keys to navigate to the required icon then press OK to highlight the icon.

A box will now appear around the icon indicating this function has been selected this test will be performed if a gas monitor is inserted into the I-Test.

If the OK button is pressed again this will deselect the icon and the function will no longer be selected and will not be performed if a gas monitor is inserted into the I-Test.

4.4.1 Speedy bump

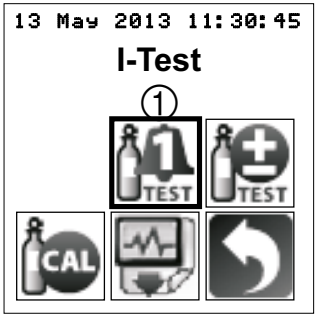
Select this option to undertake a speedy bump on all sensors when the gas monitor is inserted into I-Test.

A speedy bump will test the gas monitor sensors to the first alarm level.

- To select a Speedy Bump in the sequence, from the Test Sequence screen use the arrow keys to navigate to the Speedy Bump icon then press OK to highlight the Speedy Bump icon ①.
- A box will now appear around the icon indicating that Speedy Bump function has been selected and this test will be performed if a gas monitor is inserted into the I-Test.
- Press to return to Test Settings screen and then press again to return to main menu screen.

Note: Smart bump functionality is only applicable to Gas-Pro, a T4 I-Test test screen will not display the smart bump icon .

Figure 81: Speedy Bump screen



4.4.2 Smart bump

Select this option to undertake smart bump on all sensors when the gas monitor is inserted into I-Test.

A smart bump will test that the gas monitor responds correctly to a specified level of test gas within a given time window dependant upon the sensor response time. These parameters are set in the Inlet Configuration in I-Test Manager, see *page 40*.

Only one type of bump test can be selected, if speedy bump test is selected then smart bump will be disabled and vice versa.

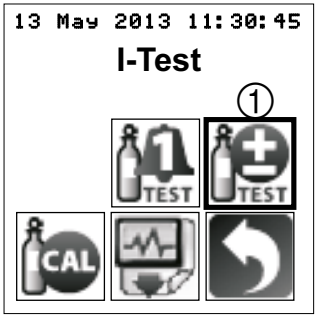
To select a Smart Bump in the sequence, from the Test Sequence screen use the arrow keys to navigate to the Smart Bump icon then press OK to highlight the Smart Bump icon ①.

A box will now appear around the icon indicating that Smart Bump function has been selected and this test will be performed if a gas monitor is inserted into the I-Test.

▶ Press to return to Test Settings screen and then press again to return to main menu screen.

Note: Smart bump functionality is only applicable to Gas-Pro, a T4 I-Test test screen will not display the smart bump icon.

Figure 82: Smart Bump screen



4.4.3 Calibration

I-Test offers three calibration options dependent upon user requirements, Standalone Calibration, Calibration after Bump Test Fail and Calibrate if expired (refer to *page 37*).

Standalone calibration and calibration after bump test fail are available via the front panel, calibrate if expired is available via I-Test Manager.

4.4.3.1 Standalone Calibration

This option should be selected if I-Test is to be configured to undertake only a calibration function, when a gas monitor inserted into I-Test.

Standalone calibration will calibrate all sensors in the gas monitor; this will occur even if the sensor was not due a calibration.

Standalone calibration can ***not*** be selected when speedy bump is selected.

If standalone calibration is selected with smart bump this will change the functionality of the calibration process to that as described below in Bump Test Fail Calibration.

Standalone calibration can be selected with download gas monitor log files (see *page 37*).

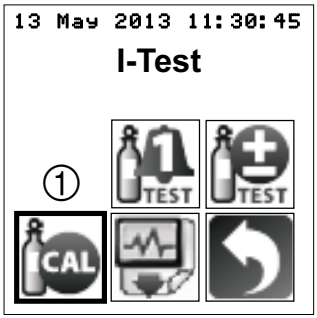
- ▶ To select a Standalone Calibration from the Test Sequence screen use the arrow keys to navigate to the Calibration icon CAL then press OK to highlight the Calibration icon ①.
- ▶ A box will now appear around the icon indicating that Standalone Calibration function has been selected and this test will be performed if a gas monitor is inserted into the I-Test.

To ensure a standalone calibration is undertaken, speedy bump and smart bump must not be selected

- ▶ Press to return to Test Settings screen and then press again to return to main menu screen.

Note: Smart bump functionality is only applicable to Gas-Pro, a T4 I-Test test screen will not display the smart bump icon .

Figure 83: Standalone Calibration screen



4.4.3.2 Bump Test Fail Calibration

This option should be selected if there is a requirement to calibrate a sensor, should it fail a smart bump test.

It should be noted that if a monitor passed a smart bump test but calibration on a sensor has expired, at the end of the smart bump test this sensor will be calibrated.

If Calibration and Smart Bump are selected together I-Test will not perform a standalone calibration upon insertion of the gas monitor (as described above) but will perform a bump test fail calibration on any sensor that fails a smart bump test.

Only sensors that fail smart bump will be calibrated, this will occur even if the sensor was not due a calibration.

Bump Test Fail Calibration can be selected with Smart Bump, Allow configuration and download gas monitor log files. Bump Test Fail calibration can ***not*** be selected with speedy bump.

If a monitor passed a smart bump test but calibration on a sensor has expired at the end of the smart bump test, this sensor will be calibrated.

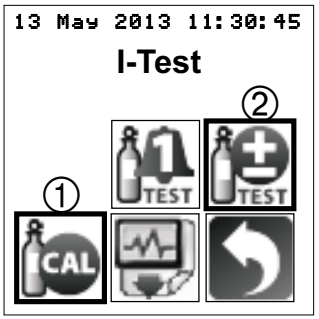
- To select a Bump Test Fail Calibration, from the Test Sequence screen use the arrow keys to navigate to the Calibration icon then press (OK) to highlight the Calibration icon ①. Then use the arrow keys to navigate to the Smart Bump icon then press (OK) to highlight the Smart Bump icon ②.
- A box will now appear around the icons indicating that Bump Test Fail Calibration function has been selected and this test will be performed if a gas monitor is inserted into the I-Test.

To ensure a Bump Test Fail calibration is undertaken smart bump and calibration must both be selected.

- Press to return to Test Settings screen and then press again to return to main menu screen.

Note: Smart bump functionality is only applicable to Gas-Pro, a T4 I-Test test screen will not display the smart bump icon .

Figure 84: Bump Test Fail Calibration screen



4.4.4 Gas Monitor Log File Transfer to I-Test

As part of a test sequence I-Test can be configured to transfer the gas monitor log files to I-Test.

I-Test Manager offers the functionality to select if either the gas monitor event logs or gas monitor data logs are transferred to the I-Test, or both (see *page 38*).

Once this selection has been made I-Test can be configured via the I-Test front panel to transfer the selected log files to I-Test.

To transfer log files from the gas monitor to I-Test, proceed as follows:

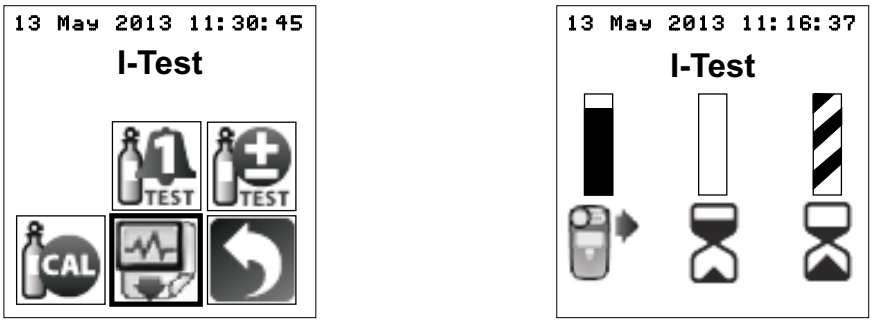
- From the Test Sequence screen use the arrow keys to navigate to the Log File Transfer icon then press OK to highlight the Log File Transfer icon ①.
- A box will now appear around the icon indicating that Log File Transfer function has been selected and this test will be performed if a gas monitor is inserted into the I-Test.

  I-Test will transfer log files from the monitor to I-Test as the last action of the test sequence. The progress screen ② will be displayed on I-Test as the log files are transferred.
- Press to return to Test Settings screen and then press again to return to main menu screen.

If I-Test is configured to transfer log files to I-Test the log files will be deleted from I-Test after transfer.

Note: Smart bump functionality is only applicable to Gas-Pro, a T4 I-Test test screen will not display the smart bump icon .

Figure 85: Log transfer configuration and progress screens



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4.4.5 Selection of I-Test Banner

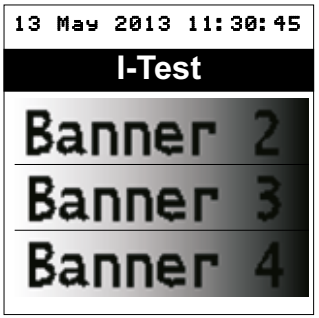
I-Test offers the ability to upload a banner to the I-Test display that can be used to identify the I-Test when in situ.

It is possible to define a maximum of 6 banners and store this Banner Set to the database in I-Test Manager; this allows multiple banner sets to be created which can then be uploaded to the I-Test. (see *page 33*).

I-Test can be configured via the front panel key pad to select a specific banner from the previously uploaded banner set as follows.

- Access the Main menu (see *page 93*).
- From the Main menu use the arrow keys to highlight the banner selection icon .
- Press the (OK) key.
- The uploaded banners will be shown see *Figure 86*.
- Use the arrow keys to highlight the required banner and press (OK) .
- I-Test will then return to the home screen and the selected banner will be displayed.

Figure 86: Banner selection



4.5 USB Memory Stick Functionality

USB memory stick functionality is not available whilst I-Test is operating on backup battery.

With the I-Test connected to its power source, a memory stick can be plugged into the USB connector and the following functions can be carried out:

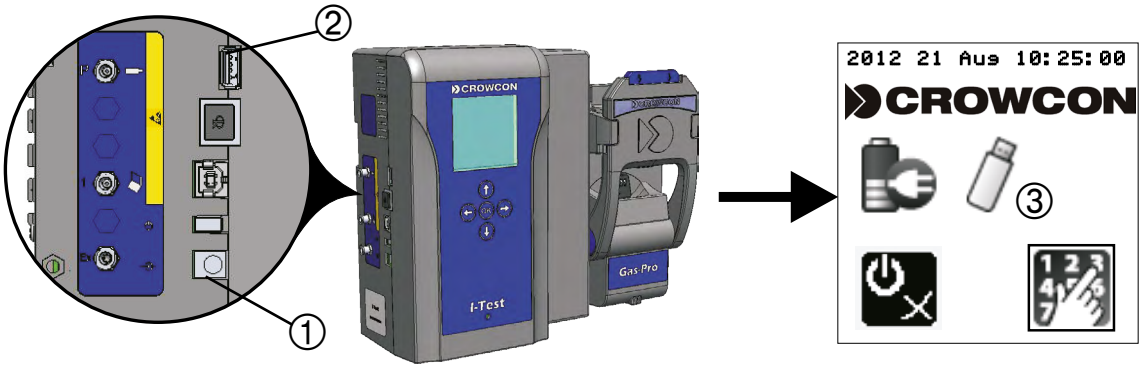
- Download I-Test configuration from memory stick (see *page 107*)
- Upload event log from I-Test to memory stick (see *page 108*)
- Upload data log from I-Test to memory stick (see *page 109*)

4.5.1 Plugging in the memory stick

▶ Ensure the I-Test power lead is connected to a suitable power source and plugged into to the power input socket ①.

▶ Plug the memory stick into the correct USB socket ②. The memory stick icon ③ will be displayed.

Figure 87: Connecting a memory stick



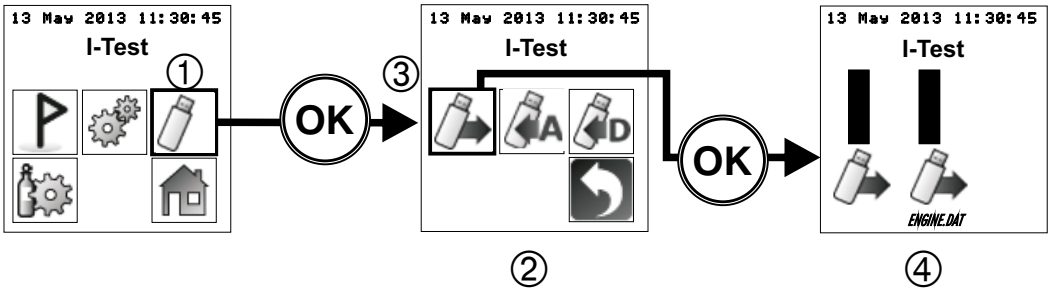
Unpacking
Overview
Set-up
Operating I-Test
I-Test Manager
Configuring I-Test
Specification
Troubleshooting
Appendices
Warranty
Contacts
Exit

4.5.2 Upload I-Test configuration from USB Memory Stick to I-Test

This option will upload an I-Test configuration previously created in I-Test Manager and saved to a USB Memory Stick (see *page 52*)

- With the memory stick correctly plugged in (see *page 106*), access the Main menu (see *page 93*).
- From the Main menu use the arrow keys to highlight the Memory Stick icon ①.
- Press the OK key. The Memory Stick Functions screen ② will be displayed.
- Use the ← and → keys to highlight the Download Configuration icon ③ and press OK. The Configuration Status screen will be displayed ④.

Figure 88: Upload I-Test configuration function



- When the download is complete the success icon will be displayed.

Before removing the USB Memory Stick from I-Test press to return to main menu screen. If the USB Memory stick is removed before returning to the main screen I-Test will display an error that can then be cleared by pressing the OK button.

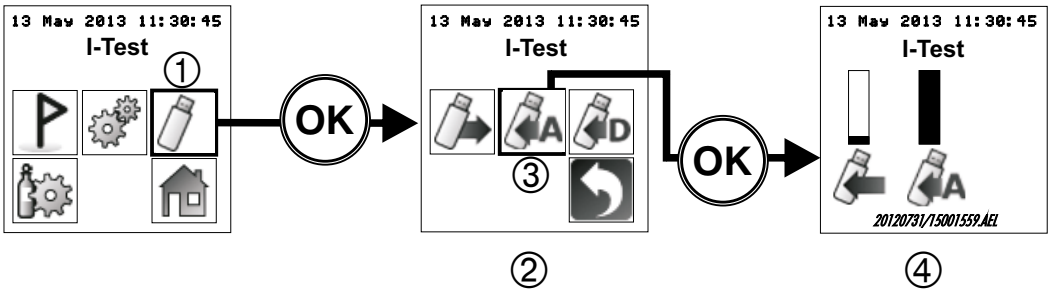
4.5.3 Download I-Test activity log from I-Test to USB Memory stick

This option will download the I-Test activity log files from I-Test to a USB Memory stick.

I-Test action log files contain data to allow data management of the fleet of gas monitors as shown on *page 61*.

- ▶ With the memory stick correctly plugged in (see *page 106*), access the Main menu (see *page 93*).
- ▶ From the Main menu use the arrow keys to highlight the Memory Stick icon ①.
- ▶ Press the OK key. The Memory Stick Functions screen ② will be displayed.
- ▶ Use the ← and → keys to highlight the Upload Activity Log icon ③ and press OK. The Activity Log Upload Status screen will be displayed ④.

Figure 89: Download activity log from USB memory stick function



- ▶ When the upload is complete the success icon will be displayed.

Before removing the USB Memory Stick from I-Test press to return to main menu screen. If the USB Memory stick is removed before returning to the main screen I-Test will display an error that can then be cleared by pressing the OK button.

It is recommended to download activity logs at regular intervals or the download process may take an extended time.

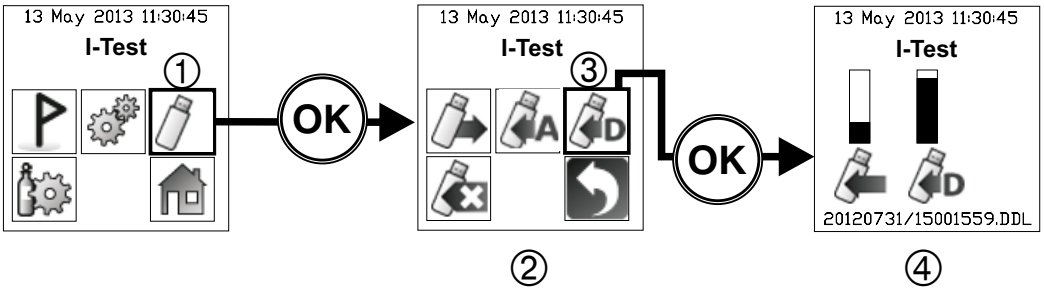
4.5.4 Download gas monitor logs from I-Test to USB memory stick

This option will download gas monitor log files from I-Test to a USB Memory stick.

I-Test Manager offers the functionality to select if either the gas monitor event logs or gas monitor data logs are transferred to the I-Test, or both (see *page 38*). This option will download the log files as configured by I-Test Manager.

- ▶ With the memory stick correctly plugged in (see *page 106*), access the Main menu (see *page 93*).
- ▶ From the Main menu use the arrow keys to highlight the Memory Stick icon ①.
- ▶ Press the OK key. The Memory Stick Functions screen ② will be displayed.
- ▶ Use the ← and → keys to highlight the Gas Monitor Log icon ③ and press OK. The Gas Monitor Log Status screen will be displayed ④.

Figure 90: Download gas monitor log files from USB memory stick function



- ▶ When the upload is complete the success icon will be displayed.

Before removing the USB Memory Stick from I-Test press to return to main menu screen. If the USB Memory stick is removed before returning to the main screen I-Test will display an error that can then be cleared by pressing the OK button.

5. I-Test Specification

Item	Specification
Size (d x l x w)	320 x 250 x 110 (width x height x depth) in mm
Weight	2024 grams
Input Supply	9-12V @3A
I-Test Backup Battery	I-Test battery backup capable of typically 200 speedy bump test with 15 second interval between tests. Typically 5 hours in standby with no bump test. I-Test backup battery life approximately 500 cycles Backup battery charge time typically 7 hours
RTC Backup Battery	3 year life
USB Interface	One standard USB type A socket for USB Flash Memory stick One standard USB type B socket for connections to PC
Inlets/Outlets	Single Gas Inlet *(Requires demand flow regulator)* Purge Inlet (Air) Exhaust
Gas-Suitability	O_2, H_2S, CO, CO_2, CH_4, C_5H_{12}, C_3H_8, C_4H_{10}
Regulators	Demand flow regulator required
Storage Capacity	Internal 2GB MicroSD card
Temperature Specifications	**Operating Temperature** 0°C to +50°C **Storage Temperature** -25°C to +60°C **Charging Temperature** 0°C to +40°C
Humidity	0% and 95% relative humidity (non-condensing) at +40˚C
Ingress protection	IP20

6. Service and maintenance

There are no user serviceable items within I-Test with the exception of the flow gasket on the module door.

If the device develops a fault it should not be opened or a repair attempted and the unit should be returned to **Crowcon**.

7. Accessories

Part Number	Description
AC0611	Replacement flow gasket
M048521	Replacement flow gasket T4
E011136	Multi-region power supply
AC0510	Cylinder Holder (wall mount) for 34l to 110l cylinders
AC0612	Inlet tube connector
AC0613	Exhaust tube connector
AC0615	1m reactive gas tubing (Tygothane® 4.8mm ID including tube insert) *Note: This tubing is suitable for gas inlet and exhaust*
AC0616	3m reactive gas tubing (Tygothane® 4.8mm ID including tube insert) *Note: This tubing is suitable for gas inlet and exhaust*
AC0201	1M Standard tubing (includes tube insert) *Note: This tubing is suitable for exhaust*
AC0203	3M Standard tubing (includes tube insert) *Note: This tubing is suitable for exhaust*
AC0205	5M Standard tubing (includes tube insert) *Note: This tubing is suitable for exhaust*
AC0210	10M Standard tubing (includes tube insert) *Note: This tubing is suitable for exhaust*
AC0220	20M Standard tubing (includes tube insert) *Note: This tubing is suitable for exhaust*
AC0230	30M Standard tubing (includes tube insert) *Note: This tubing is suitable for exhaust*
C03052	Pressure regulator for 58L and 110L cans

8. Standard Target Gas Cylinders

These cylinders can be used when the monitor flammable sensor is to bump tested or calibrated with target gas. That is the flammable sensor is configured to detect the same gas type as the gas type in the cylinder to be attached to I-Test.

Part Number	Description
Quint Gas Mixes	
5G-QUINT-1-34	34 litre 15 ppm H_2S / 100 ppm CO / 2.5% Methane /0.5% CO_2 / 18% O_2 in N_2
5G-QUINT-1-58	58 litre 15 ppm H_2S / 100 ppm CO / 2.5% Methane /0.5% CO_2 / 18% O_2 in N_2
5G-QUINT-1-110	110 litre 15ppm H_2S / 100 ppm CO / 2.5% Methane /0.5% CO_2 / 18% O_2 in N_2
5G-QUINT-2-34	34 litre 15ppm H_2S / 100 ppm CO / 2.2% Methane /0.5% CO_2 / 18% O_2 in N_2
5G-QUINT-2-58	58 litre 15ppm H_2S / 100 ppm CO / 2.2% Methane /0.5% CO_2 / 18% O_2 in N_2
5G-QUINT-2-110	110 litre 15ppm H_2S / 100 ppm CO / 2.2% Methane /0.5% CO_2 / 18% O_2 in N_2
Quad Gas mixes	
4G-QUAD-1-34	34 Litre/ 15ppm H_2S / 100 ppm CO / 2.2% Methane / 18% O_2 in N_2
4G-QUAD-1-58	58 Litre/ 15ppm H_2S / 100 ppm CO / 2.2% Methane / 18% O_2 in N_2
4G-QUAD-1-110	110 Litre/ 15ppm H_2S / 100 ppm CO / 2.2% Methane / 18% O_2 in N_2
4G-QUAD-2-34	34 Litre 15ppm H_2S / 100 ppm CO / 2.2% Methane / 18% O_2 in N_2
4G-QUAD-2-58	58 Litre 15ppm H_2S / 100 ppm CO / 2.5% Methane / 18% O_2 in N_2
4G-QUAD-2-110	110 Litre 15ppm H_2S / 100 ppm CO / 2.5% Methane / 18% O_2 in N_2
Tri Gas Mixes	
3G-TRI-1-34	34 Litre 100 ppm CO / 2.5% Methane / 18% O_2 in N_2
3G-TRI-1-58	58 Litre 100 ppm CO / 2.5% Methane / 18% O_2 in N_2
3G-TRI-2-34	34 Litre 100 ppm CO / 2.2% Methane / 18% O_2 in N_2
3G-TRI-2-58	58 Litre 100 ppm CO / 2.2% Methane / 18% O_2 in N_2
3G-TRI-3-58	58 Litre 50 ppm CO / 2.5% Methane 18% O_2 in N_2
3G-TRI-4-58	58 Litre 50 ppm CO / 2.2% Methane 18% O_2 in N_2
3G-TRI-5-58	58 Litre 15 ppm H_2S / 100ppm CO/ 2.2% Methane in Air

9. Cross Calibration Cylinders

If I-Test is to bump test or calibrate flammable sensors with non target gas, only methane gas can be used for this purpose.

Only the following cylinder concentrations must be used to ensure the instruments are correctly tested.

Part Number	Description
Quint Gas Mixes	
G5-QUINT-3-112	**ATEX/IECEx Gas Monitors** 112 litre 15 ppm H_2S/ 100 ppm CO / 1.2% Methane /0.5% CO_2 / 18% O_2 in Nitrogen
G5-QUINT-4-112	**UL Gas Monitors** 112 litre 15 ppm H_2S/ 100 ppm CO / 1.5% Methane /0.5% CO_2 / 18% O_2 in Nitrogen
Quad Gas mixes	
G4-QUAD-6-58	**ATEX/IECEx Gas Monitors** 58 Litre 15 ppm H_2S / 100 ppm CO / 1.2% Methane / 18% O_2 in Nitrogen
G4-QUAD-6-112	**ATEX/IECEx Gas Monitors** 112 Litre 15 ppm H_2S / 100 ppm CO / 1.2% Methane / 18% O_2 in Nitrogen
G4-QUAD-7-58	**UL Gas Monitors** 58 Litre 15 ppm H_2S / 100 ppm CO / 1.5% Methane / 18% O_2 in Nitrogen

10. Troubleshooting

Symptom	Cause	Action
No action is undertaken when the monitor is inserted and no progress or result icons appear on the screen.	The I-Test display is not showing the home screen and is in a functional menu. USB to PC cable is still attached to I-Test following configuration.	Navigate to the home screen, remove the monitor, re-insert to repeat test. Remove USB cable from I-Test, remove the monitor, re-insert to repeat test.
I-Test Performs no test when monitor is inserted and display then shows complete success icon 	No test action has been selected.	Select a test, e.g. speedy bump, via either I-Test Manager (see *page 34*) or via I-Test Front Panel (see *page 99*), and then repeat process.
I-Test Performs no test when monitor is inserted and display then shows the  icon	The attached cylinder does not contain the required gas for a sensor within Gas-Pro that is due a bump test. The attached cylinder does not contain the required gas for a sensor within Gas-Pro that to be calibrated.	Replaced the attached cylinder with a cylinder containing the appropriate test gases and reconfigure I-Test.
USB Flash Stick icon is not available when the USB Flash Stick is inserted.	USB functionality is not available when I-Test is operating on backup battery.	Connect the power adapter to a suitable mains outlet and connect its DC connector to the power input socket on the I-Test.
I-Test does not respond when power switch is operated to turn on the unit.	DC power supply is not connected and backup battery is exhausted. USB to PC cable is still attached to I-Test following configuration.	Connect DC power supply and power cycle I-Test Remove USB cable from I-Test and power cycle I-Test.

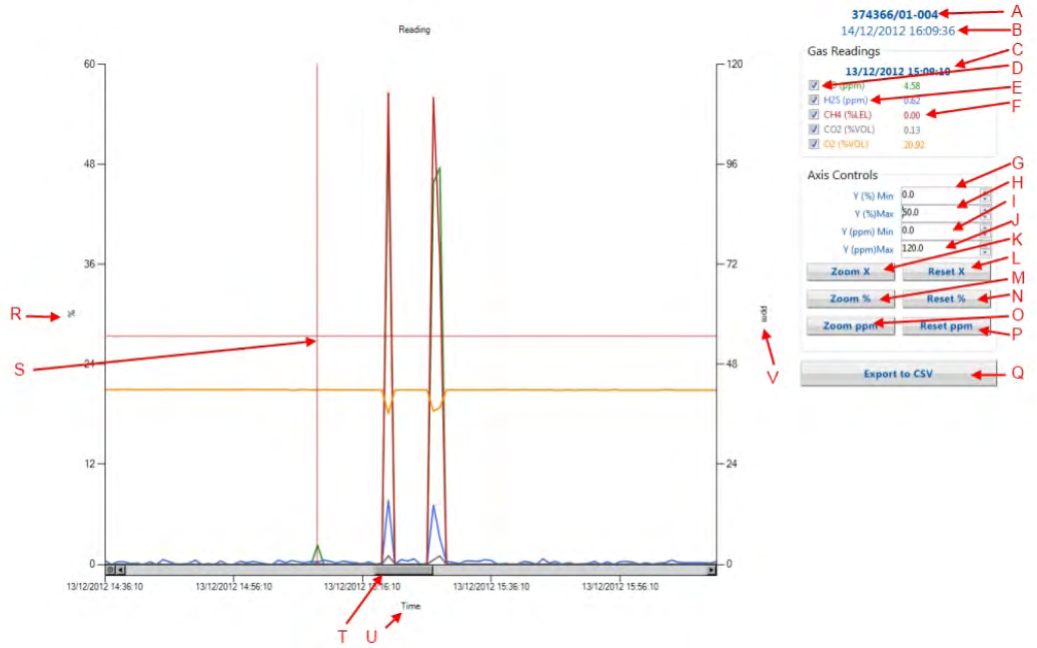
Symptom	Cause	Action
Error icon  is displayed.	Gas cylinder is exhausted and must be replaced.	Once I-Test has detected an exhausted cylinder it is important to change the cylinder Lot number (see *Section 3.7.4* on *page 40* or *Section 4.3* on *page 94*) when the cylinder is replaced as otherwise I-Test will continue show this error message.
Error icon  is displayed.	Gas cylinder expiry date has been exceeded.	Replace the gas cylinder and reconfigure the cylinder Lot number and expiry date (see *Section 3.7.4* on *page 40* or *Section 4.3* on *page 94*)
Error icon  is displayed.	A monitor with sensors/gases not supported by I-Test has been inserted.	
Error icon  and I-Test gas monitor pod LED flashing red.	The monitor has not been inserted correctly.	Remove the monitor, re-insert correctly and repeat test.
Icon  shown during entry of values via I-Test front panel	Value entered is too high to be accepted	Enter a lower value.
Icon  shown during entry of values via I-Test front panel	Value entered is too low to be accepted	Enter a higher value.
Test result declared as incomplete in calibration or bump test report.	Monitor may have been removed during test. Gas cylinder may have exhausted during test.	

Appendix A: Allowable Cylinder Profiles

Cylinder Type	Cylinder Gases
Tri Gas	
	CH_4 (Methane), H_2S (Hydrogen Sulphide), O_2 (Oxygen),
	CH_4 (Methane), CO (Carbon Monoxide), O_2 (Oxygen),
	CO (Carbon Monoxide), H_2S (Hydrogen Sulphide),O_2 (Oxygen),
	C_4H_{10} (Butane), H_2S (Hydrogen Sulphide), O_2 (Oxygen),
	C_4H_{10} (Butane), CO (Carbon Monoxide), O_2 (Oxygen),
	C_3H_8 (Propane), H_2S (Hydrogen Sulphide), O_2 (Oxygen),
	C_3H_8 (Propane), CO (Carbon Monoxide), O_2 (Oxygen),
	C_5H_{12} (Pentane), H_2S (Hydrogen Sulphide), O_2 (Oxygen),
	C_5H_{12} (Pentane), CO (Carbon Monoxide), O_2 (Oxygen),
Quad Gas	
	CH_4 (Methane), H_2S (Hydrogen Sulphide), CO (Carbon Monoxide), O_2 (Oxygen),
	CH_4 (Methane), CO (Carbon Monoxide), CO_2 (Carbon Dioxide), O_2 (Oxygen),
	CO_2 (Carbon Dioxide), CO (Carbon Monoxide), H_2S (Hydrogen Sulphide), O_2 (Oxygen),
	C_4H_{10} (Butane), H_2S (Hydrogen Sulphide), CO (Carbon Monoxide), O_2 (Oxygen),
	C_4H_{10} (Butane), CO (Carbon Monoxide), CO_2 (Carbon Dioxide), O_2 (Oxygen),
	C_3H_8 (Propane), H_2S (Hydrogen Sulphide), CO (Carbon Monoxide), O_2 (Oxygen),
	C_3H_8 (Propane), CO (Carbon Monoxide), CO_2 (Carbon Dioxide), O_2 (Oxygen),
	C_5H_{12} (Pentane), H_2S (Hydrogen Sulphide), CO (Carbon Monoxide), O_2 (Oxygen),
	C_5H_{12} (Pentane), CO (Carbon Monoxide), CO_2 (Carbon Dioxide), O_2 (Oxygen),
Quint Gas	
	CH_4 (Methane), O_2 (Oxygen), H_2S, CO (Carbon Monoxide), CO_2 (Carbon Dioxide),
	C_3H_8 (Propane), O_2 (Oxygen), H_2S, CO (Carbon Monoxide), CO_2 (Carbon Dioxide),
	C_3H_8 (Propane), O_2 (Oxygen), H_2S, CO (Carbon Monoxide), CO_2 (Carbon Dioxide),
	C_5H_{12} (Pentane), O_2 (Oxygen), H_2S, CO (Carbon Monoxide), CO_2 (Carbon Dioxide),

Appendix B: Graph Function Explained

Figure 91: Datalogging screen details



A: The serial number of the instrument whose date we are viewing.

B: The date and time that the data we are viewing was retrieved.

C: The date and time of the position of the mouse pointer.

D: A checkbox for enabling/disabling the associated data series for viewing.

E: The gas name and unit of the data series.

F: The gas level at the date / time specified in ‘C’.

G: The minimum value visible on the % axis.

H: The maximum value visible on the % axis.

I: The minimum value visible on the ppm axis.

J: The maximum value visible on the ppm axis.

K: Zoom in on the X (time) axis.

L: Reset the X (time) axis to view all the data.

M: Zoom data plotted on the % axis.

N: Reset the % axis to the original values*.

O: Zoom data plotted on the ppm axis.

P: Reset the ppm axis to the original values*.

Q: Export all data on the chart to a csv file.

R: The % axis.

S: The position of the mouse.

T: A scrollbar that appears when zooming in. This may be dragged to scroll through the datapoints.

U: The X (time) axis.

V: The ppm axis.

*The original values for the % and ppm axes may not be the same for each set of data that is viewed. This is to ensure that extreme values do not distort the graph and render it unusable.

Appendix C: I-Test Icons

Icons

I-Test has a number of icons these are summarised below.

Menu Icons

 - Banner selection menu

 USB Flash Stick Menu

 - Home Menu

 - Test Stages Menu

 - Inlet setup Menu

 - Test Sequence Settings Menu

 - Inlet 1 Settings Menu

 - Exit menu

Test Icons

 - Zero Test

 - Speedy Bump Test

 - Smart Bump Test

 - Calibration

 - Gas Monitor Log File Transfer

 - Field Configuration Icon

Cylinder Setup Icons

 - Cylinder Profile Selection

 - Gas Concentration Setting

 - Cylinder Lot Number Setting

 - Cylinder Expiry Date Setting

USB Flash Stick Icons

 - Upload I-Test Configuration

 - Download I-Test Activity Logs

 - Download gas monitor logs

 - Progress Indicator

I-Test Charging Status

 - Battery Low

 - Battery discharging

 - Battery charging

 - Battery Charged

 - Battery fault.

Safe Shutdown Icons

 - I-Test safe to switched off power down (flashing tick indicates time out for safe shutdown about to expire)

 - I-Test should not be switched off or have power removed

Error Messages

 - Incorrect PIN entered

 - Internal SD Card low space warning

 - Enter PIN

 - Value entered too low

 - Value entered too high

 - Internal time clock error

 - Cylinder is exhausted/or blocked

 - Purge Inlet is exhausted/or blocked

 - Cylinder expiry date has been exceeded

 - A monitor with sensors/gases not supported by I-Test has been inserted.

 - I-Test gas monitor pod LED flashing red- Monitor has not been inserted correctly.

Warranty

This equipment leaves our factory fully tested and calibrated. If within the warranty period of two years from despatch, the equipment is proved to be defective by reason of faulty workmanship or material, we undertake at our option either to repair or replace it free of charge, subject to the conditions below.

Flow gasket

The flow gasket is expected to last 15,000 bumps in ambient conditions.

Warranty Procedure

To facilitate efficient processing of any claim, contact your local Crowcon agent/distributor, a Crowcon regional office or our global customer support team (English working language) on +44 (0)1235 557711 or customersupport@crowcon.com to obtain a returns form for identification and traceability purposes. This form may be downloaded from our website 'crowconsupport.com' and requires the following information:

- Your company name, contact name, phone number and email address.
- Description and quantity of goods being returned, including any accessories.
- Instrument serial number(s).
- Reason for return.

I-Test will not be accepted for warranty without a Crowcon Returns Number (CRN). It is essential that the address label is securely attached to the outer packaging of the returned goods.

The guarantee will be rendered invalid if the instrument is found to have been altered, modified, dismantled, tampered with, or has not used Crowcon spares for replacement parts or has been serviced or repaired by any party not authorised and certified by Crowcon to do so. The warranty does not cover misuse or abuse of the unit including use outside of specified limits.

Warranty Disclaimer

Crowcon accept no liability for consequential or indirect loss or damage howsoever arising (including any loss or damage arising out of the use of the instrument) and all liability in respect of any third party is expressly excluded.

This warranty does not cover the accuracy of the calibration of the unit or the cosmetic finish of the product. The unit must be maintained in accordance with the instructions in this manual.

The warranty on replacement consumable items supplied under warranty to replace faulty items, will be limited to the unexpired warranty of the original supplied item.

Our liability in respect of defective equipment shall be limited to the obligations set out in the guarantee and any extended warranty, condition or statement, express or implied statutory or otherwise as to the merchantable quality of our equipment or its fitness for any particular purpose is excluded except as prohibited by statute. This guarantee shall not affect a customer's statutory rights.

Crowcon reserves the right to apply a handling and carriage charge whereby units returned as faulty, are found to require only normal calibration or servicing, which the customer then declines to proceed with.

For warranty and technical support enquiries please contact:

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