X-MET8000 Series User Manual

X-MET8000 Series

Contents

Welcome

This guide covers several products, and uses ‘X-MET8000 series’ to refer to them. The X-MET8000 series can analyze all elements between Magnesium and Uranium.

Oxford Instruments wishes to ensure that every customer is able to get the maximum benefit from their use of the X-MET8000 series. There are two booklets to help operators:

Safe, Accurate Measurements With The X-MET8000 Series	This booklet helps operators to make safe, reliable and accurate measurements. When and how to use the right accessories. How to maintain the X-MET8000 series to get the maximum benefit from it, and basic troubleshooting information. This booklet also includes safety, regulatory and compliance information, technical specifications and the EC Declaration of Conformity.
How To Use The X-MET8000 Series	This booklet demonstrates how to use the X-MET8000 series. How the software works. It shows how to make typical measurements which every customer is likely to need, and how to search the results. How to save the X-MET8000 Series User Manual to a USB memory device.

The X-MET8000 Series User Manual is stored within the X-MET8000 series, and has more in depth information, and how to use the X-MET8000 series in some specific situations. It shows how a supervisor can prepare the X-MET8000 series for an operator to use.

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Who Is This Guide For?

This guide is for the operators and supervisors who are trained to analyze samples with X-ray fluorescence. The local Oxford Instruments representative can train personnel in the safe and accurate use of the X-MET8000 series, or give advice about how to train personnel.

X-MET8000 Series Operator's Guide

The X-MET8000 Series

These are the main components and features of the X-MET8000 series, and the external connections to it.

The X-MET8000 Series Components

The X-MET8000 series includes a rugged transit case as standard. This contains the following items:

1. X-MET8000 series analyzer
2. Slot for lanyard
3. Slot for wrist lanyard
4. Operator's Manuals on a CD
5. Spare protective film windows
6. Spare battery
7. Battery, inside handle
8. USB cable
9. Background plate (optional accessory)
10. Slot for optional light radiation shield or weld adapter
11. DC power supply with cable and plug adapter
12. Desktop battery charger
13. Alloy CRM sample
14. Sample boxes

The included accessories depend upon the version of the X-MET8000 series. The background plate, the light radiation shield, and the weld adapter are optional accessories. The DC power supply (battery charger) includes international plug adapters.

The X-MET8000 Series Features

These are the main features of the X-MET8000 series.

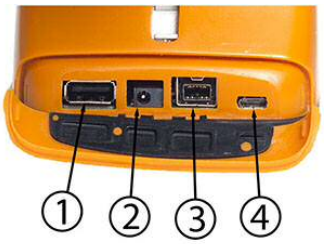
1. Measurement window
2. Proximity window
3. Hot surface protection
4. Control panel
5. Proximity and X-Ray On indicators
6. Touch screen display
7. Trigger
8. Battery cover
9. Battery cover release
10. Ring for lanyard
11. Connector cover

The control panel contains the Power On button and the Home button. The labels include safety information and the serial number. Open the connector cover to access the external connections.

Check both batteries before use. Refer to: *Battery Maintenance* on page 94.

The X-MET8000 Series External Connections

The X-MET8000 series has four external connections that are underneath the display. Open the plastic connector cover to access them.



1. USB A connector.
2. DC supply connector.
3. Extension connector.
4. USB Micro-AB connector.

Use the USB Micro-AB connector to connect the X-MET8000 series to a PC with the USB cable. Use the USB A connector for a USB memory device or an external display. Use the DC supply connector to connect the external DC power supply to charge or power the X-MET8000 series.

Only use the included DC power supply to charge or power the X-MET8000 series and it's batteries. Use of incompatible DC power supply and/or charger might result in damage or personal injury.

The extension connector is designed for X-MET8000 series accessories and is not compatible with generic consumer devices. Connecting incompatible devices to the extension port might damage the X-MET8000 series and/or the device(s) connected to it.

Safety First!

The X-MET8000 series is designed to meet rigorous safety requirements, and is safe to operate in accordance with these instructions.

If the X-MET8000 series is used in a manner not specified by Oxford Instruments, the safety features of the X-MET8000 series can be impaired.

Many regulatory organizations require each customer to register the X-MET8000 series. The local Oxford Instruments representative can assist with the specific regulatory requirements.

The X-MET8000 has regulatory approval as Type Number: XMDS 2770.

Safety Symbols

These symbols appear on the X-MET8000 series and in the documentation.

Caution; X-Rays: This symbol is a warning about X-ray generation.

Caution; X-Rays (Ca): This symbol is a warning about X-ray generation for use in Canada.

Caution; Toxic Material: This symbol is a warning about the presence of toxic material.

Caution; Electricity: This symbol is a warning about the presence of electricity.

Caution: This symbol provides a general warning.

Caution X-Rays

The X-MET8000 series generates X-ray radiation when it is energized.

Caution; X-Rays: Do not misuse or abuse the X-MET8000 series because of the risk of direct exposure to X-ray radiation above permissible levels. Prolonged direct exposure to X-ray radiation can cause serious personal injury.

Contact the local Oxford Instruments representative for advice about X-ray radiation, or for X-ray safety training.

Caution Beryllium

The detector has a thin beryllium window. Beryllium is a toxic compound, however, the beryllium window poses no health hazard when it is intact.

Caution; Toxic Material: Do not puncture, break or damage the beryllium window in any way. This can produce airborne particles. Prolonged inhalation of beryllium can cause cancer.

Do not allow the detector to come into contact with moisture, or condensation from high humidity. This can corrode the beryllium window, in particular if chlorine, sulphates, copper or iron is also present.

Contact the local Oxford Instruments representative for advice about beryllium, or if the beryllium window is pierced, broken, damaged or corroded.

Caution Lanyard Use

The X-MET8000 series includes a lanyard. This is only applicable for use at ground level.

Caution: Do not use the X-MET8000 series lanyard as a safety lanyard for work at height because of the risk of a fall. This can result in serious personal injury.

The anchor for the lanyard on the underside of the X-MET8000 series is applicable for use with a tool safety lanyard for work at height.

X-MET8000 Series Safety Features

The X-MET8000 series includes these 10 key safety features to protect the operator.

Power On Button And Indicator

Safety Feature: Press and hold the Power On button for 5 seconds to switch the X-MET8000 series on or off.

Password Protection

Safety Feature: An operator must have the correct password to use the X-MET8000 series.

Safety Feature: The supervisor can change the passwords.

Proximity Sensors

Safety Feature: The sample must cover the proximity window before the X-MET8000 series can generate an X-ray beam.

Safety Feature: When the sample covers the proximity window, the proximity indicators change to green.

Safety Feature: The X-MET8000 series switches the X-ray beam off if there is no return signal from the sample.

Trigger And X-Ray On Indicators

Safety Feature: An operator must pull the trigger for the X-MET8000 series to generate an X-ray beam.

Safety Feature: The X-Ray On indicators blink red when the X-MET8000 series generates an X-ray beam.

Safety Feature: If one of the X-Ray On indicators fails, the X-MET8000 series will not generate an X-ray beam.

X-ray shutter

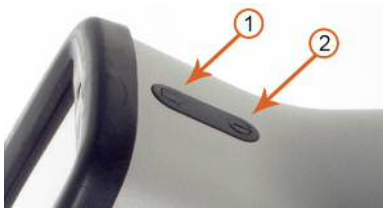
Safety Feature: The shutter state is indicated on the X-MET8000 series screen "Shutter open/Shutter closed".

How To Operate The X-MET8000 Series

Use the control panel and touch screen display to operate the X-MET8000 series. The touch screen display includes a virtual keyboard to type text and numbers. There is a Menu screen and a status bar to access the main functions and the configuration, and a Tools menu can appear for some screens.

The Control Panel

The control panel contains the Power On button and the Home button.



1. Home button
2. Power On button

Home button	Press the Home button to immediately leave the current screen and cancel an operation. The symbol on the Home button is lit white when the X-MET8000 series is on.
Power On button	The symbol on the Power On button is lit white when the X-MET8000 series is on. Press and hold the Power On button for 5 seconds to switch the X-MET8000 series on or off.

The Touch Screen

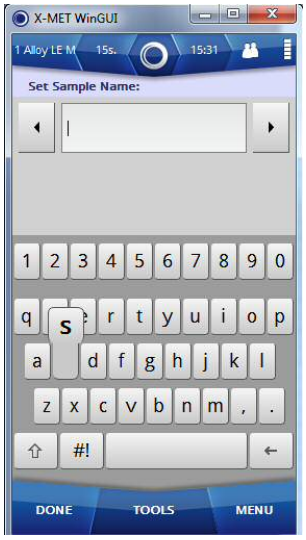
Use these finger movements to control the X-MET8000 series.

Tap **Slide** **Flick**

- **Tap** a button or arrow to select or activate it.
- **Press** and **Slide** to scroll a list up or down.
- **Flick** a screen to left or right to display the previous or next screen.

The Virtual Keyboard

Use the virtual keyboard to type text into a text box. Tap the character, and it will pop up above the other keys. Release the character, and it appears in the text box. Tap the arrows on either side of the text box to move the cursor to the left or right.



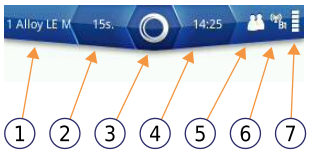
The Menu Screen

Tap **Menu** in the bottom right of the screen and the Menu screen appears. This gives access to the main functions of the X-MET8000 series.

The Menu screen is always available. Tap **Menu**, and then tap **Home** to immediately leave the current screen and cancel an operation.

The Status Bar

Tap the status bar at the top of the screen and the status bar screen appears. This contains information about the configuration and provides quick access to these settings. The status bar is always available.



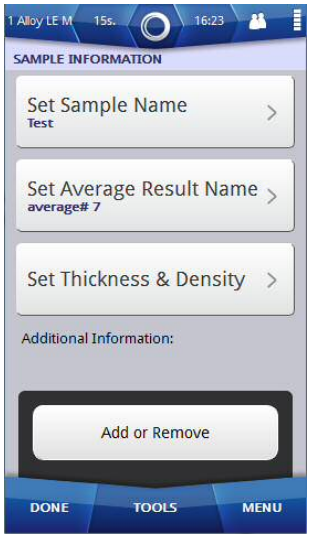
1. Method name
2. Measurement time
3. Proximity indicator
4. Time
5. User level
6. Bluetooth and Wi-Fi
7. Battery level

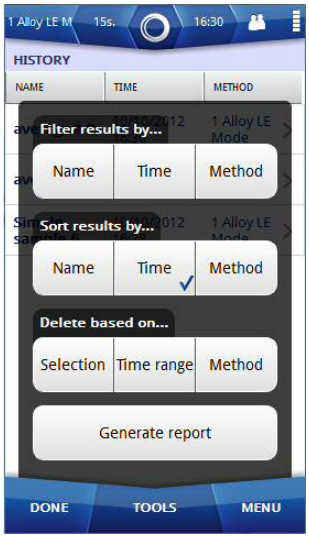
The user level is shown as:

- Operator: two people
- Supervisor: one person

The Tools Menu

When available, **Tools** appears in the middle at the bottom of the screen because a Tools menu is available. Not every screen requires a Tools menu. Tap **Tools** to make the Tools menu appear. The function of the Tools menu varies with the screen that it supports. These are two examples.





Take The First Measurement

The X-MET8000 series has factory settings which are applicable to many measurements. It is a good idea to give each sample a name, because it is easier to find it in the results history if it has one. Follow these instructions to take the first measurement.

Remember that the booklet ‘Safe, Accurate Measurements With The X-MET8000 Series’ contains important safety information, as well as guidance for accurate measurements.

Switch On The X-MET8000 Series

Take the X-MET8000 series out of the transit case, and then follow these steps to switch it on.

1. Press and hold the Power On button for 5 seconds.

   The X-MET8000 series powers on, and the Safety screen appears.

2. Tap **Login** in the bottom left of the Safety screen.

   The Login screen appears, with the numeric keypad.

3. Tap the numbers to type the password.

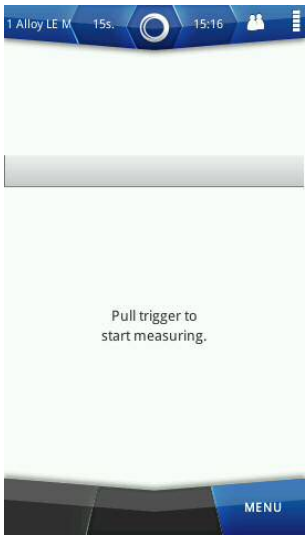
   The factory settings are:

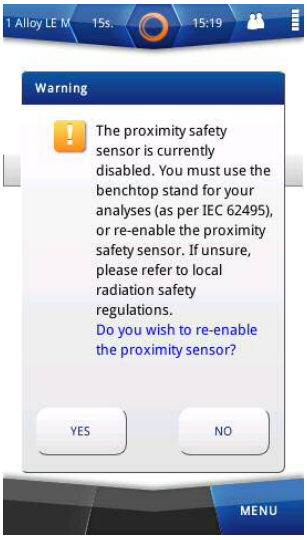
   - Operator: 1111
   - Supervisor: 0000

   The supervisor should change the passwords. Refer to the X-MET8000 Series User Manual .

4. Tap **Done**.

   The main screen appears. If the Proximity Safety Sensor has been disabled a warning message is shown. The Proximity Safety Sensor can be re-enabled by tapping Yes.





If it is necessary to set the date, time or language, refer to: *X-MET8000 Series Settings* on page 82.

Add A Sample Name

Follow these steps to name the sample.

1. Tap **Menu**, and then tap **Sample Name**.

   The Sample Information screen appears.

2. Tap **Set Sample Name**.

   The Set Sample Name screen appears, with the virtual keyboard.

3. Use the virtual keyboard to type the Sample Name, and then tap **Done**.
4. Tap **Done** again to return to the main screen.

Take A Measurement

Follow these steps to measure the sample.

1. Carefully hold the X-MET8000 series so that it touches the sample, and that both the proximity and measurement windows are covered.

   Do not press the X-MET8000 series into the sample.

   The proximity indicators change to green.

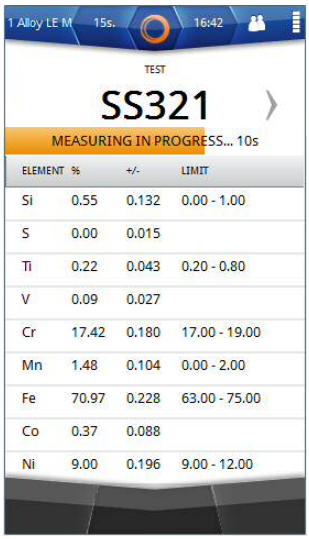
2. Pull and hold the trigger firmly.

   The X-ray On indicators blink red.

3. Keep the X-MET8000 series upright and steady during the measurement.

   Use both hands to hold the X-MET8000 series and keep them away from the sample.

   The Results screen refreshes approximately every 2 seconds.



4. At the end of the measurement time, the X-MET8000 series makes a ‘ping’ sound. Release the trigger to stop the measurement.

   The measurement stops, and the X-MET8000 series displays the result.

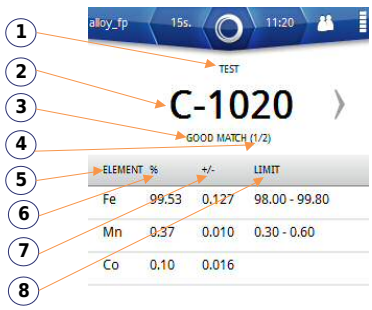
   It is possible to release the trigger and stop the measurement before the ‘ping’ sound.

   Follow these steps again to make the next measurement.

   Flick the screen to left or right to access other results.

The Results Screen

The Results screen has this information.



1. Sample name
2. Grade ID
3. Match level
4. The number of potential matches
5. Element
6. % or PPM
7. +/-
8. Limit

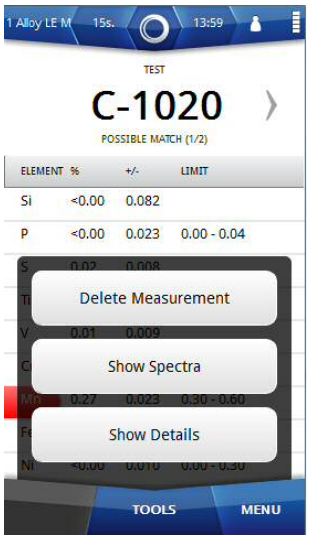
Sample name	This is defined in *Add A Sample Name* on page 16.
Grade ID	The grade or trade name for the sample. Tap the arrow on the left or right of the grade ID to display the next or previous possible match.
Match level	'Good Match' or 'Possible Match'.
The number of potential matches	There can be more than one match for the sample. The best match is always shown first.
Element	The chemical symbol. If an element has a red background it is because it is outside the required limits for that grade.
% or PPM	The measurement unit, for example %(percentage) or PPM(parts per million).
+/-	This indicates the precision(2 sigma) of the measurement. The lower the +/- value, the greater the precision.
Limit	The required limits for the grade.

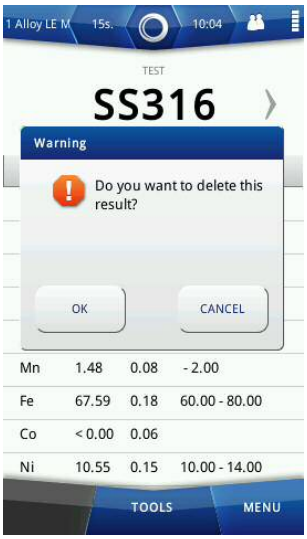
Delete A Poor Measurement

Occasionally a poor measurement will occur. This can be because the sample is badly positioned, or because the measurement time is too short. The booklet ‘Safe, Accurate Measurements With The X-MET8000 Series’ contains guidance for accurate measurements. Follow these steps to delete a measurement from the Results screen.

1. Tap **Tools** when a result is visible.

   The Results screen Tools menu appears.





2. Tap **Delete Measurement**.

   A Warning dialog box appears.

3. Do one of the following:

   - Tap **OK** to delete the measurement.
   - Tap **Cancel** to not delete the measurement.

Print Result From Result Screen To Bluetooth Printer

Before printing the results, it is necessary to configure a Bluetooth Printer and select **Connect as Printer** option from the Tools menu in the Bluetooth Settings screen. Please refer to the Supervisor manual to set this up. Follow these steps to print a measurement from the Results screen to a Bluetooth Printer.

1. Tap **Tools** when a result is visible.

   The Results screen Tools menu appears.

2. Tap **Print Result**.

   Device begins to send the result for the printing. In few seconds, result is printed at the Bluetooth Printer.

Switch Off The X-MET8000 Series

Press and hold the Power On button for 5 seconds. The X-MET8000 series powers off.

Average A Batch Of Measurements

Sometimes it is necessary to average a batch of measurements on a larger, mixed sample. It is important that all measurements use the same conditions:

- The same method
- The same measurement time.

When all the measurements are complete, it is very easy to switch between the various results. The X-MET8000 series also provides comprehensive search facilities to find a series of measurements from the results history.

Sample And Batch Names

The X-MET8000 series automatically increments an index number appended to the sample name, and uses a separate name for a batch of measurements. For example, ‘Sample Batch’ could include ‘Sample 1’, ‘Sample 2’,’Sample 3’ and so on.

Which Method?

The method defines how the X-MET8000 series analyses the sample. The available methods depend upon the version of the X-MET8000 series.

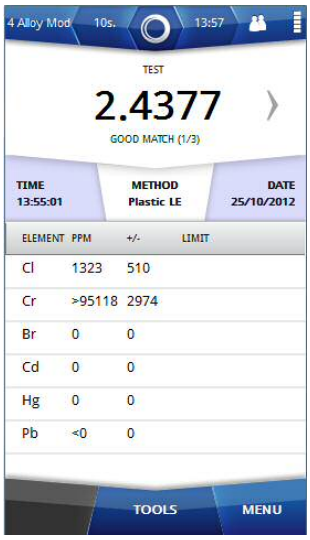
Some of the method names include ‘FP’, for example Alloy FP, Mining FP or Soil FP. This refers to ‘fundamental parameters’, which is a complex mathematical algorithm to analyse materials.

The X-MET8000 series can include auto select modes, with a ‘Mode’ suffix. If an applicable mode is available, this is the first choice for the operator. These appear at the top of the method list, and include Alloy Mode, Alloy LE Mode, Mining Mode and RoHS Mode. Modes chose the most applicable calibration for the sample.

The X-MET8000 series can include empirical calibrations. These are calibrations of specific elements with a specific concentration range, and include stainless steel, copper, titanium, iron and many other elements. An operator will not see these in the list of available methods. Only a supervisor can see these. An auto select mode can chose the correct empirical calibration for the sample, which makes analysis easier for the operator.

The X-MET8000 includes 'LE' in some of the method names, for example Stainless LE, Alloy LE FP or Alloy LE Mode. The LE refers to 'light elements', and these methods can analyse alloys that include magnesium, aluminum, silicon, phosphorous and sulfur.

Sometimes a mode is not able to fully measure a sample, because some of the concentrations in the sample are outside the limits for that method. If this occurs, a greater than, >, or less than, <, indicator appears next to the concentration.



When this occurs, the operator should choose an applicable 'FP' method. These work with a wider range of concentrations and sample types, and is the second choice for the operator.

Auto Select Modes Make Analysis Easy

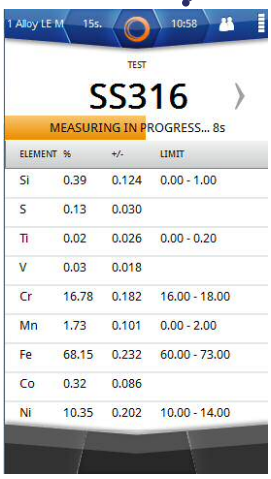
Auto select modes make use of both empirical and fundamental parameter calibrations. Use the numbers in the illustrations to follow how Alloy LE Mode analyzes first stainless steel and then gold. It uses an empirical calibration for stainless steel, and a fundamental parameter calibration for gold. All steps happen automatically, and can make life very easy for an operator!

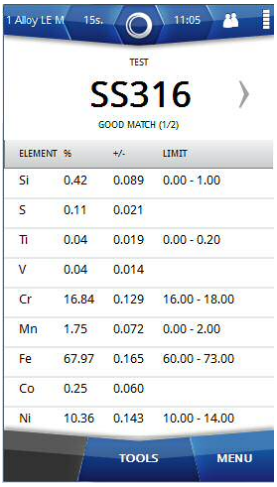
Alloy LE Mode, Empirical For Stainless Steel

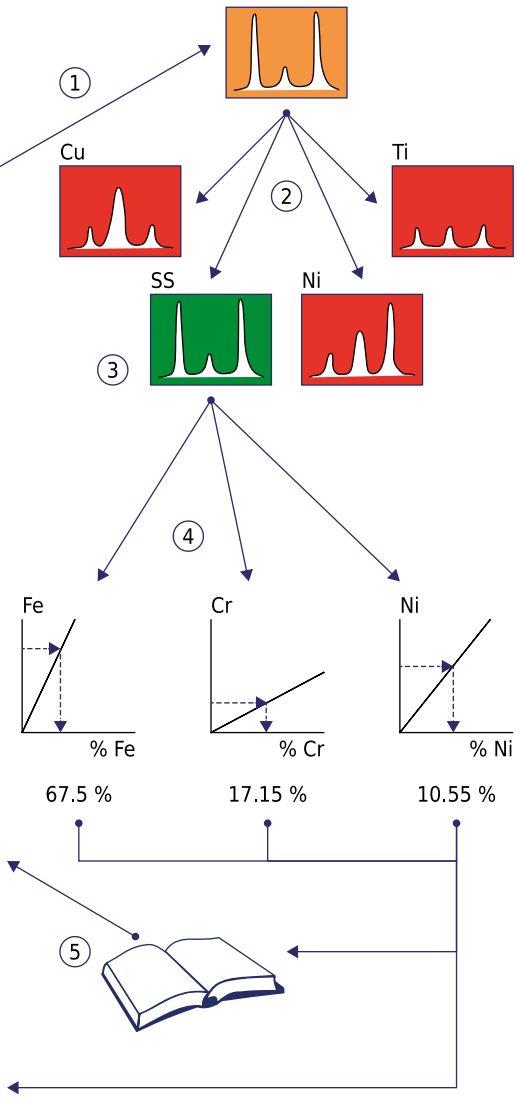
These steps show how Alloy LE Mode uses an empirical calibration to analyze a stainless steel sample, and return the grade.

1. The X-MET8000 series acquires a spectrum to identify the sample.
2. It compares the identification spectrum with all the empirical calibrations to obtain a match.
3. It finds a match with the stainless steel empirical calibration, shown in green.
4. It uses the stainless steel calibration to analyze the sample and then display the results.
5. It compares the results with the grade library and finds SS316 is the best match.

Alloy LE Mode, Empirical For Stainless Steel





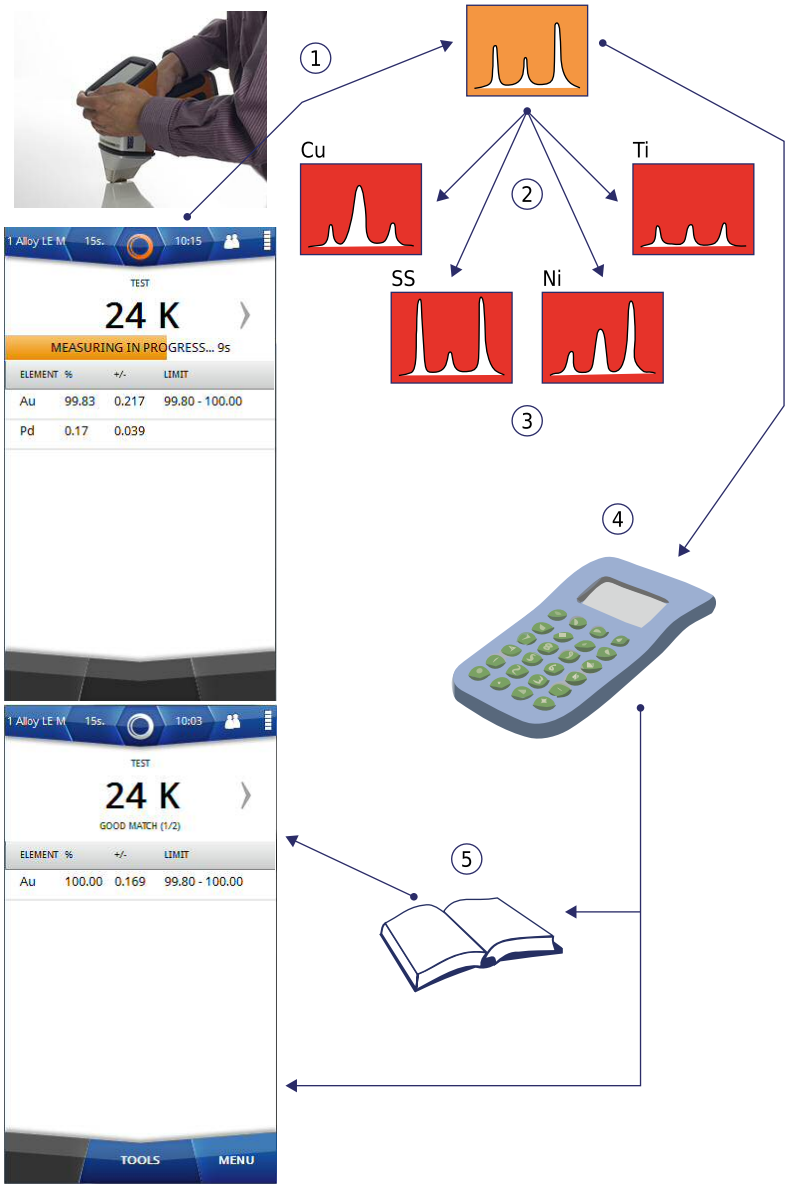


Alloy LE Mode, Fundamental Parameter For Gold

These steps show how Alloy LE Mode uses a fundamental parameter calibration to analyze a gold sample, and return the grade.

1. The X-MET8000 series acquires a spectrum to identify the sample.
2. It compares the identification spectrum with all the empirical calibrations to obtain a match.
3. It does not find a match with any empirical calibration, all shown in red.
4. It switches to a fundamental parameter calibration and uses the internal calculator to analyze the sample, compute and then display the results.
5. It compares the results with the grade library and finds 24 carat gold is the best match.

Alloy LE Mode, Fundamental Parameter For Gold



How Long For A Measurement?

The factory set measurement time of 15 seconds is applicable for many measurements. Quicker measurements for iron, copper, nickel and similar alloys require as little as 5 seconds. Magnesium and aluminum alloys need longer measurement times, for example 30 seconds or more. Complex alloys also require longer measurement times to analyze all the trace elements.

Longer measurements will always give more precise results. However, the X-MET8000 series can provide excellent results in only a few seconds. The standard deviation, STD, figures indicate the measurement precision. The longer the measurement time, the lower the standard deviation figures, the greater the precision.

At the end of the measurement time, the X-MET8000 series makes a ‘ping’ sound. It is also possible to use the internal timer to fully control the measurement. This is known as ‘Timed Assay’. The operator

pulls the trigger, and then releases it to start the measurement. The internal timer automatically stops the measurement.

When Timed Assay is off, the operator must release the trigger when the ‘ping’ sounds to stop the measurement. The Results screen refreshes approximately every 2 seconds, and the operator can decide to release the trigger before the ‘ping’ sounds to stop the measurement immediately.

Timed Assay is very useful for longer measurements and measurements with the bench-top stand. It is also useful to make sure that a batch of measurements all have the same measurement time.

It is possible to set the measurement time to zero. There is no ‘ping’ sound, and the operator must decide when to stop the measurement. If Timed Assay is off, the operator pulls the trigger to start the measurement, and then releases the trigger to stop the measurement. If Timed Assay is on, the operator pulls and releases the trigger to start the measurement, and then pulls and releases it again to stop the measurement.

Add The Sample And Batch Names

Follow the *Add A Sample Name* on page 16 steps to name the sample. Make sure that the sample name has a single word, then a space, then a number. For example, ‘Steel 1’ or ‘Alloy 1’, but not ‘Steel alloy 1’.

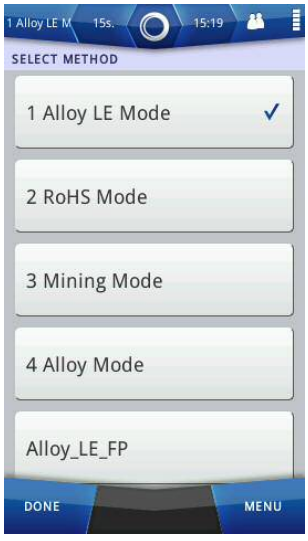
Follow the *Add A Sample Name* on page 16 steps again, but tap **Set Average Result Name**. Use the virtual keyboard to type the batch name.

Choose A Method

Follow these steps to choose a method.

1. Tap **Menu**, and then tap **Method**.

   The Method screen appears.



2. Tap a method to choose it from the list of available methods. If the list of Methods is long, press and slide the list to scroll it up or down.

   - The first preference is for a Mode, and these appear at the top of the list.
   - The second preference is for a method with an ‘FP’ suffix.

3. Tap **Done** to return to the main screen.

Set The Measurement Time

Follow these steps to set the measurement time.

1. Tap **Menu**, and then tap **Time**.

   The Measurement Time Settings screen appears.

2. For an average of a batch of measurements, tap **Timed Assay ON**.

   Make sure that a tick appears in the correct Timed Assay tick box.

3. Tap **Measurement Time**.

   The Set Measurement Time screen appears, with the numeric keypad.

4. Use the numeric keypad to type the measurement time, in seconds, and then tap **Done**.
5. Tap **Done** again to return to the main screen.

Check The Status Bar

The status bar at the top of the screen shows the Method and Measurement Time. Check that the values shown are correct.

1. Tap the status bar to access the Method and Measurement Time.

   The Status Bar screen appears.

2. Do one of the following:

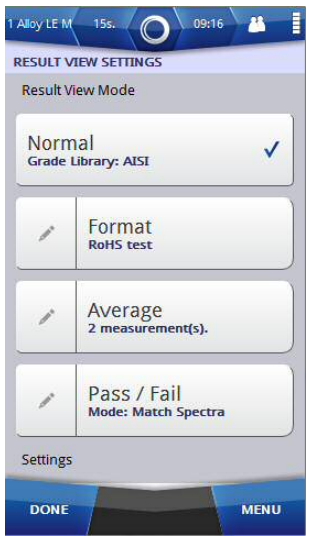
   - If it is necessary to change one or the other, tap **Method** or **Measurement Time** to navigate straight to the applicable settings.
   - Tap the status bar again to close it.

Set The Batch Size

To assist an average of a batch of measurements, it is possible to set the number of measurements to average. Follow these steps to set the number of measurements.

1. Tap **Menu**, and then tap **Settings**.

   The Settings screen appears.



2. Tap **Result View Settings**.

   The Result View Settings screen appears.

3. Tap **Average**, and make sure that the tick appears in the box.
4. Tap **Edit** (pencil) next to **Average**.

   The Set Number Of Measurements screen appears, with the numeric keypad.

5. Use the numeric keypad to type the number of measurements to average, and then tap **Done**.

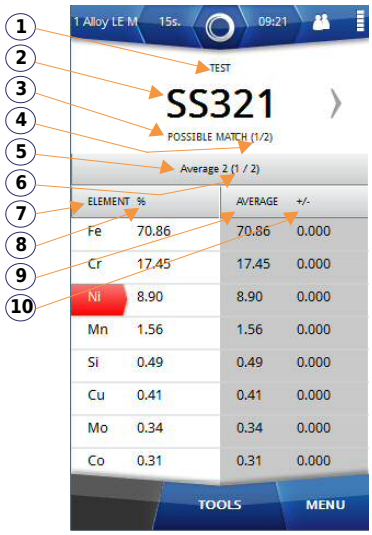
6. Tap **Done** twice again to return to the main screen.

Take Averaged Measurements

Follow the steps in *Take A Measurement* on page 16, but pull the trigger firmly, then release it. When Timed Assay is on, the internal timer controls the measurement and stops it automatically. When it is complete, the X-MET8000 series displays the result. The display includes both the individual result, and an average of all the results in the batch. Flick the screen to left or right to access other results.

The Average Results Screen

The Average Results screen has this information.



1. Sample name
2. Grade ID
3. Match level
4. The number of potential matches
5. Average name
6. Average result
7. Element
8. % or PPM
9. Average
10. +/-

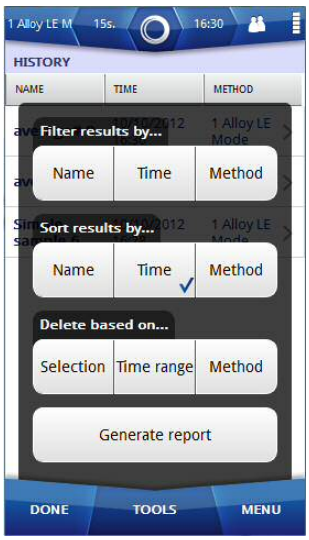
Sample name	This is defined in *Add The Sample And Batch Names* on page 24.
Grade ID	The grade or trade name for the sample. Tap the arrow on the left or right of the grade ID to display the next or previous possible match.
Match level	'Good Match' or 'Possible Match'.
The number of potential matches	There can be more than one match for the sample. The best match is always shown first.
Average name	This is defined in *Add The Sample And Batch Names* on page 24.
Average result	The result number within the batch and the batch size.
Element	The chemical symbol. If an element has a red background it is because it is outside the required limits for that grade.
% or PPM	The measurement unit, for example %(percentage) or PPM(parts per million).
Average	The average concentration of the element across the batch.
+/-	This indicates the precision(2 sigma) of the measurement. The lower the +/- value, the greater the precision.

Search The Results History

The X-MET8000 series has a search facility to find results with a specific name, date, or method. Follow these steps to search and manage the results history.

1. Tap **Menu**, and then tap **History**.

   The History screen appears.



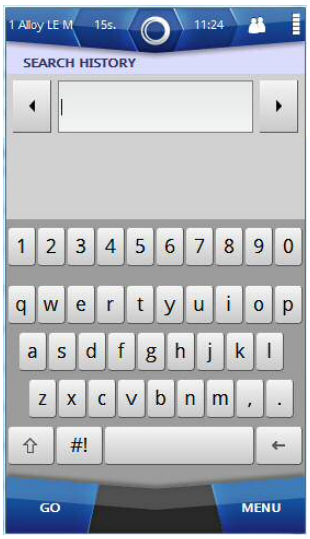
2. Tap **Tools**.

   The History screen Tools menu appears.

3. Tap one of the following **Filter Results By** options.

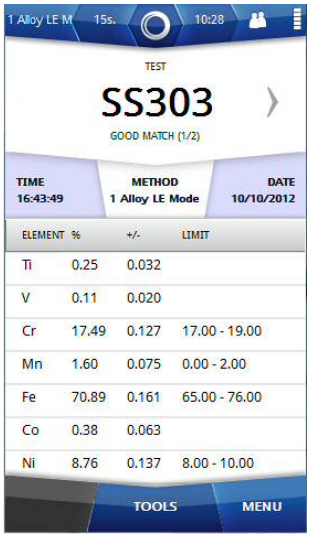
   - **Name**
   - **Time**
   - **Method**

   The Search History screen appears, with the virtual keyboard when **Name** or **Method** is selected. And Set Date Range screen appears when **Time** is selected.



4. Use the virtual keyboard to type the item to search for, and then tap **Go**.

   The History screen appears with search results.



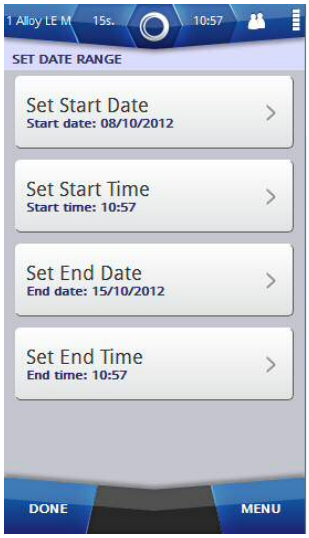
5. Tap a measurement in the list to display the results.

   The History Results screen appears.

6. To restore all the results to the History screen, tap **Tools** and then **Restore**.

   The Tools menu now includes **Filter Results By** option.

7. To search results by time , tap: **Tools** > **Filter Results By** > **Time**
   Set Date Range screen appears.



8. Tap **Set Start Date** or **Set End Date**

   The Select Date screen appears .

9. Tap an arrow on the left or right of the month to scroll to the correct month in Select Date screen.
10. Tap the correct date in the month, and then tap **Done** to return to the Set Date Range screen.
11. Tap **Set Start Time** or **Set End Time**

    The Set Time screen appears, with the numeric keypad.

12. Use the numeric keypad to type the correct hour, or use the up or down arrows on the right of the time to increase or decrease the hour.
13. Slide over the minutes to select them, and type the minutes with the numeric keypad or arrows.
14. Tap **Done** twice to return to the History screen.
    The History screen appears with filtered results.
15. If necessary, tap one of the three **Sort Results By** options to sort search results.

    - **Name**
    - **Time**
    - **Method**

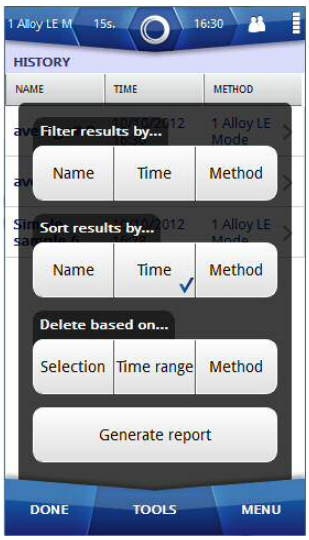
    The History screen appears with sorted results.

Delete The Results History

The X-MET8000 series has a delete facility to delete results with a selection, time range, or method. Follow these steps to delete and manage the results history.

1. Tap **Menu**, and then tap **History**.

   The History screen appears.



2. Tap **Tools** and then tap one of the following three **Delete based on** options.

   - **Selection**

     When **Selection** is selected, the Delete Results screen appears. Select the results to be deleted by tapping on each result row or by selecting one of the Tools menu options **Filter Results By**, **Mark All**, **Mark between selected rows**.

   - **Time range**

     When **Time range** is selected, the Set Date Range screen appears. Enter the values into **Set Start Date**, **Set End Date**, **Set Start Time** and **Set End Time**

   - **Method**

     When **Method** is selected, the **Delete based on** screen appears. Tap on the applicable method to delete that method's results.

3. Tap **Done** after selecting the results to be deleted.
   A **Warning Message** appears.
4. Do one of the following:

   - Tap **OK** to delete the measurement.
   - Tap **Cancel** to not delete the measurement.

   The History screen appears.

5. Tap **Done** to return to the main screen.

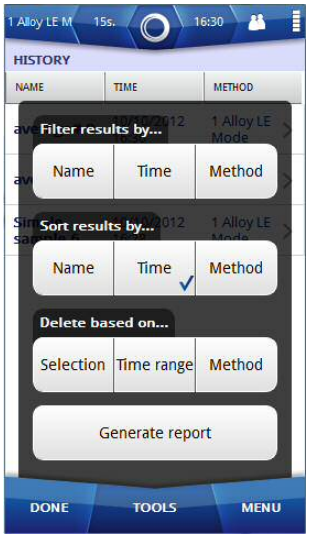
Generate Report to USB Memory Device

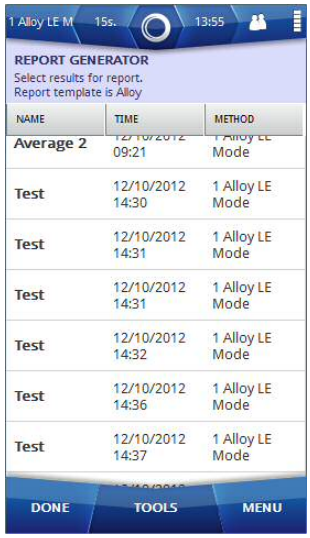
Follow the below steps to generate report to USB memory device.

1. Open the connector cover underneath the display to access the external connections. Plug a USB memory device into the USB A connector.

2. Tap **Menu**, and then tap **History**.

   The History screen appears.





3. Tap **Tools** to select **Generate Report** option.

   The History screen Tools menu appears.

4. Tap **Generate Report**.

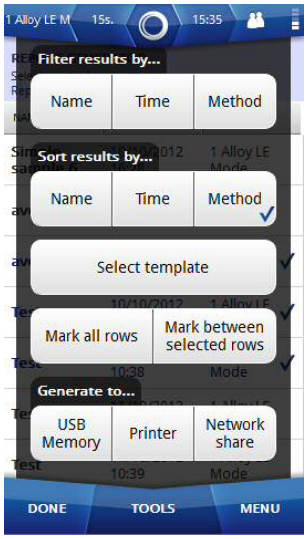
   The Report Generator screen appears.

5. Tap **Tools** and then tap on **Select Template** to select template.

   The Select Report Template screen appears with the default report template list and also user defined templates which were created in Web GUI.

6. Tap on the applicable template and then tap **Done** to return to the Report Generator screen.
7. Select the measurement results for the report by tapping on each result row in Report Generator screen or tap **Tools** and select results using following options

   - Filter by
   - Sort by
   - Mark All
   - Mark between selected rows



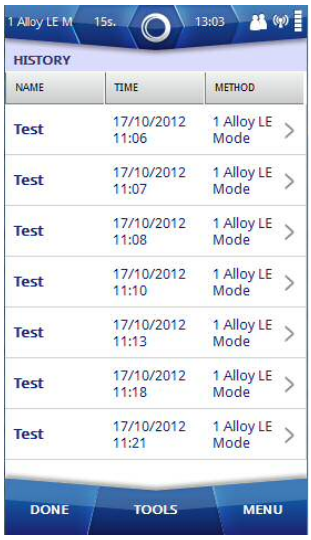
8. Tap: **Tools** > **USB Memory** after selecting the results.
   Device starts generating report to USB memory device. Once the report is generated to USB memory device, Report Generator screen appears.
9. Tap **Done** twice to return to the main screen.

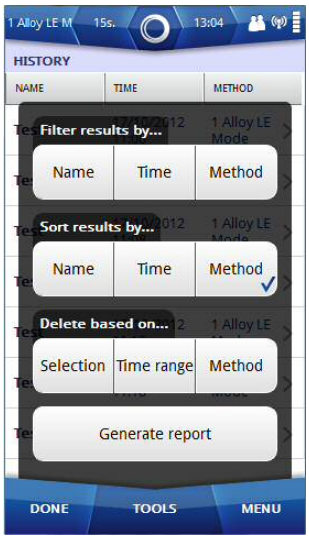
Generate Report to Printer

The Supervisor must configure a network printer in the device in order to generate reports directly on a printer, and must connect the device to the same WiFi network as the one to which the network printer is connected. Please refer to the Supervisor manual to set this up. Follow the below steps to generate report to printer.

1. Tap **Menu**, and then tap **History**.

   The History screen appears.



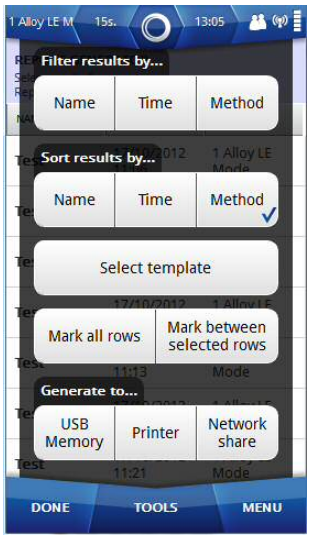


2. Tap: **Tools** > **Generate Report**

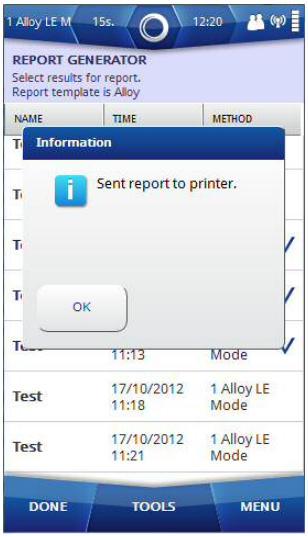
   The Report Generator screen appears.

3. Tap: **Tools** > **Select Template**

   The Select Report Template screen appears with the default report template list and also user defined templates which were created in the Web GUI.



4. Tap on the applicable template and then tap **Done** to return to Report Generator screen.
5. Select the measurement results for the report by tapping on each result row in Report Generator screen or tap **Tools** and select results using following options
   - Filter by
   - Sort by
   - Mark All
   - Mark between selected rows
6. Tap: **Tools** > **Printer** after selecting results.
   Device starts generating report to the printer. Once the report is generated to the printer, an Information dialog box appears .



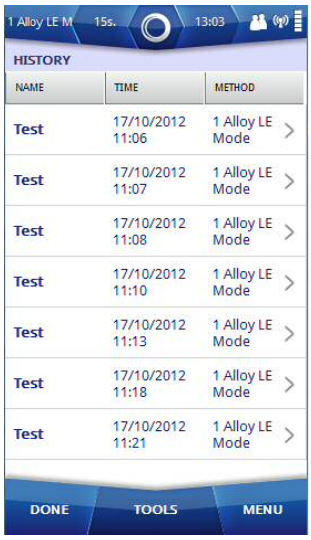
7. Tap **OK**.
   The Report Generator screen appears.
8. Tap **Done** twice to return to the main screen.

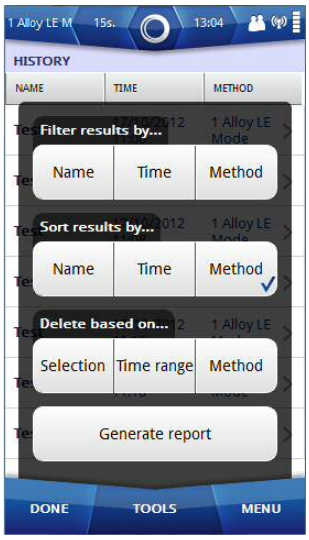
Generate Report to Network Share

The Supervisor must configure the network share in order to save reports on the selected network, and must connect the device to the same WiFi network as the one to which the server hosting the network share is connected. Please refer to the Supervisor manual to set this up. Follow the below steps to generate report to Network Share.

1. Tap **Menu**, and then tap **History**.

   The History screen appears.



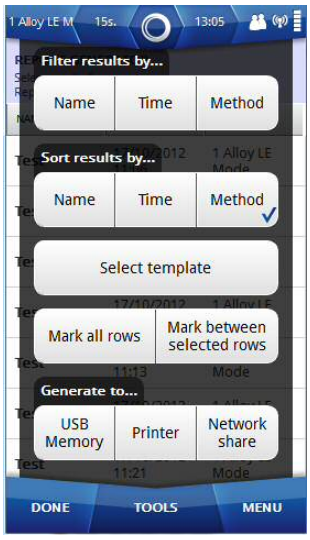


2. Tap: **Tools** > **Generate Report**

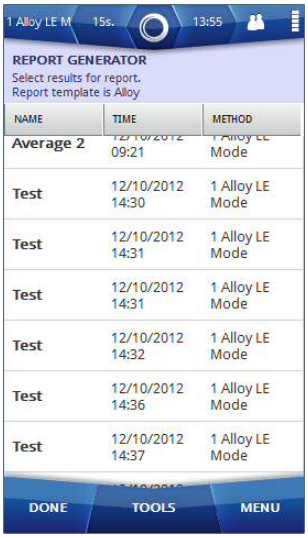
   The Report Generator screen appears.

3. Tap: **Tools** > **Select Template**

   The Select Report Template screen appears with the list of the default report templates and user defined templates which were created in the Web GUI.



4. Tap on applicable template and then tap **Done** to return to Report Generator screen.
5. Select the measurement results for the report by tapping on each result row in the Report Generator screen or tap **Tools** and select the results using following options.
   - Filter by
   - Sort by
   - Mark All
   - Mark between selected rows
6. Tap: **Tools** > **Network Share** after selecting the results.
   Device starts generating report to the printer. Once the report is generated to the network share Report Generator screen appears.



7. Tap **Done** twice to return to the main screen.

The X-MET8000 Series User Manual and USB Driver

The X-MET8000 Series User Manual is stored within the X-MET8000 series, and has more in depth information, and how to use the X-MET8000 series in some specific situations. It shows how a supervisor can prepare the X-MET8000 series for an operator to use.

The USB Driver is stored within the X-MET8000 series, and has detailed information about how to install a USB Driver on different Windows versions.

Save The X-MET8000 Series User Manual and USB Driver

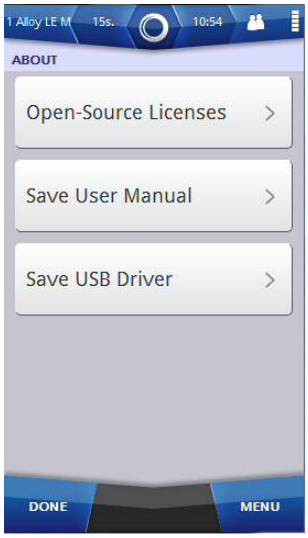
Follow these steps to access the X-MET8000 Series User Manual , USB Driver and save it to a USB memory device.

1. Open the connector cover underneath the display to access the external connections.

2. Plug a USB memory device into the USB A connector.
3. Tap **Menu**, and then tap **Settings**.

   The Settings screen appears.
4. Tap **About**.

   The About screen appears.



5. Tap **Save User Manual**.

   An Information dialog box appears.

6. Tap **OK** to save the X-MET8000 Series User Manual .
7. Tap **Save USB Driver** to save the USB driver and it's installation instructions to the USB memory device.
8. Tap **Done** to return to the Settings screen.
9. Tap **Done** again to return to the main screen.
10. Remove the USB memory device.

Operation With A PC

It is possible to operate the X-MET8000 series with a PC to do the following:

- Create a report for a series of results.
- Do a test measurement.
- Access the X-MET8000 Series User Manual .

Both supervisors and operators can operate the X-MET8000 series with a PC. Each uses their own login code. There is not a separate login code for PC operation.

Operations with the PC use an Internet browser. The standard URL to connect to the X-MET8000 series is *http://10.0.0.1/*. Please contact the local Oxford Instruments representative if it is necessary to change the URL.

Connect To A PC And Login

Follow these steps to connect the X-MET8000 series to a PC and then login.

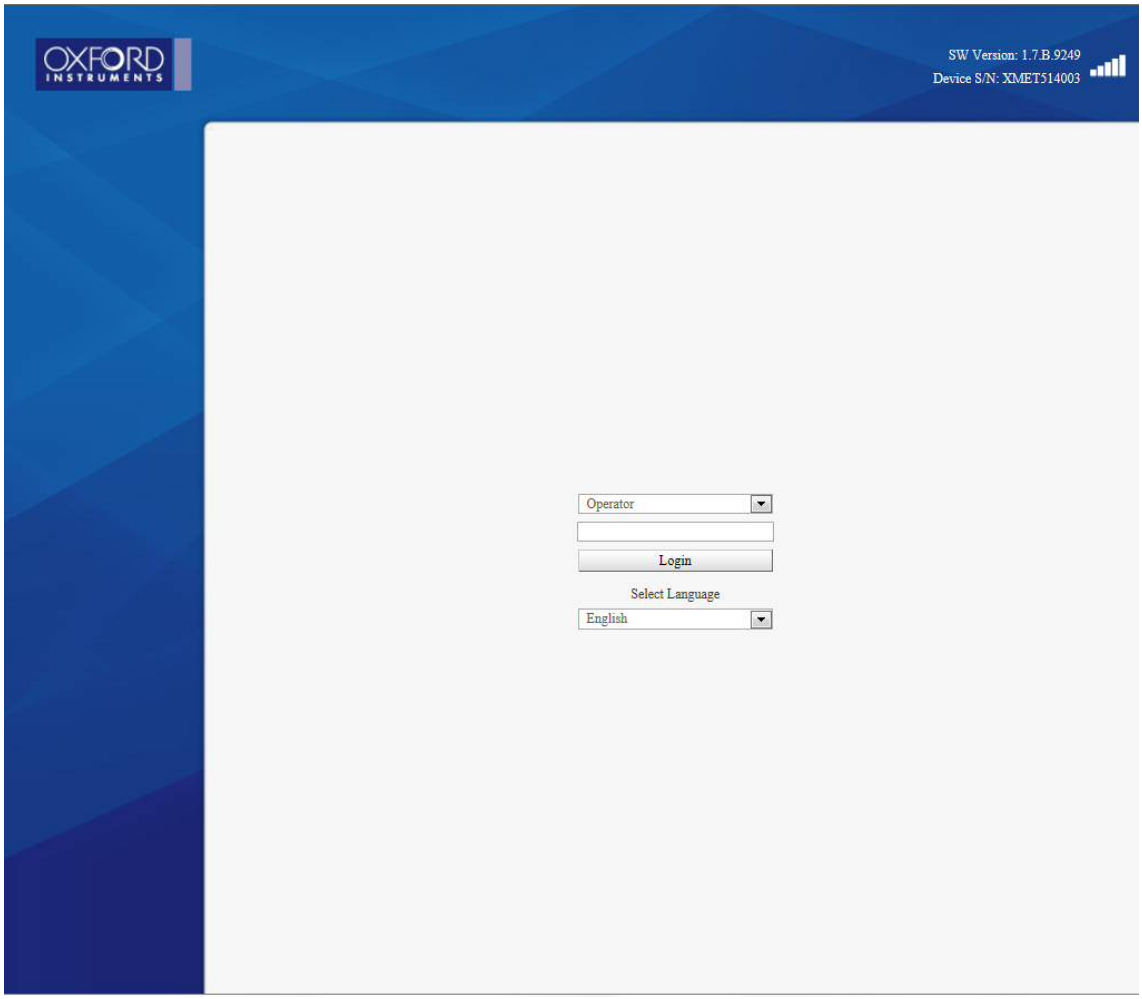
1. Open the connector cover underneath the display to access the external connections.

2. Use the USB cable to connect the X-MET8000 series to a PC.
   - Connect the smaller USB Mini-AB connector to the X-MET8000 series.
   - Connect the larger USB A connector to the PC.

   Make sure that the connections are correct.

3. Open the Internet browser on the PC, and type the URL: *http://10.0.0.1/*.

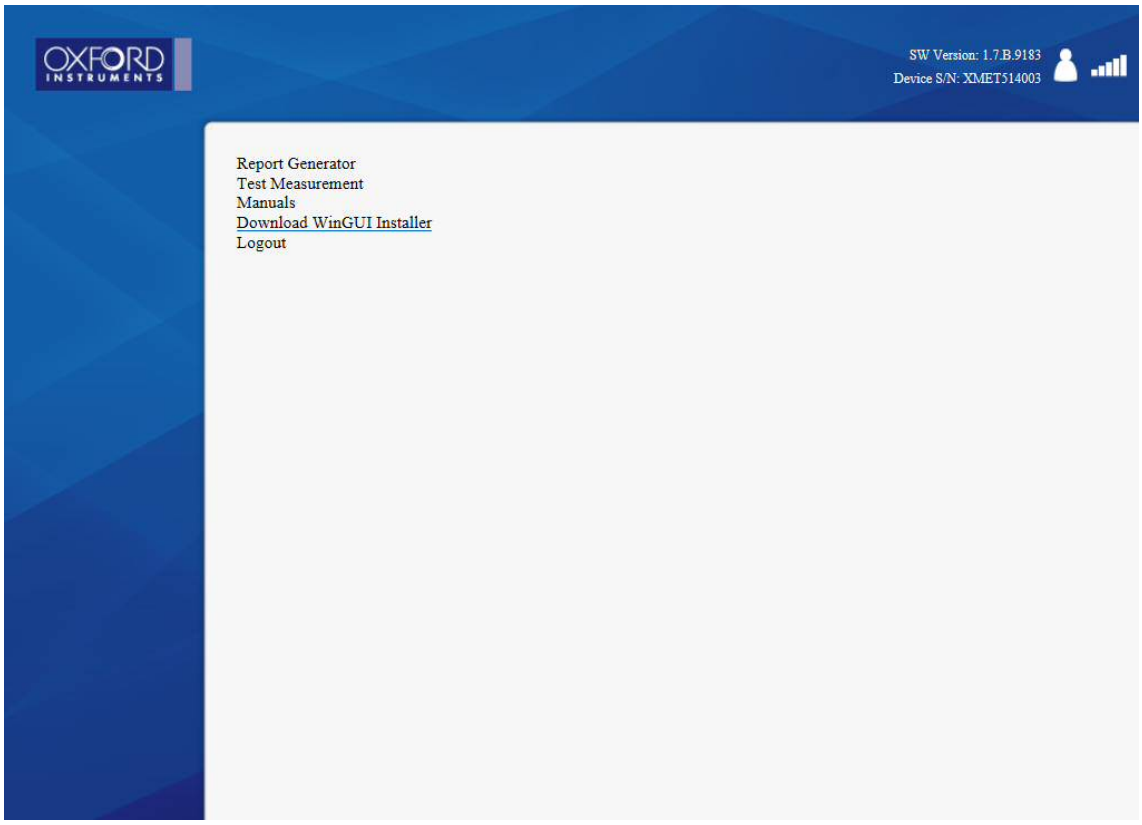
   The PC Login screen appears.



4. Select the language from drop down list and Choose the correct user from the **User** drop down list, type the login code into the text box, and click **Login**.

   The PC main screen appears.

   The X-MET8000 series shows the Safety screen with a Warning dialog box.



About The Report Generator

The X-MET8000 series has a comprehensive report generator. It is possible to create templates to use for different reports. The supervisor can create templates for an operator to use. The report generator creates a PDF file or a CSV file. A CSV file is applicable for a spreadsheet and not available in operator level.

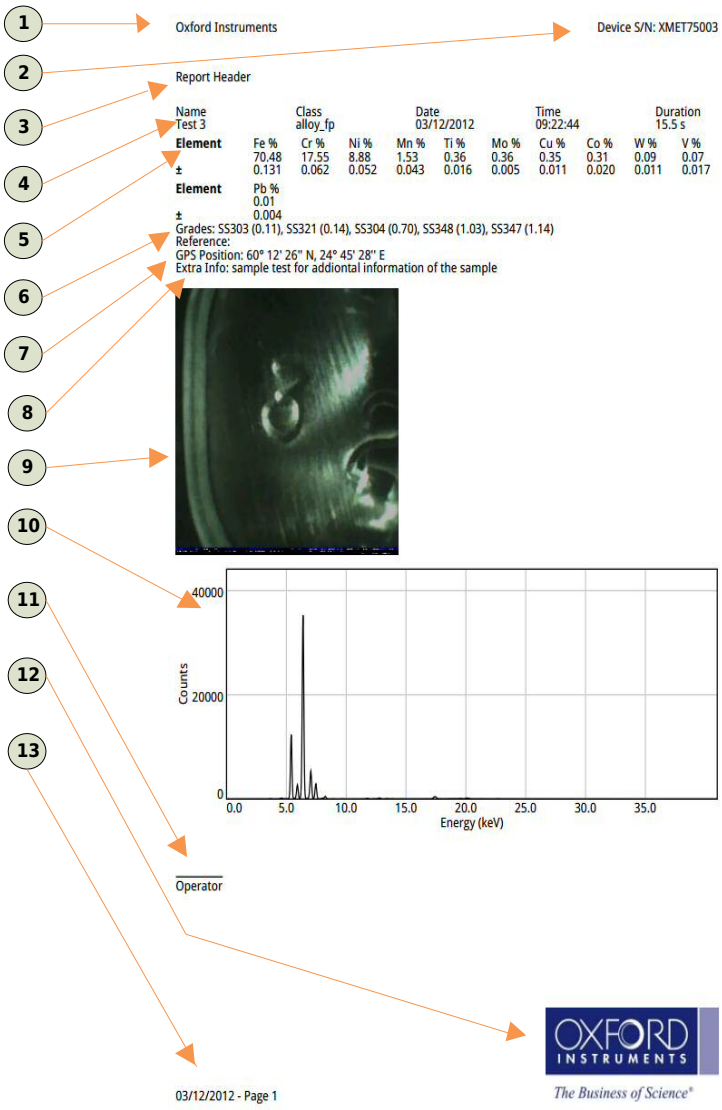
The template can include company information with the logo, a report header, the date and page number, and the X-MET8000 series serial number, as applicable. To create a report, it is necessary to have a report template. The logo file must be less than 1024kB and one of the formats: .jpg, .png or .bmp.

The report can include one or more results. Each result can include the operator's name, the grade and element concentration and standard deviation. It is also possible to include the spectra for the result, and it is possible to save the spectra with the report.

Once a supervisor creates a template, it is possible to download it to the PC, and then upload it to other X-MET8000 series.

A Custom Report

This is a typical custom report. The report template provides full control of all these aspects of the report.



1. Margin: company information
2. Margin: serial number
3. Report header
4. Sample information
5. Element: concentration and +/-
6. Grade
7. GPS Position
8. Additional Information
9. Camera Image
10. Spectra
11. Operator information
12. Margin: logo
13. Margin: date and page number

Margins

The margins can include:

- Company information
- Company logo
- The device serial number
- The date and page number.

It is possible to place these items in any of the four margins.

Report header

The report can start with an introduction.

Sample information

Sample information includes:

- The sample name

- The mode or method
- The date and time
- The measurement time.

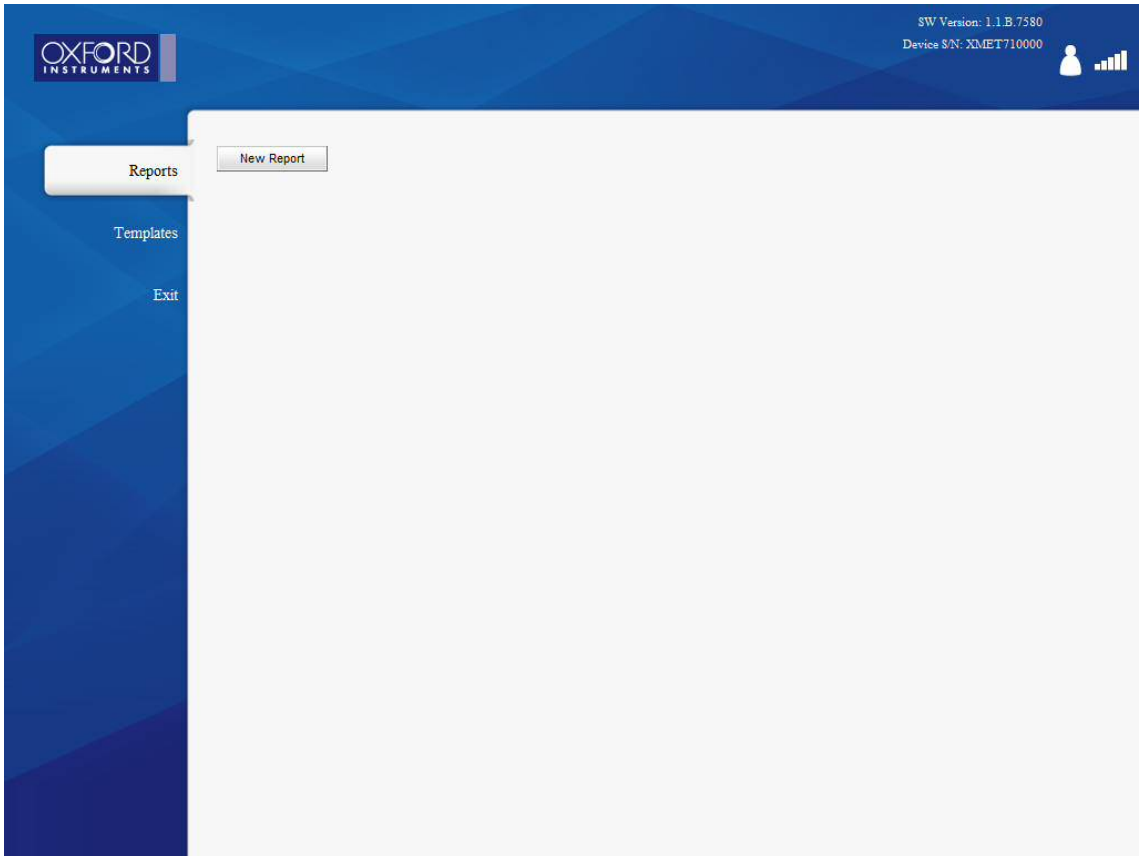
Element information	It is necessary to select the elements to appear in the report. Chosen elements that are not present in the sample donot appear in the report unless **All The Elements From The Result** option is selected . Element information can include the concentration and +/- value.
Grade	The report can include the grade information.
GPS Position	The report can include the GPS information.
Additional Information	The report can include the additional information for the sample.
Camera Image	The report can include the camera image of the sample.
Spectra	The report can include the spectra for the sample.
Operator information	The report can include information about the operator.

Create A Report

It is necessary to have a report template to create a report. Follow these steps to create a report.

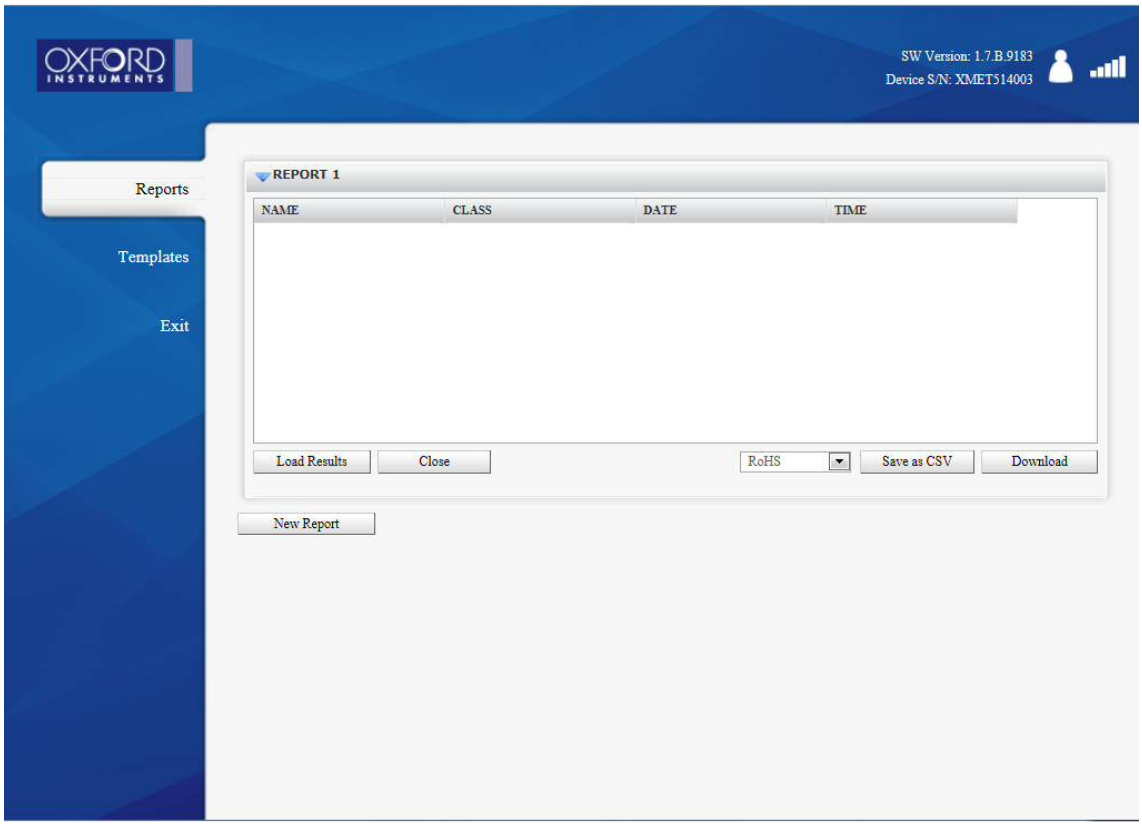
1. From the PC main screen, click **Report Generator**.

   The Reports screen appears.



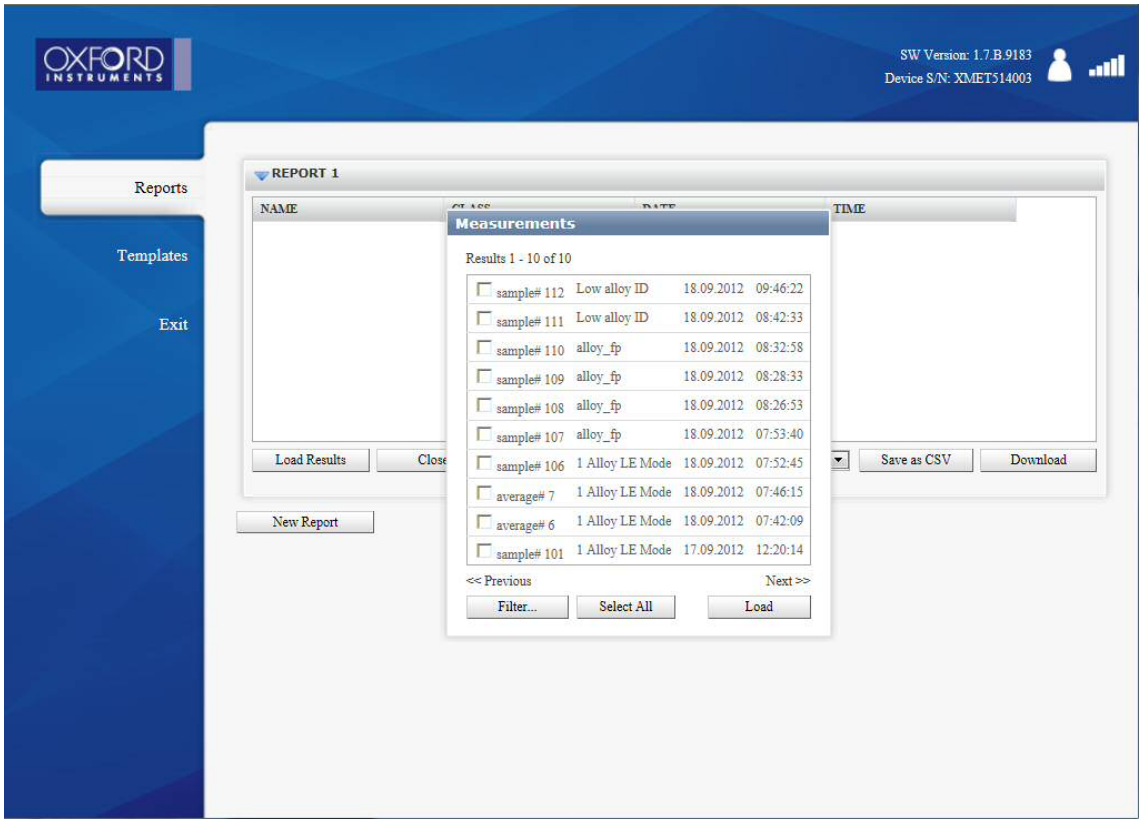
2. Click **New Report**.

   The Reports screen has a new report.



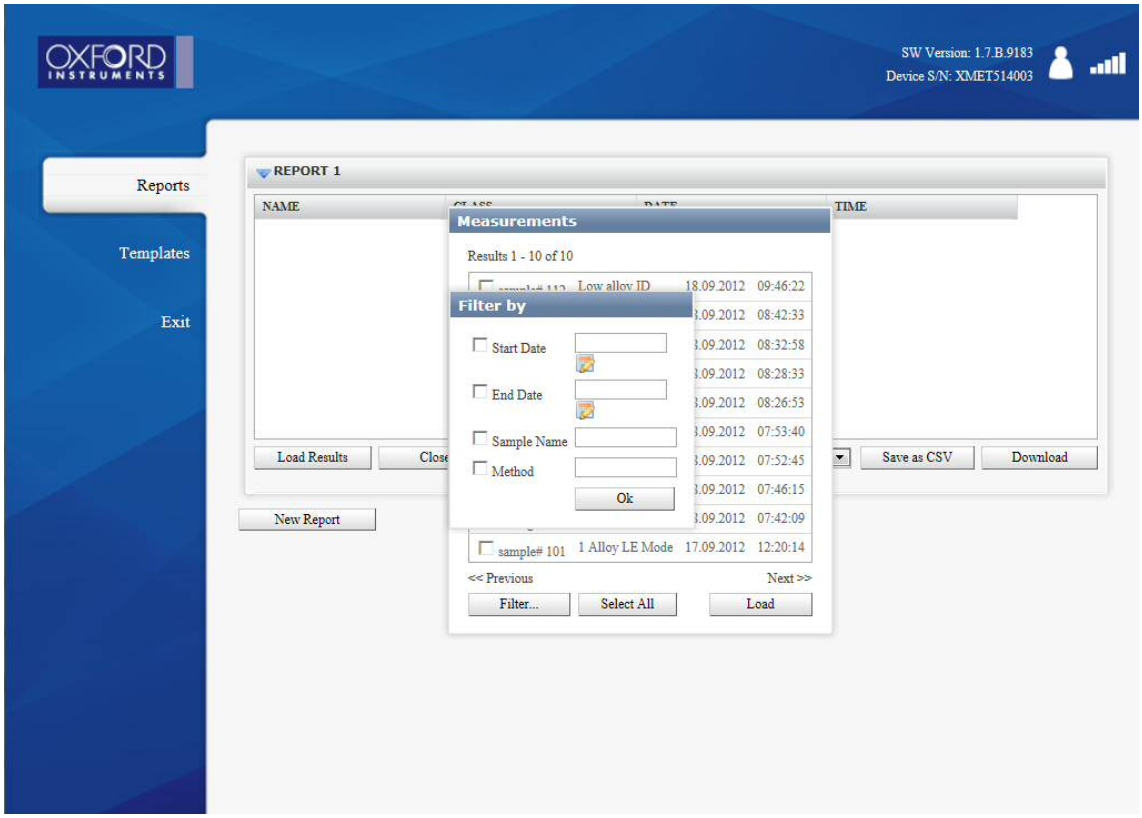
3. Click **Load Results**.

   The Measurements dialog box appears.



4. If required, click **Filter ...**.

   The Filter by dialog box appears.



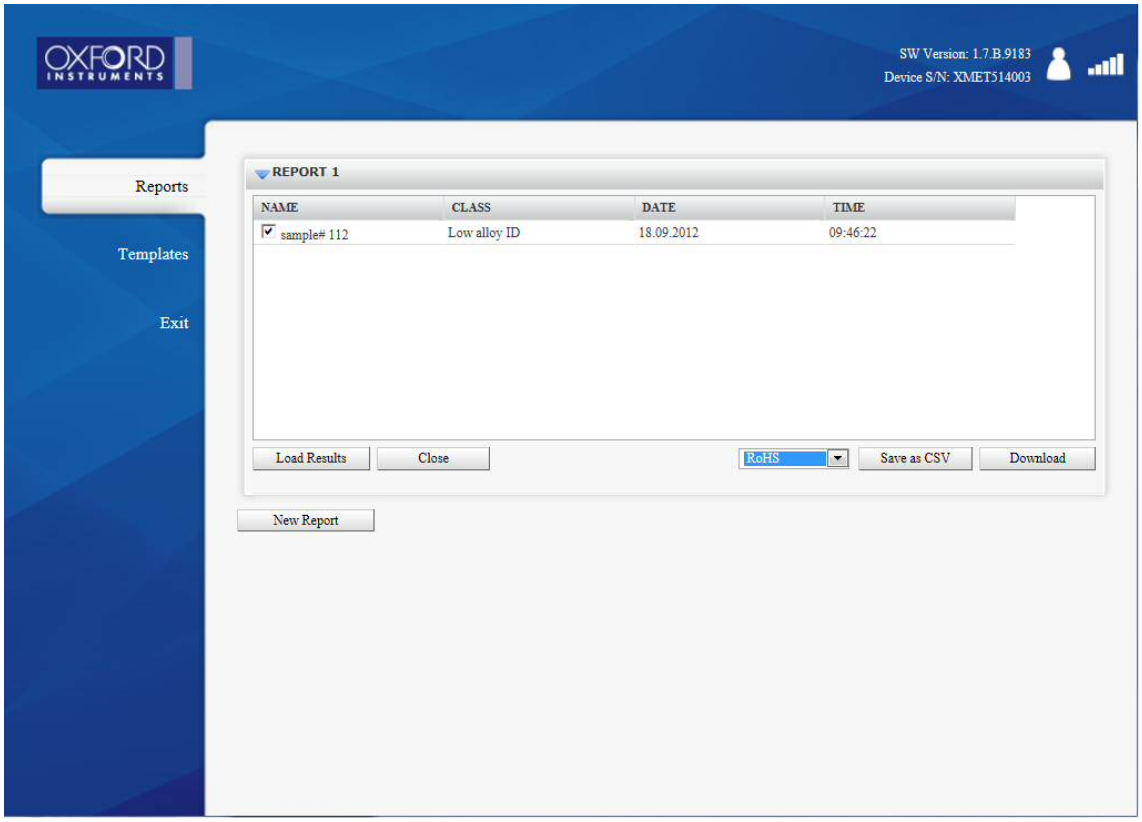
5. To use the filter, do one or more of the following, as required:

   - Click the **Start Date** tick box, and use the calendar to choose a date.
   - Click the **End Date** tick box, and use the calendar to choose a date.
   - Click the **Sample Name** tick box, and type all or part of the sample name.
   - Click the **Method** tick box, and type all or part of the Method name.

6. Click **OK** to return to the Measurements dialog box, with filtered results.

7. If required click **Select All** to select all the results for the report, and then click **Load**.

   The Reports screen shows the result or results for the report.



8. Select the required template for the report from the **Report Template** drop down list.
9. Click **Download** to download a PDF file.

   The File Download dialog box appears.

10. Click **Save** to save the file.

    The Zip file contains the report PDF file.

11. Click **Exit** to return to the PC main screen.

Wireless Network Use Cases

The X-MET8000 series can connect to Wi-Fi networks in Managed and Ad hoc mode. A typical use for Wi-Fi is to connect to a PC. This can allow more than one PC to connect to the X-MET8000 series.

The Wi-Fi connection can be used to transfer reports directly to a shared network resource and for operation of the X-MET8000 series trough a PC or tablet device using the WEB-interface or VNC. The Wi-Fi connection can also be used to control the X-MET8000 series remotely using the XAPI protocol.

In a managed network the X-MET8000 series can write reports to shared network folders and print reports to network printers. In addition the X-MET8000 series can be controlled from any computer on the local network providing that the IP address for the X-MET8000 series is known.

This manual will in detail explain how to connect the X-MET8000 series to a Wi-Fi network, enable shared folders for file transfer and connect to the X-MET8000 series using a Wi-Fi enabled computer or tablet.

Trough an ad hoc network connection it is possible to remotely access and control the X-MET8000 series using an WEB-browser or VNC and from the X-MET8000 series use shared folders and printers physically connected to the computer providing the ad hoc network.

Note that shared network resources may not work in ad hoc mode unless the resources are located on the device providing the ad hoc network.

The X-MET8000 series can be remotely controlled trough a VNC connection and using most common WEB browsers. This manual includes instructions on how to setup and control the X-MET8000 series using a WEB browser running on a PC and trough a VNC-connection from a PC and an iPad.

WEB browsers on mobile devices may not be fully compatible with the X-MET8000 series web interface, some features might not work properly if used with a mobile device web browser.

Multiple Wi-Fi connected X-MET8000 series devices can be controlled from a single computer using tabs in the WEB browser, one tab for each X-MET8000 series device.

Using the XAPI interface and a Wi-Fi connection multiple X-MET8000 series devices can be used for automated operation with a minimum of additional equipment and infrastructure.

Wireless Connections

The X-MET8000 series can connect to Bluetooth and Wi-Fi networks. Both networks are switched off by default. A typical use for Bluetooth would be to connect to a precision GPS receiver for mining applications, and it is possible to check the GPS information from the X-MET8000 series. A typical use for Wi-Fi is to connect to a PC. This can allow more than one PC to connect to the X-MET8000 series.

The Wi-Fi connection can be to a broadcast network or to a hidden network. For a broadcast network, it can be necessary to know the passkey. For a hidden network, it is necessary to know the SSID. Hidden networks can be either managed or ad-hoc. Managed networks can use either WPA or WPA2 Personal encryption, and ad hoc networks can use WPA None encryption. If a hidden network uses encryption, it is necessary to know the passkey. The network administrator will know the type of network in use, and can provide the SSID and passkey, as applicable.

An ad hoc Wi-Fi network is a decentralized type of wireless network. The network is ad hoc because it does not rely on a pre existing infrastructure, such as access points in managed wireless networks. Network shared folders and printer will most likely not work trough an ad hoc network

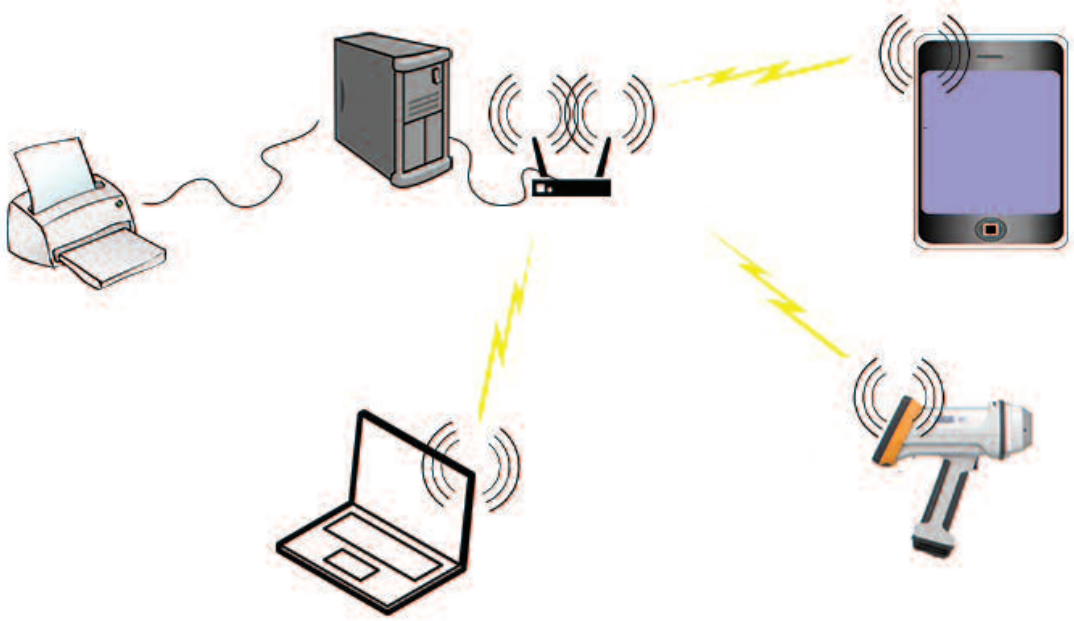
A managed Wi-Fi network utilizes access points providing wireless access to the network infrastructure including shared folders and printers

Most common full featured web browsers i.e. IE, Mozilla and Chrome will work with the X-MET8000 series web user interface and are platform and X-MET8000 series software version independent.

Many mobile devices use web browsers optimized for mobile web browsing, these might not include all features required by the X-MET8000 series web GUI. Multiple X-MET8000 series devices running different software versions can be operated simultaneously using tabs in the web browser.

Wi-Fi ad hoc network topology

The laptop provides the Wi-Fi network in ad hoc mode and the X-MET8000 series connects directly to the laptop. Network resources might not be accessible from the X-MET8000 series.



Wi-Fi managed network topology

In managed networks existing infrastructure like routers and switches connects the clients to the network, shared resources are accessible from all network connected clients.

Connect the X-MET8000 series to a company network

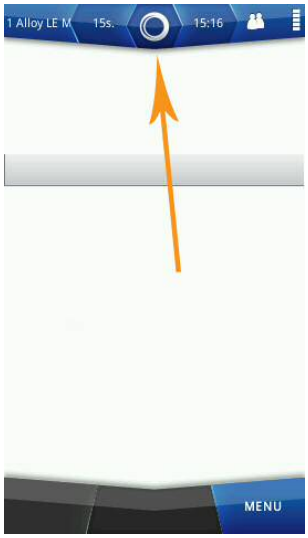
The procedure may differ depending on the network security level and server versions used. If the network utilizes device based authentication or you are unable to connect to the network using the following steps, please contact your local network administrator for support.

Add A Broadcast Wi-Fi Connection

Follow these steps to connect to a broadcast Wi-Fi network.

1. Navigate: **Status Bar** > **Wireless** .

   The Wireless screen appears.

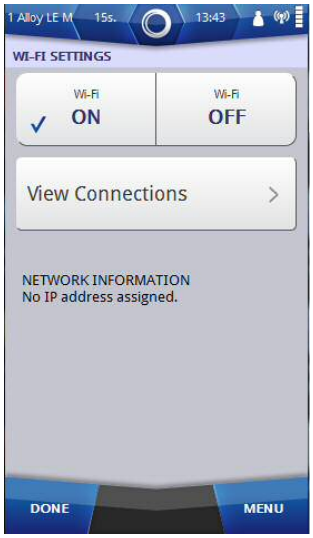


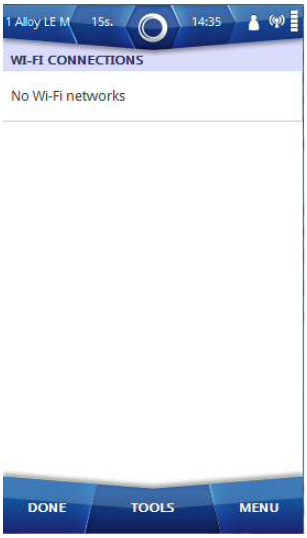
2. Tap **Wi-Fi**.

   The Wi-Fi Settings screen appears.

3. Tap the **ON** tick box.

   The Wi-Fi Settings screen changes.

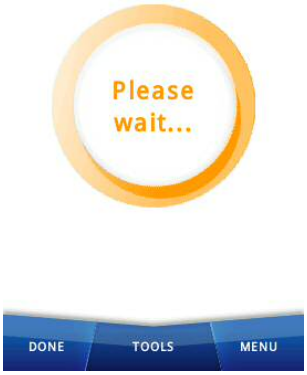




4. Tap **View Connections**.

   The Wi-Fi Connections screen appears.

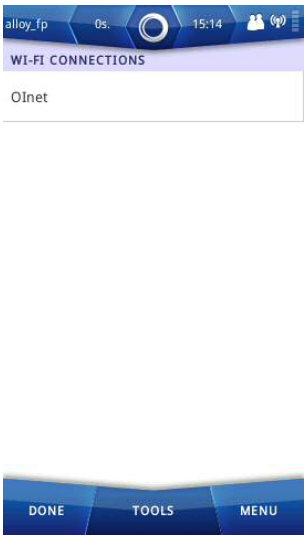
5. Tap: **Tools** > **Scan Networks** .



The Network Discovery screen appears, and a search for Wi-Fi networks begins.

When the search is complete, the screen shows the available Wi-Fi networks.

The list is ordered with the strongest signals at the top.

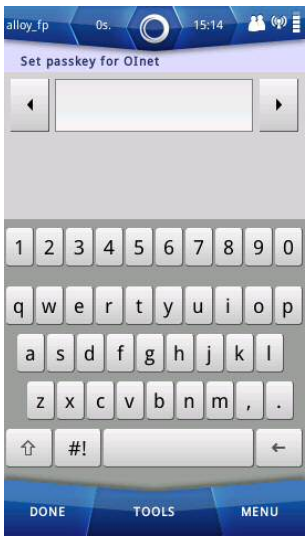


6. If necessary, tap: **Tools** > **Scan Again** .

   Another search for Wi-Fi networks begins, and the Network Discovery screen is refreshed.

7. Tap one of the Wi-Fi networks.

8. If the selected Wi-Fi network requires a passkey, use the virtual keyboard to type the passkey for the network, then tap **Done** to return to the Network Discovery screen.



9. Tap **Done** to return to the Wi-Fi Connections screen.

   This shows the active Wi-Fi connection.

10. Tap **Done** to return to the Wi-Fi Settings screen.
    Wait until the Network Information IP address and Mask update in the Wi-Fi Settings screen. The updated IP address can be used to access the X-MET8000 series from the other computers that are in the same network.

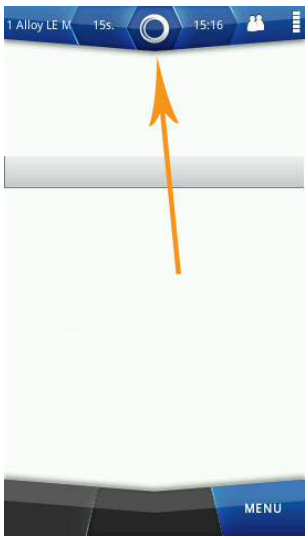
11. Tap **Done** twice to exit the Wi-Fi Settings screen.

Add A Hidden Wi-Fi Connection

Follow these steps to connect to a hidden Wi-Fi network. Managed networks can use either WPA or WPA2 Personal encryption, and ad hoc networks can use WPA None encryption.

1. Navigate: **Status Bar** > **Wireless** .

   The Wireless screen appears.

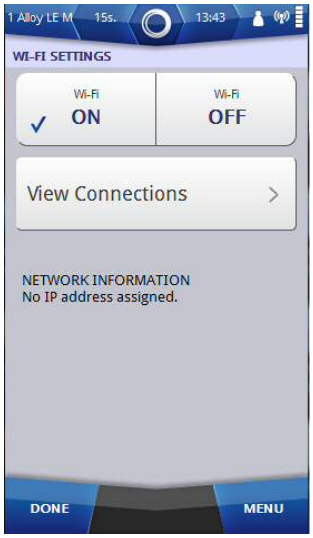


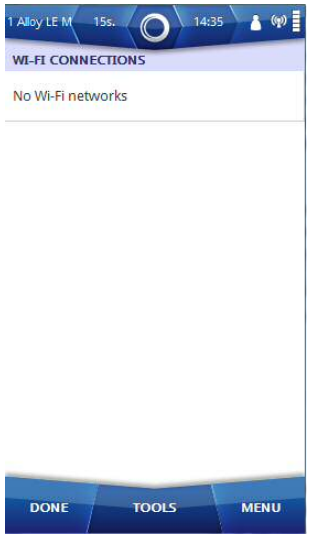
2. Tap **Wi-Fi**.

   The Wi-Fi Settings screen appears.

3. Tap the **ON** tick box.

   The Wi-Fi Settings screen changes.



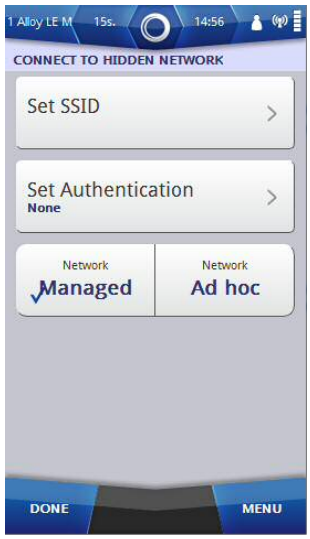


4. Tap **View Connections**.

   The Wi-Fi Connections screen appears.

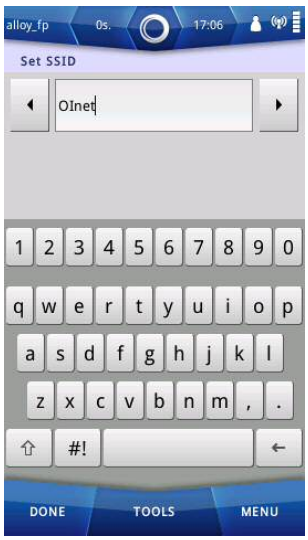
5. Tap: **Tools** > **Connect To Network** .

   The Connect To Hidden Network screen appears.



6. Tap **Set SSID**.

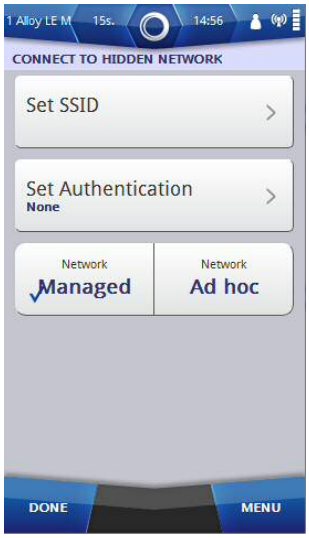
7. Use the virtual keyboard to type the SSID, and then tap **Done** to return to the Connect To Hidden Network screen.



8. Do one of the following:
   - Tap **Managed**
   - Tap **Ad Hoc**

9. Tap **Set Authentication**.

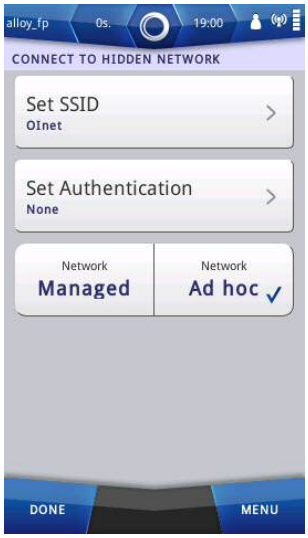
   The Set Authentication Method screen appears.



10. Do one of the following:

    - Tap **None**
    - Tap **WPA & WPA2 Personal**

    For an ad hoc network, the second choice is **WPA None**.

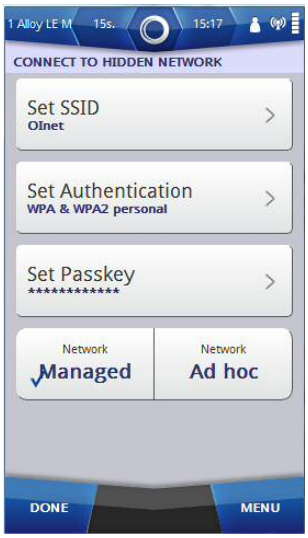


11. Tap **Done** to return to the Connect To Hidden Network screen.

    The Connect To Hidden Network screen changes.

12. Tap **Set Passkey**.

13. Use the virtual keyboard to type the passkey for the network, and then tap **Done** to return to the Connect To Hidden Network screen.



14. Tap **Done** to return to the Wi-Fi Settings screen.
Wait until the Network Information IP address and Mask update in the Wi-Fi Settings screen. The updated IP address can be used to access the X-MET8000 series from the other computers that are in the same network.

15. Tap **Done** twice to exit the Wi-Fi Settings screen.

Wireless Printing

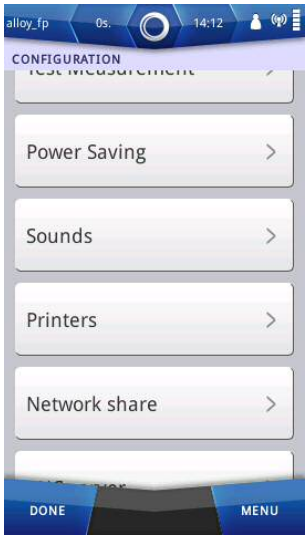
The X-MET8000 series supports printing Reports directly to a network connected printer over a Wi-Fi connection. Setup wireless printing using the following instructions.

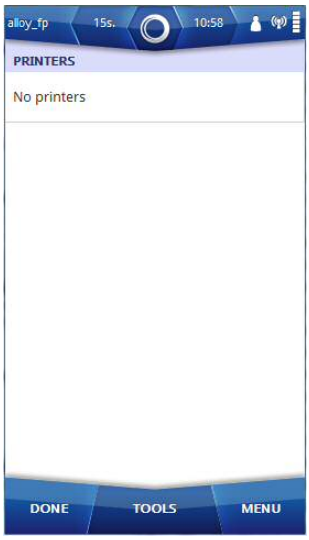
Configure A Printer

It is necessary to connect the X-MET8000 series device to a Wi-Fi network before configuring a printer. Follow the steps below to configure a printer.

The supervisor must configure network printers.

1. Navigate: **Menu** > **Settings** > **Instrument Configuration** > **Printers** .





The Printers screen appears.

2. Tap **Tools** > **Add Printer** .

   The Select Printer screen appears and a search begins for the network printers. When the search is complete, the screen shows the available **Network Printers** and **Add Other Printer**.

3. If necessary, scan again by selecting **Tools** > **Scan Again** .
4. Tap either on the found **Network Printers** or **Add Other Printer** to input the printer information manually.

   The Add/Edit Printer screen appears.

5. Do the following:

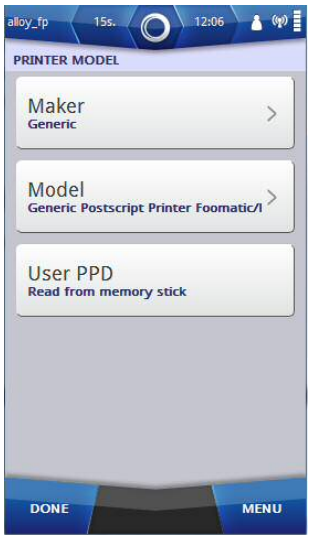
   - Tap **Name**

     The Printer name can be any text, it is used to identity a printer when multiple printers are configured in the device.

   - Tap **URI**

     The system administrator will need to provide the IPP address for the printer.

6. Use the virtual keyboard to type the new value, and tap **Done** to return to the Add/Edit Printer screen.
7. It is not necessary to change **Model** as most of the printers work with a default generic postscript driver which is available in the device. If the user wants to install a different PPD driver from a USB memory device, then tap **Model** .
   The Printer Model screen appears.



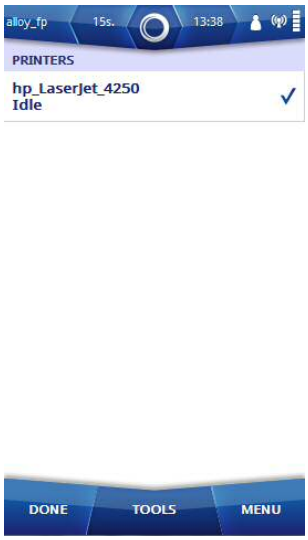
8. Tap **Maker** to select the applicable maker. Tap **Done** to return to the Printer model screen.
   The Printer Model screen updates with the new values.
9. Tap **User PPD** to install the PPD file for the printer from the memory stick.
10. Tap **Done**.
    The Information dialog box appears.
11. Tap **OK** to return to the Select Printer screen.
12. Tap **Done** 4 times to return to the main screen.

Print A Test Page

It is necessary to configure a printer before printing a test page. Follow the steps below to print a test page.

1. Navigate: **Menu** > **Settings** > **Instrument Configuration** > **Printers** .

   The Printers screen appears.



2. Select a printer and tap **Tools** > **Maintenance Selected** .
   The Printer Maintenance screen appears.
3. Tap **Print Test Page**.

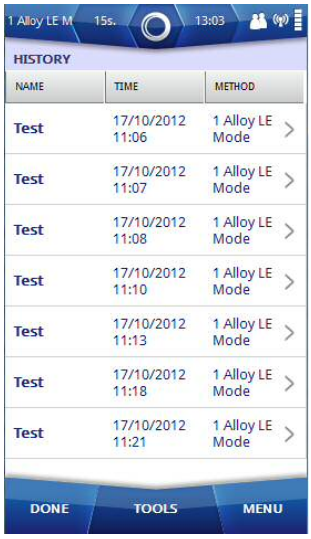
   The Information dialog box appears.
4. Tap **OK** to return to the Printer Maintenance screen.
5. If the printing of the test page is successful, set the printer as the default printer by selecting **Set As Default Printer** in the Printer Maintenance screen.
6. Tap **Done** 4 times to return to the main screen.

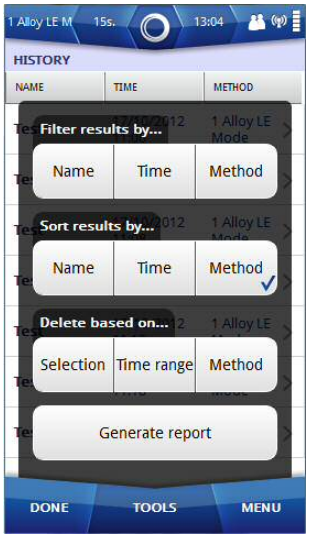
Generate Report to Printer

The Supervisor must configure a network printer in the device in order to generate reports directly on a printer, and must connect the device to the same WiFi network as the one to which the network printer is connected. Please refer to the Supervisor manual to set this up. Follow the below steps to generate report to printer.

1. Tap **Menu**, and then tap **History**.

   The History screen appears.



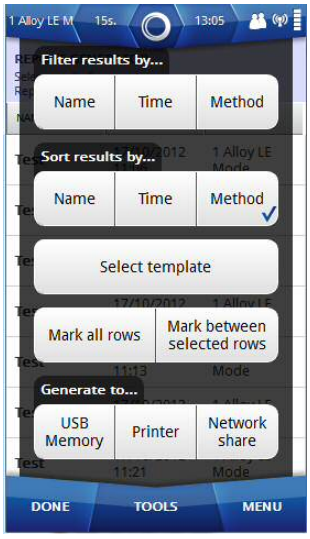


2. Tap: **Tools** > **Generate Report**

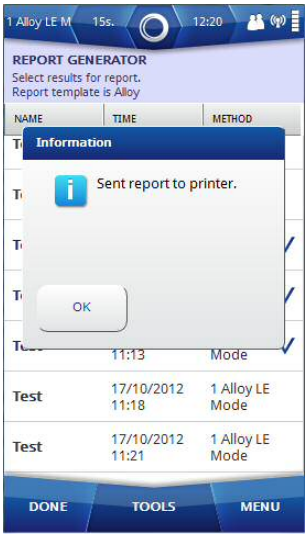
   The Report Generator screen appears.

3. Tap: **Tools** > **Select Template**

   The Select Report Template screen appears with the default report template list and also user defined templates which were created in the Web GUI.



4. Tap on the applicable template and then tap **Done** to return to Report Generator screen.
5. Select the measurement results for the report by tapping on each result row in Report Generator screen or tap **Tools** and select results using following options
   - Filter by
   - Sort by
   - Mark All
   - Mark between selected rows
6. Tap: **Tools** > **Printer** after selecting results.
   Device starts generating report to the printer. Once the report is generated to the printer, an Information dialog box appears .



7. Tap **OK**.
   The Report Generator screen appears.
8. Tap **Done** twice to return to the main screen.

Wireless File Transfers

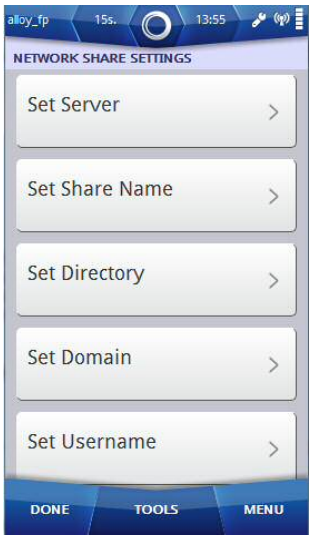
The X-MET8000 series can store reports directly to a network share over a Wi-Fi connection. Setup shared folders using the following instructions.

Configure Network Share Settings

Follow the steps below to configure the Network Share Settings.

1. Navigate: **Menu** > **Settings** > **Instrument Configuration** > **Network Share** .

   The Network Share Settings screen appears.



2. Do all of the following:
   - **Set Server**

     Set Server is the IP address of the server hosting the network share.
   - **Set Share Name**

     Set Share name is the name of the network share.
   - **Set Directory**

     Set Directory is the directory path inside the network share.
   - **Set Domain**

     Set Domain is the domain or workgroup where the user account is created.
   - **Set Username**

     Set Username is the username of the user to access the network share.
   - **Set Password**

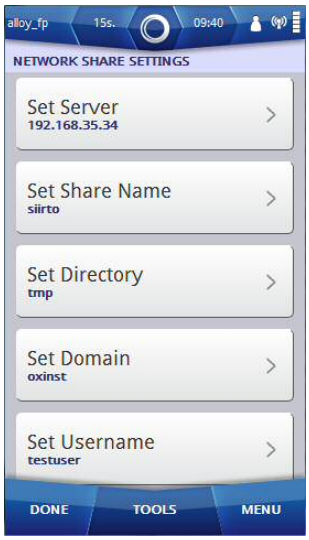
     Set Password is the password of the user to access the network share.
3. The sytem administrator will know the settings of the available shares in the network, and can provide the necessary information for the Network Share Settings. Use the virtual keyboard to type the new value, and tap **Done** to return to the Network Share settings.
4. Tap **Done** three times to return to the main screen.

Write Test File To Network

It is necessary to configure the Network Share Settings before writing a test file to the network. Follow these steps to write a test file.

1. Navigate: **Menu** > **Settings** > **Instrument Configuration** > **Network Share** .

   The Network Share Settings screen appears.



2. Tap **Tools** > **Write Test File** .

   The Information dialog box appears.

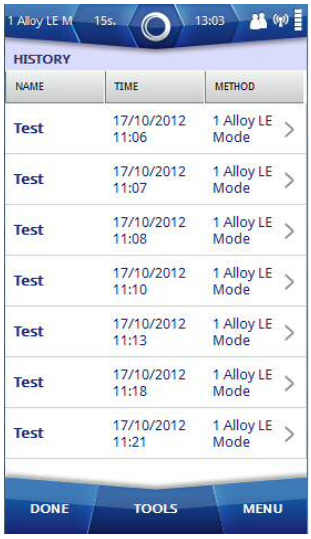
3. Tap **OK** and then tap **Done** three times to return to the main screen.

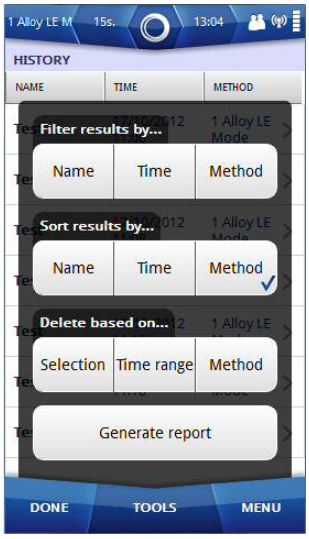
Generate Report to Network Share

The Supervisor must configure the network share in order to save reports on the selected network, and must connect the device to the same WiFi network as the one to which the server hosting the network share is connected. Please refer to the Supervisor manual to set this up. Follow the below steps to generate report to Network Share.

1. Tap **Menu**, and then tap **History**.

   The History screen appears.



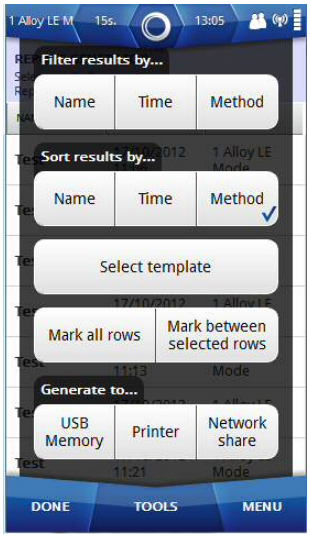


2. Tap: **Tools** > **Generate Report**

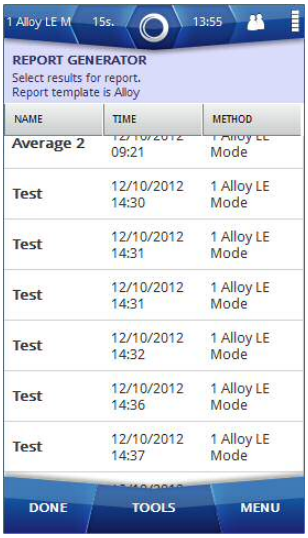
   The Report Generator screen appears.

3. Tap: **Tools** > **Select Template**

   The Select Report Template screen appears with the list of the default report templates and user defined templates which were created in the Web GUI.



4. Tap on applicable template and then tap **Done** to return to Report Generator screen.
5. Select the measurement results for the report by tapping on each result row in the Report Generator screen or tap **Tools** and select the results using following options.
   - Filter by
   - Sort by
   - Mark All
   - Mark between selected rows
6. Tap: **Tools** > **Network Share** after selecting the results.
   Device starts generating report to the printer. Once the report is generated to the network share Report Generator screen appears.



7. Tap **Done** twice to return to the main screen.

Operation With A PC

It is possible to operate the X-MET8000 series with a PC to do the following:

- Create a report for a series of results.
- Do a test measurement.
- Access the X-MET8000 Series User Manual .

Both supervisors and operators can operate the X-MET8000 series with a PC. Each uses their own login code. There is not a separate login code for PC operation.

Operations with the PC use an Internet browser. While using an USB connection the standard URL to connect to the X-MET8000 series is *http://10.0.0.1/*. Please contact the local Oxford Instruments representative if it is necessary to change the URL. When connecting to the X-MET8000 series over Wi-Fi the URL depends on the IP address assigned to the X-MET8000 series by the network.

Connect To A PC And Login

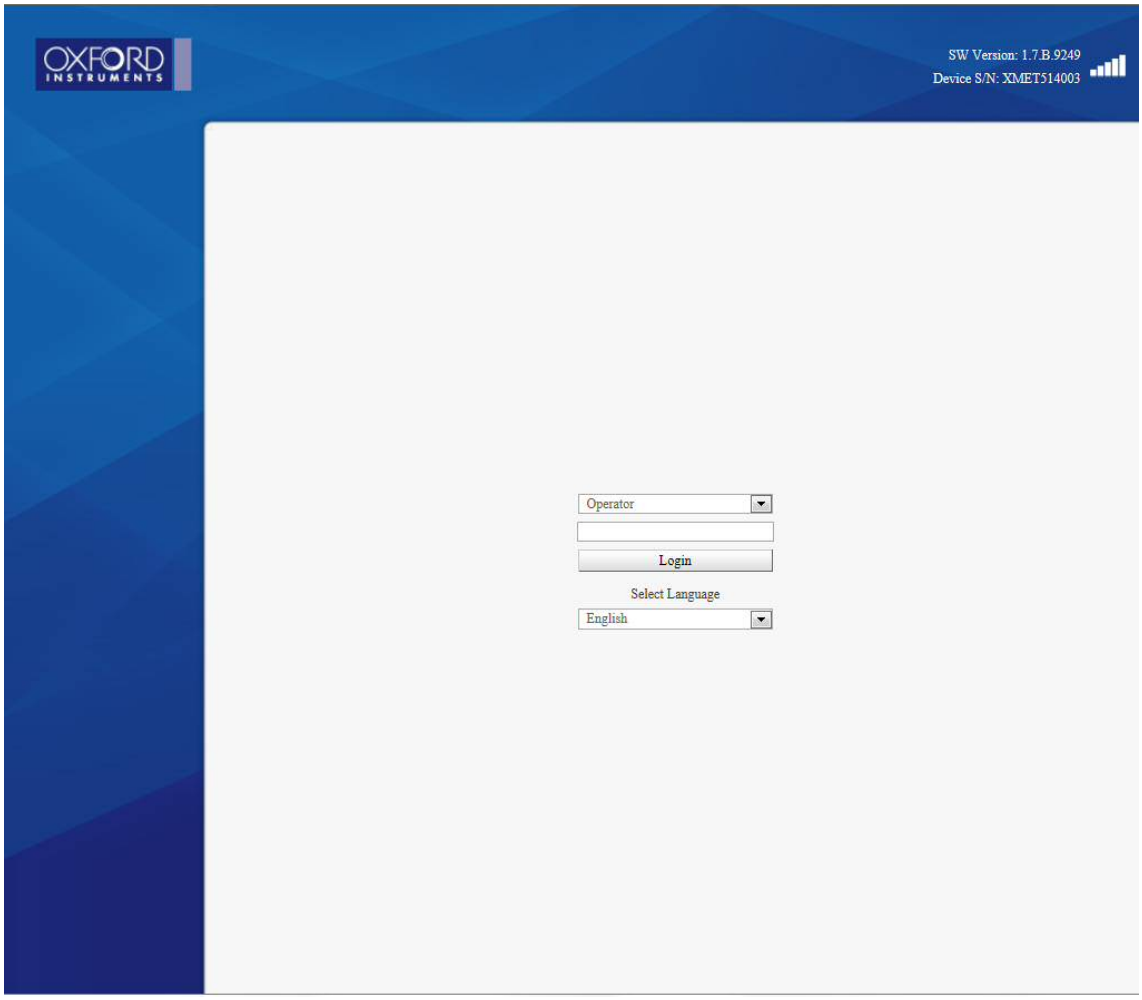
Follow these steps to login on the X-MET8000 series from a PC over WLAN.

1. Follow the steps to connect the X-MET8000 series to a Wi-Fi network. Please note that the PC must be connected to the same WLAN network for the connection to work.

2. Open the Wi-Fi Settings screen on the X-MET8000 series and note the IP address found under **NETWORK INFORMATION**.

3. Open an Internet browser on the PC and type the IP from the previous step in the address field in the browser and hit ENTER.

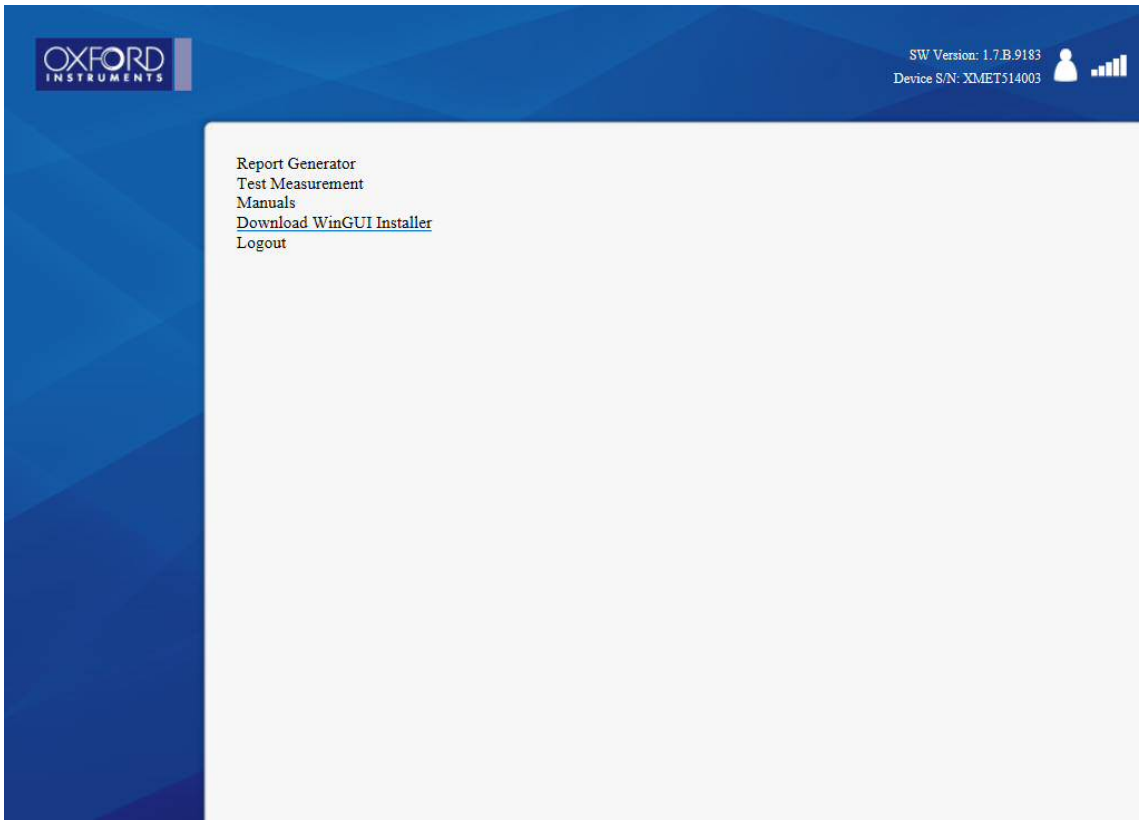
   The PC Login screen appears.



4. Select the language from drop down list and Choose the correct user from the **User** drop down list, type the login code into the text box, and click **Login**.

   The PC main screen appears.

   The X-MET8000 series shows the Safety screen with a Warning dialog box.



VNC connection to the X-MET8000 series

The X-MET8000 series can be used trough VNC over a Wi-Fi connection. Setup a VNC connection using the following instructions.

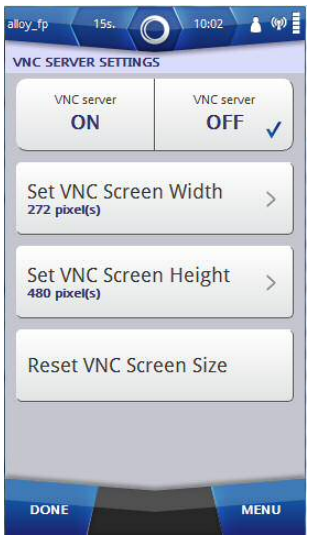
Using a VNC connection all the operations that are available locally on the X-MET8000 series are accessible trough remote screen.

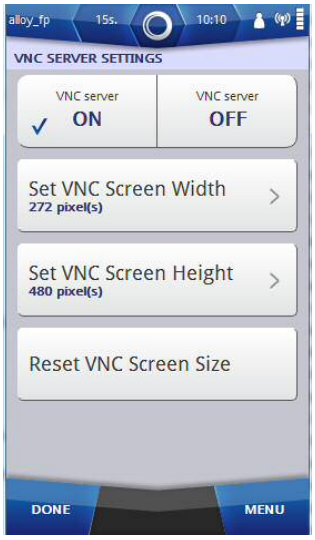
Configure VNC Server Settings

It is necessary to have a VNC client on computer to connect to the X-MET device's VNC server. Contact your IT service administrator to setup a VNC client on your computer. A VNC connection can be established by connecting a VNC client with a VNC server using either the X-MET device's Wi-Fi IP address, or the IP address 10.0.0.1 when using a direct USB connection. Follow the steps below to configure the VNC server settings in the device.

1. Navigate: **Menu** > **Settings** > **Instrument Configuration** > **VNC Server** .

   The VNC Server Settings screen appears.





2. Tap **VNC Server ON**.
   The Information dialog box appears.
3. Tap **OK** to return to the VNC Server Settings.
4. If necessary, do the following to change the VNC screen width and height before setting **VNC Server ON**.
   - **Set VNC Screen Width**
   - **Set VNC Screen Height**
5. Use the virtual keyboard to type the new value, and tap **Done** to return to the VNC Server Settings.
6. To reset the VNC screen width and height to the default values, tap **Reset VNC Screen Size**.
7. Tap **Done** three times to return to the main screen.

Setup a VNC connection on a PC

Follow these steps to set up a VNC connection on a PC and connect to the X-MET8000 series.

It is necessary to have a VNC client on computer to connect to the X-MET8000 series device's VNC server. Contact your IT service administrator to setup a VNC client on your computer. A VNC connection can be established by connecting a VNC client with a VNC server using either the X-MET8000 series device's Wi-Fi IP address, or the IP address 10.0.0.1 when using a direct USB connection. The VNC Server must be set up on the X-MET8000 series before a connection can be established.

1. On the PC, Download and install a VNC client, i.e. RealVNC Viewer from http://www.realvnc.com.
   Follow the instructions for the selected software to install the VNC client.

2. Start the VNC Client on the PC and enter the X-MET8000 series IP address found under Network settings **Status Bar** > **Wireless** > **Wi-Fi** .

3. On the VNC client, tap **Connect** to open the remote connection.

   If the VNC client is unable to connect to the X-MET8000 series it might be necessary to disable and restart the Wi-Fi on the X-MET8000 series, from the Wi-Fi settings, tap OFF and then ON again to restart the adapter.

4. If prompted for a passcode in the VNC client, leave this blank.

   The X-MET8000 series screen appears on the PC. The X-MET8000 series can now be controlled from the PC.

5. To end the VNC connection, tap **Close Connection** from the tools menu.

   The VNC window on the PC closes.

Control the X-MET8000 series using an iPad

An iPad or similar tablet can be used to control the X-MET8000 series trough VNC over a Wi-Fi connection. Setup a iPad VNC connection using the following instructions.

Setup an iPad to control the X-MET8000 series

Follow these steps to install and set up a VNC client on a iPad to connect to the X-MET8000 series. The same basics can be applied to other tablets.

The Wi-Fi and VNC Server must be set up and started on the X-MET8000 series before a VNC connection can be established.

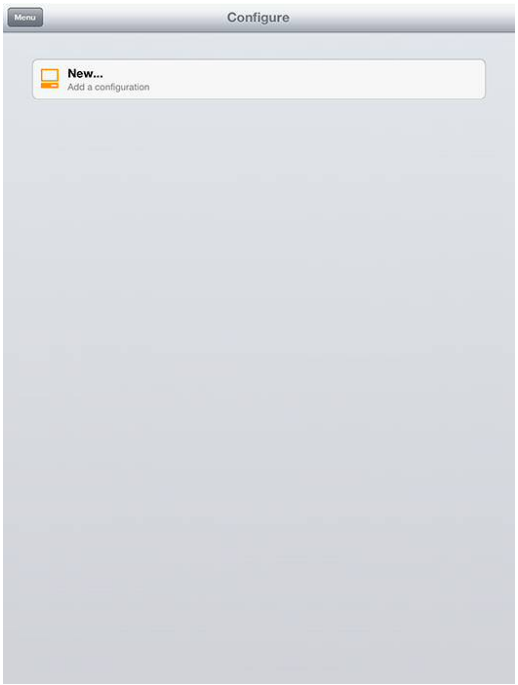
1. On the iPad, purchase and install a VNC client of choice, these instructions are for Mocha VNC client and can also be used as a guide for other VNC clients.

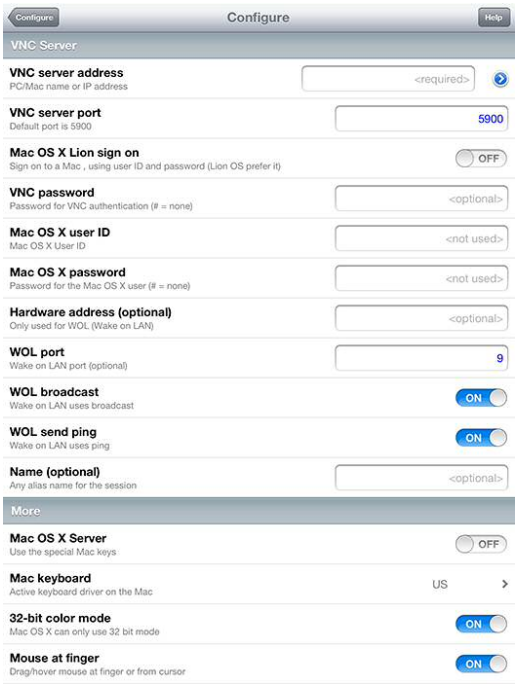
   Follow the instructions for the selected software to install the VNC client.

2. Start the VNC Client on the iPad. When started for the first time, add a New connection by tapping on **New**.

   If a connection already exists, use **Menu**/**Add another Server** to add new servers.

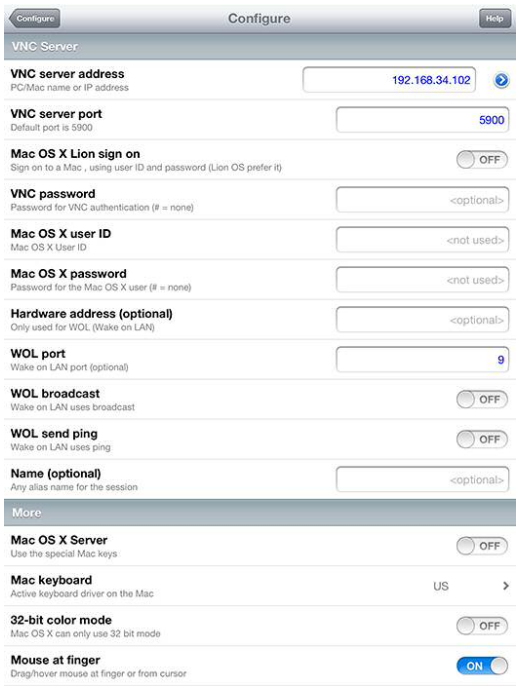
   Once a connection is stored, use the **Menu** in the upper left corner to switch between **Connect** and **Configure**.





3. In the VNC client, enter the X-MET8000 series IP address found under Network settings (Navigate: **Status Bar** > **Wireless** > **Wi-Fi**) and verify that that the settings in the VNC client are according to the following table:

   Note, 32-bit color mode will not work with the X-MET8000 series, other default settings in Mocha VNC should be adequate.



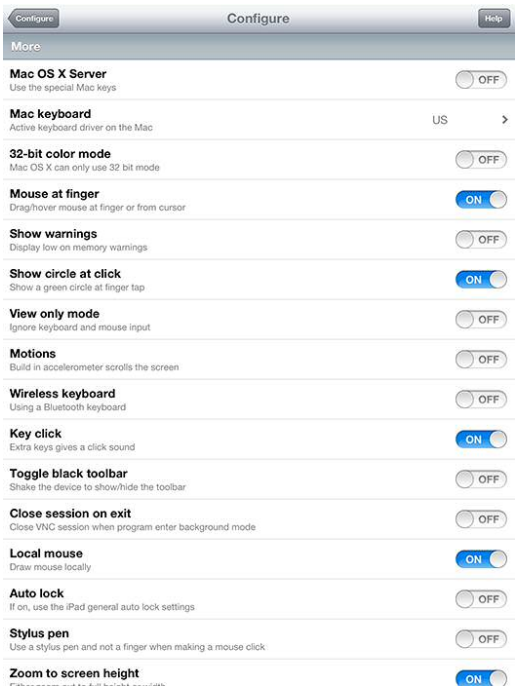


Table 1: Configuration table

VNC Server	Value
VNC server address	X-MET8000 series IP address
VNC server port	5900
Mac OS X Lion sign on	OFF
VNC password	<optional>
Mac OS X User ID	<not used>
Mac OS X Password	<not used>
Hardware address (optional)	<optional>
WOL port	9
WOL broadcast	OFF
WOL send ping	OFF
Name (optional)	<optional>
More	**Value**
Mac OS X server	OFF

More	Value
Mac keyboard	US or according to keyboard preferences
32bit color mode	OFF
Mouse at finger	ON
Show warnings	OFF
Show circle at click	ON
View only mode	OFF
Motions	OFF
Wireless keyboard	OFF
Key click	ON
Toggle black toolbar	OFF
Close session on exit	OFF
Local mouse	ON
Auto lock	OFF
Stylus pen	OFF
Zoom to screen height	ON

4. Follow the steps in the next chapter to connect and control the X-MET8000 series using the iPad.

Control the X-MET8000 series using an iPad

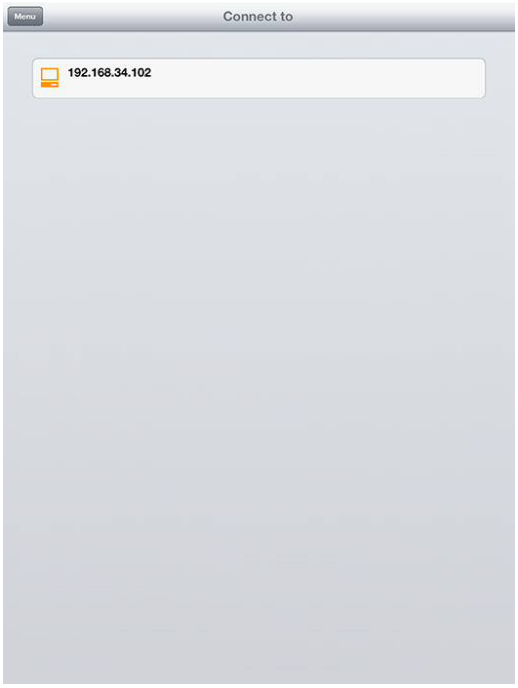
Follow these steps to connect to the X-MET8000 series using an iPad. The same basics apply also to other tablets.

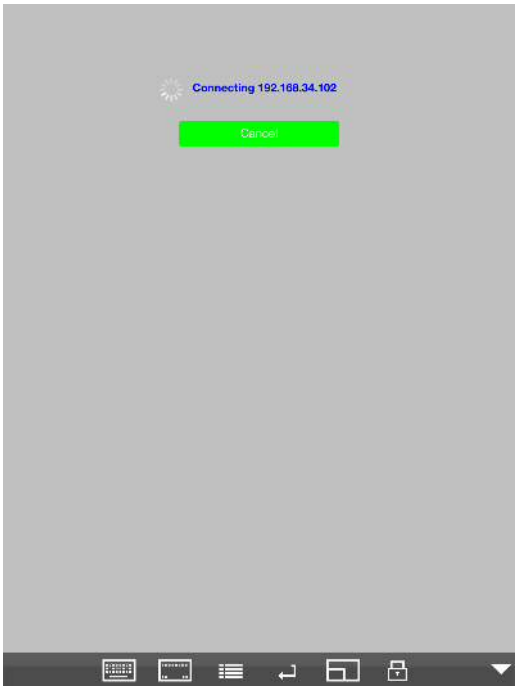
Wi-Fi and the VNC Server must be set up and started on the X-MET8000 series and the IP address of the X-MET8000 series must be known before a connection can be established.

1. Tap on the connection with the IP address for the X-MET8000 series to connect to. If necessary, tap **Menu** in the upper left corner to switch between **Connect** and **Configure**.

   If no connection exist for the correct IP address, add a new server or modify an existing connection to match the X-MET8000 series current IP address.

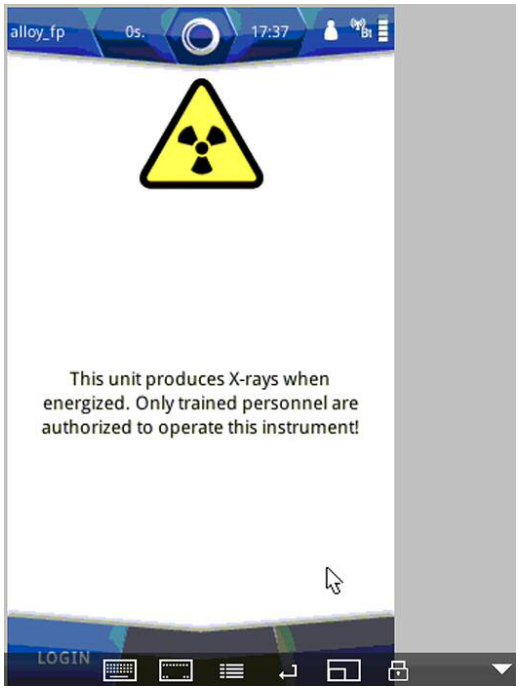
   The VNC connection to the X-MET8000 series is started.



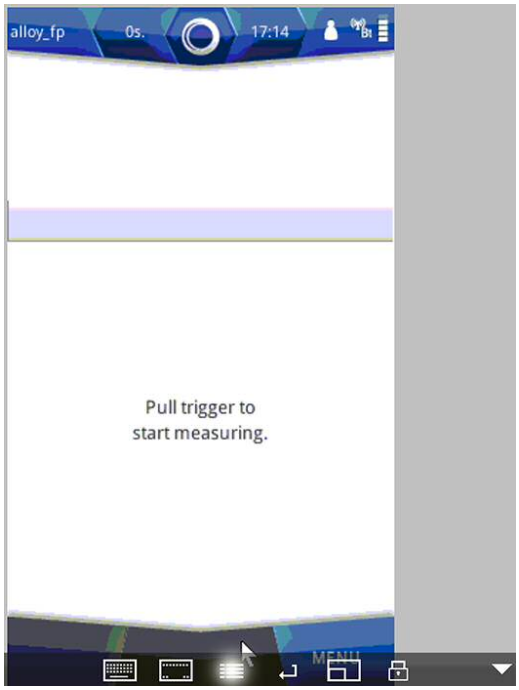


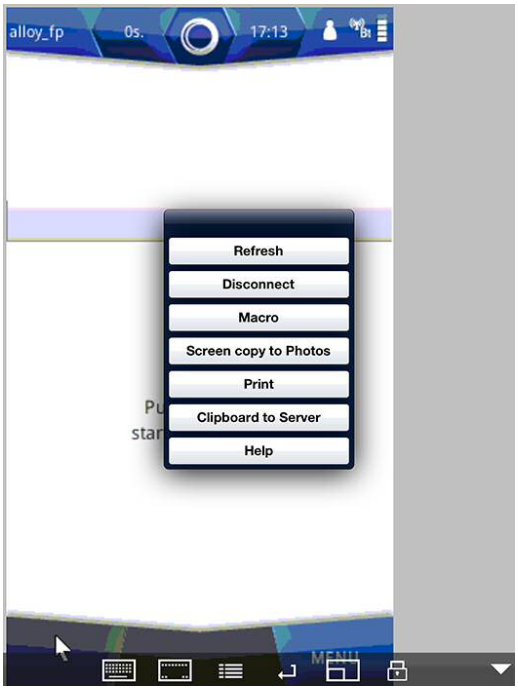
2. If prompted for a passcode, this can be left blank.

   The X-MET8000 series screen appears on the iPad. Log in to the X-MET8000 series as usual, the X-MET8000 series can now be controlled using the iPad.



3. To end the VNC connection, tap **Menu Symbol** at the bottom of the iPad screen.





4. Tap **Disconnect** to end the VNC session.

   The VNC session ends.

X-MET Application Programming Interface

The X-MET8000 series provides software access to measurement data and other information over USB or WLAN connection.

X-MET Application Programming Interface (XAPI)

XAPI is a RESTful web service accessible via the URL http://10.0.0.1:8080/xapi/ if the X-MET8000 series is configured to use the default IP address of 10.0.0.1. The data is returned in XML format. This document contains examples of retuned data and an XML Schema Document "xapi.xsd" is provided for reference. The X-MET8000 series can also be configured to push new measurement results to a HTTP server.

Oxford Instruments Analytical Customer Support provides example files for usage of the XAPI on request.

Resources

The following resources under the XAPI URL can be queried with HTTP GET request.

/ A directory of top level resources. The following list is returned in software version 1.2:

```
<DirectoryListing>
   <Entry name ="Measurements" xlink="measurements" />
   <Entry name ="Methods" xlink="methods" />
   <Entry name ="Report Templates" xlink="reporttemplates" />
   <Entry name ="Report PDF" xlink="reportpdf" />
   <Entry name ="Push Client Settings"
       xlink="pushclientsettings" />
</DirectoryListing>
```

/measurements A list of all available measurements. The list can be filtered using HTTP GET parameters **startDate**, **endDate**, **measurementNamePart** and **methodNamePart**. For example, the URL /measurements?startDate=2011-02-16 lists measurements with date 16th February 2011 or later. Entries in the list have the **datetime**, **methodName**, **id** and **name** attributes:

```
<Measurements>
  <MeasurementRef datetime="2011-01-01T13:01:56.253"
    methodName="metal_fp" id="1" xlink="1"
    name="Noname 1" />
</Measurements>
```

Individual measurement resources are located at **/measurements/<id>** where the <id> is the ID number of the measurement. Normal Measurements use the **Measurement** root element, average measurements have an **AverageMeasurement** element instead. Depending on the method used there is at least one **FundamentalParametersResult**, **EmpiricalAssayResult** or **EmpiricalIdentificationResult** element. An average measurement also have an **AverageResult** element.

FP and empirical assay results contain **ConcentrationResults** and **Grades** elements while an identification method result contains an **IdentificationResults** element instead. The **Spectrums**, **AdditionalInfo**, and **Location** (GPS position) elements are common to all result types.

```
<Measurement measurementTime="2011-01-01T13:01:56.253"
             id="1" name="Noname 1">
 <Result>
  <FundamentalParametersResult1
   measurementTime="2011-01-01T13:01:56.253"
   name="Noname 1" measurementDuration="6">
  <ScreeningInfo>
   <ScreeningMethod name="metal_fp" />
```

```
  </ScreeningInfo>
  <spectrums>
   <Spectrums>
    <SpectrumRef xlink="/xapi/spectrums/1" />
   </Spectrums>
  </spectrums>
  <ConcentrationResults>
   <ConcentrationResult name="Fe"
     standardDeviation="0.259588"
     numberOfDecimals="2" concentration="68.6963"
     unit="%" />
   </ConcentrationResults>
   <Grades>
    <Grade name="SS316" match="0.612988">
     <GradeElement elementShortName="Fe"
                   highLimit="0.8" result="OK"
                   lowLimit="0.6" />
     </Grade>
    </Grades>
   </FundamentalParametersResult>
  </Result>
</Measurement>
```

/spectrums The resource **/spectrums/<id>** contains the mapping from channels to energy (**slope>** and **intercept** units), measurement parameters (**current** and **voltage** and the counts for each channel.

```
<Spectrum slope="20046" name=""
  measurementTime="2011-01-01T13:04:15 current="10"
  intercept="0" voltage="40" id="3" accumulationTime="5">
 <Counts value="0" channel="0" />
 <Counts value="0" channel="1" />
  ...
</Spectrum>
```

/methods A list of methods in the device with method ID and name.

```
<Methods>
  <MethodInfo id="1" name="Aluminium" />
  <MethodInfo id="2" name="Aluminium ID" />
  <MethodInfo id="3" name="alloy_fp" />
</Methods>
```

/reporttemplates A list of report templates in the device with name, modification date and ID.

The ID is used for generating PDF reports.

```
<ReportTemplates>
  <ReportTemplateInfo
    modificationDate="2011-01-01T14:31:10.249"
    id="1" name="basic" />
</ReportTemplates>
```

/reportpdf Generate and return a measurement report in the PDF format used by the report generator in device GUI and web GUI. Report template and measurements must be selected using the **reportTemplateId** and **measurementId** GET parameters. For example, the URL /reportpdf?reportTemplateId=1&mesurementId=10&mesurementId=12 would generate report PDF using template 1 ad containing the two measurements with IDs 10 and 12.

/pushclientsettings returns current settings of the push client. The default values are

```
<pushclientsettings>
  <server-url>http://localhost:5000/measservice</server-url>
  <user>user</user>
```

```
  <password>password</password>
  <buffersize>0</buffersize>
  <retryinterval>60</retryinterval>
  <send-measurements>false</send-measurements>
  <send-spectrums>false</send-spectrums>
</pushclientsettings>
```

The parameters are explained below.

Push API

The X-MET8000 series can be configured to send new measurements and spectra to a specified URL in HTTP POST requests. The push client is enabled and configured by performing a HTTP PUT request to the **/pushclientsettings** resource in the format defined above. If the PUT request was successful, HTTP Status code 200 OK is returned and the new settings come to effect immediately. In case of an error, HTTP Status code 400 Bad Request is returned and settings are not modified. Settings are saved and restored when the X-MET8000 series device is restarted.

The following parameters can be set:

- **server-url:** Valid server URL to the root directory of the push-server.
- **user:** Username used in HTTP Basic authentication.
- **password:** Password used in HTTP basic authentication.
- **buffersize:** The amount of extra spectra and measurement results that are stored in a queue in case of a connection error. Buffer size must be an integer in range [0, 100]. **No data is sent if buffer size is set to 0.**
- **retryinterval:** Interval in second between retry attempts in case of a connection error. Value must be a positive integer.
- **send-measurements:** Configures if measurements results are sent to the server. Valid values are "true" and "false".
- **send-spectrums:** Configures if spectra are sent to the server. Valid values are "true" and "false".

Push Client sends spectra and measurement results to the server whenever a new spectrum or result is finished. Measurements are sent in a HTTP POST request to the URL **<server-url>/[serial-number]/measurements** where **[serial-number]** is the serial number of the X-MET7000 series

Measurement results are sent in the same XML format that is used for the **/measurements** resource, except that the Spectrums element containing links to spectra is replaced with a SpectrumData element containing the data directly.

Spectra are sent to the URL **<server-url>/[serial-number]/spectrums** in the same XML format used for the **/spectrum** resource.

Push Client uses HTTP Basic authentication when communicating with the server. In case of an error, Push Client keeps spectra and measurements in the queue and tries sending again every <retryinterval> seconds.

X-MET8000 Series Settings

Follow these procedures to set the date, time and language for the X-MET8000 series.

Set The Date And Time

Follow these steps to set the date and time.

1. Tap **Menu**, and then tap **Settings**.

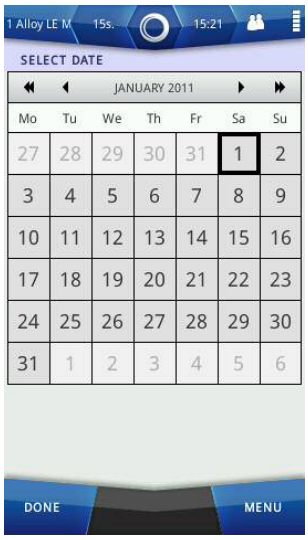
   The Settings screen appears.

2. Tap **Set Date/Time**.

   The Date And Time Setup screen appears.

3. Tap **Set Date**.

   The Select Date screen appears.



4. Tap an arrow on the left or right of the month to scroll to the correct month.
5. Tap the correct date in the month, and then tap **Done** to return to the Date And Time Setup screen.

6. Tap **Set Time**.

   The Set Time screen appears, with the numeric keypad.

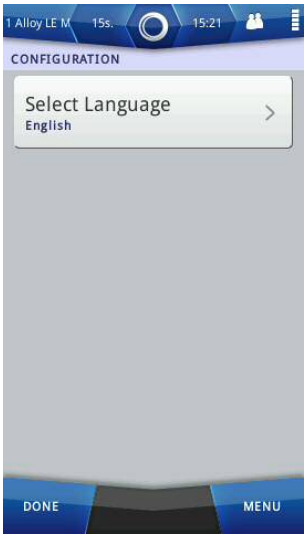
7. Use the numeric keypad to type the correct hour, or use the up or down arrows on the right of the time to increase or decrease the hour.
8. Slide over the minutes to select them, and type the minutes with the numeric keypad or arrows.
9. Tap **Done** to return to the Date And Time Setup screen.
10. Tap **Done** twice again to return to the main screen.

Set The Language

Follow these steps to set the language for the user interface.

1. Tap **Menu**, and then tap **Settings**.

   The Settings screen appears.



2. Tap **Instrument Configuration**.

   The Configuration screen appears.

3. Tap **Select Language**.

   The Select Language screen appears.

4. Press and slide the list to scroll it up or down, and then tap the correct language to select it.
5. Tap **Done** to return to the Configuration screen.
6. Tap **Done** twice again to return to the main screen.

Make Safe Measurements

Follow these simple guidelines to make safe, reliable and accurate measurements with the X-MET8000 series. The local Oxford Instruments representative can provide training in safety and how to use the X-MET8000 series.

Handle The X-MET8000 Series Carefully

Do ...	Do Not ...
	
Hold the X-MET8000 series downwards when it is not in use, or put it in the holster.	Never point the X-MET8000 series at another person.

Do ...	Do Not ...
 Use the lanyard to hold the X-MET8000 series safely.	 Do not let the X-MET8000 series drop.
 The operator must keep the X-MET8000 series with them at all times.	 Do not leave the X-MET8000 series unattended.
 Store the X-MET8000 series in the transit case.	 Do not allow the possibility of loss or theft.

Do ...	Do Not ...
	
Only use the X-MET8000 series if the labels are intact.	Do not use the X-MET8000 series if the void label is visible.

Safe, Reliable Measurements

Do ...	Do Not ...
	
Always place the sample on a flat surface to measure it (table or ground). Ensure the sample is larger than the analyser's measurement window.	Never pick up or hold a sample to measure it.
	
Use both hands to hold the X-MET8000 series and keep them away from the sample.	Do not lean against the table near to a sample.

Do ...	Do Not ...
	
Make sure that the X-MET is upright (vertical) during measurements, and that the nose of the analyser is in full contact with the sample.	Do not use the X-MET8000 series at an angle.
	
Make sure that the protective film window is intact, and measure sharp objects, in particular metal swarf, with care. It is possible to puncture the protective film window. Refer to: *The Protective Film Window Is Broken* on page 98.	Do not use the X-MET8000 series when the protective film window is broken. Do not press the X-MET8000 series into sharp objects.

Do ...	Do Not ...
	
Make sure that the sample covers the proximity window.	Do not cover the proximity window with a finger, piece of tape, or anything other than the sample.
	
Make sure that the sample is clean and remove any dirt, rust, paint or coating.	Do not measure dirty, rusty, coated or painted samples. This can give poor results.

Use The Correct Accessory

The background plate, light radiation shield, safety shield, travel stand, bench-top stand and weld adapter are optional accessories.

Background plate

Light radiation shield

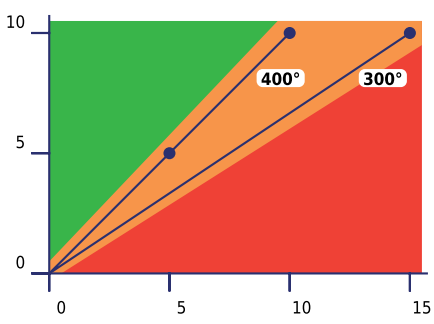
Safety shield and light stand

Do ...	Do Not ...
	
Always use the background plate **and** the light radiation shield to measure thin and/or low density samples (e.g. wood, drywall, plastics, light alloys, soil and minerals in bags, rubber, paper, ceramics, etc.). Ensure the X-MET is held in a vertical position, and the light radiation shield is pressed horizontally on the sample.	Do not measure thin or low density samples against a table without the background plate and the light radiation shield, as this will give poor results and may produce scattered radiations.
	
Always use the light stand and safety shield (or the benchtop stand) when measuring small samples.	Never use the light radiation shield to hold the sample. Some of the primary radiation will pass through and be scattered by the sample.
	

Do ...	Do Not ...
	
Always use the safety shield with the travel stand to measure small samples. The X-ray beam now points upwards!	Never use the travel stand without the safety shield.
	
When measuring large, low density samples (e.g. wall, planks of wood, large rocks, soil or minerals on the ground, large plastic, aluminium or light alloy sheets, etc.), always use the light radiation shield.	Never measure large, low density samples without the light radiation shield.

X-MET8000 Series For Hot Samples

Use the kapton protective film window for the X-MET8000 to measure hot samples. The prolene protective film window for the X-MET8000 would melt at temperatures above 100° C.



Make quick measurements for hot samples, and make sure that the X-MET8000 has enough time to cool off between hot measurements. Do not let the X-MET8000 get too hot.

Measure in seconds, but it takes minutes to cool off!

Battery Usage

Do ...	Do Not ...
	
Make sure that the battery has sufficient charge.	Do not make measurements if only one bar is lit.
	
Only remove the battery when the X-MET8000 series is off.	Do not remove the battery when the X-MET8000 series is on.

Charge the battery overnight to use the next day. Refer to: *Battery Maintenance* on page 94.

Maintenance and Troubleshooting

Careful maintenance is the key to a long life for the X-MET8000 series. Use the maintenance schedule to check that the X-MET8000 series continues to function correctly.

Only the local Oxford Instruments representative can service the X-MET8000 series. There is nothing inside the X-MET8000 series for the customer to service. The operator must not remove any cover from the X-MET8000 series. If the operator does remove a cover, the warranty will become invalid.

Caution; Electricity: There are extremely high voltages inside the X-MET8000 series, with an extreme risk of electric shock. This can cause serious personal injury.

Recommended Daily Maintenance

Follow these procedures on a daily basis.

Check The Battery Charge Levels

Make sure that all batteries are fully charged. Refer to: *Battery Maintenance* on page 94

Check The Proximity Sensor

Do this test to make sure that the proximity sensor works.

Caution; X-Rays: Do not operate the trigger to make a measurement during this test. If the X-MET8000 series emits X-ray radiation when it is not in close contact with the sample, the radiation can scatter. Prolonged direct exposure to X-ray radiation can cause serious personal injury.

1. Switch the X-MET8000 series on.
2. Hold the X-MET8000 series in the correct position against a sample.

3. Make sure that the proximity indicators change to green.

   Do not pull the trigger.
4. Slowly withdraw the X-MET8000 series away from the sample.
5. Make sure that the proximity indicators switch off.
6. Measure the distance from the sample when the proximity indicators switch off.

   The distance should be no more than 15 millimetres. If the X-MET8000 series does not achieve this test, it must be returned to the local Oxford Instruments representative for service.

Note: the proximity sensor may be disabled by a Supervisor for operation of the analyser with a benchtop stand only (as per IEC 62495). If unsure, please refer to local radiation safety regulations.

Recommended Weekly Maintenance

Follow these procedures on a weekly basis.

Check The Alloy CRM Sample

The supervisor should make a measurement of the Alloy CRM sample.

If there is a significant change from the Alloy CRM reference measurement, contact the local Oxford Instruments representative for assistance.

The X-MET8000 series can include additional check samples that are application specific. The supervisor can also use these to check the X-MET8000 series against a representative sample.

Battery Maintenance

The DC power supply (battery charger) can charge a battery and supply power to the X-MET8000 series. The X-MET8000 series display has two indicators: Charge Status and PSU.

The Charge Status indicator on the X-MET8000 series display indicates when the battery is charging.

The PSU symbol on the X-MET8000 series display indicates when the X-MET8000 series is connected to the DC power supply (charger).

If the X-MET8000 series is connected to the DC power supply (charger) while turned off, the power button light on the X-MET8000 series will pulsate to indicate that the X-MET8000 series is charging.

The time required to fully charge a battery is up to 4 hours.

The X-MET8000 series can be operated from the DC power supply (charger) without a battery. When connected to the DC power supply (charger) the battery can be removed while the X-MET8000 series is powered up.

Make sure that the DC power supply (battery charger) has the correct mains adapter, or a mains extension lead.

Remove And Check The Battery

Follow these steps to check the battery charge level in the X-MET8000 series.

1. Make sure that the X-MET8000 series is off.

2. Slide the clip at the base of the handle forward to open the battery cover.
3. The display at the bottom of the battery indicates the charge level.

   One or more of the Charge Level indicators should be lit.

   If no Charge Level indicators are lit, the battery has no charge.

   The battery is fully charged when all Charge Level indicators are lit.
4. Decide if it is necessary to charge the battery.
5. To remove the battery, pull it out using the tab.

   Make sure that the X-MET8000 series is off before removing the battery.

Charge The Battery

Follow these steps to charge the battery. The battery can be charged inside the X-MET8000 series or separately using an optional desktop charger.

1. Open the plastic cover underneath the display and connect the DC power supply (battery charger) lead to the X-MET8000 series.
   - Switch the X-MET8000 series off for faster charging.

2. Connect the DC power supply (battery charger) to a mains power supply. Make sure that the mains socket is easily accessible when the DC power supply (charger) is in use.

   If the X-MET8000 series is charged while powered off, the power button light on the X-MET8000 series pulsates to indicate that the battery is charging.

3. It is possible to switch the X-MET8000 series on to power it from the DC power supply (battery charger).

   The DC power supply (charger) is able to charge the battery and power the X-MET8000 series at the same time.

   The PSU indicator on the display indicates that the DC power supply (charger) is connected, and the Charge Status indicator on the display indicates that the battery is charging.

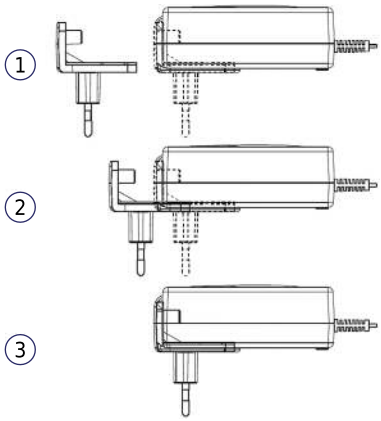
4. When the DC power supply (battery charger) is not required to charge a battery or power the X-MET8000 series, disconnect it from the mains power supply.
5. Remove the DC power supply (battery charger) lead from the X-MET8000 series and close the plastic cover.

   To charge the battery using the optional desktop charger, place the battery in the desktop charger and connect the DC power supply to the charger. Connect the power supply to a mains power supply.

   Make sure that the mains socket is easily accessible when the DC power supply (charger) is in use.

Mains Adapters For The DC Power Supply (Battery Charger)

The DC power supply (battery charger) includes mains plug adapters for Europe, UK, US and Australia. To change a mains plug adapter, slide the adapter along the body of the DC power supply (battery charger). Replace with the correct adapter.



Use The Battery And DC Power Supply Safely

Battery Usage

The X-MET8000 series uses a lithium ion battery that contains safety and protection circuits.

Caution: Do not misuse or abuse the battery because it can become very hot, ignite or explode and cause serious personal injury.

- Only use the correct battery.
- Never use a damaged battery.
- Do not drop, disassemble, crush, incinerate, puncture, or heat the battery above 100° C (212° F).
- Do not connect any of the battery terminals together with water, salt water or a metallic object.

DC Power Supply and Battery Charger Usage

The DC power supply and battery charger are designed for indoor use only, the DC power supply is double insulated and fuse protected. They have no user serviceable parts.

Caution; Electricity: Do not attempt to open the DC power supply because there are dangerous voltages and an electric shock can cause serious personal injury.

- Only use the correct DC power supply and battery charger.
- Do not use the DC power supply connector to connect anything other than the DC power supply (battery charger).
- Do not allow the DC power supply (battery charger) to come into contact with dust, water, oil, grease or chemical solvents.
- Do not cover the DC power supply (battery charger) when it is in use because it can overheat.

Refer to: *Disposal Of The X-MET8000 Series* on page 99 for information about the proper disposal of batteries and the DC power supply (battery charger).

Troubleshooting

Use this information to diagnose any problems with the X-MET8000 series. If this information does not deal with the problem, refer to the local Oxford Instruments representative.

Location Of The Serial Number

Always refer to the X-MET8000 series serial number when in contact with the local Oxford Instruments representative.

The serial number is on a label on the inside of the X-MET8000 series battery cover.

Make sure that this label is kept clean at all times, and that it is possible to read the serial number.

Unexpected Loss Of Power

Problem

The X-MET8000 series suddenly turns off while there still is charge in the battery, it is not possible to switch the X-MET8000 series on. Refer to: *Battery Maintenance* on page 94.

The battery has an overload protection circuit, and it will shut down if there is a power surge. This can occur if the X-MET8000 series is exposed to a strong radio interference.

If the overload protection circuit is triggered no indicators are lit on the Charge Level indicator.

Solution

It is necessary to reset the battery. If connected, disconnect the DC power supply (charger) from the X-MET8000 series.

Remove the battery from the X-MET8000 series for a short time and re-insert the battery in the X-MET8000 series. Connect the DC power supply (battery charger) to a mains power supply and then connect the DC power supply to the X-MET8000 series to reset the battery. It is not necessary to charge the battery.

To reset the battery using the external charger, connect the DC power supply to a mains power supply and connect the DC power supply to the charger. Place the battery in the charger to reset the protection circuit. The charge indicators will lite up and the battery starts charging when the battery is reset and ready for use.

The X-MET8000 Series Cannot Make A Measurement

Problem

It is possible to switch the X-MET8000 series on, but it is not possible to make a measurement.

Solution 1

The sample must cover the proximity window for the X-MET8000 series to generate an X-ray beam. Use the background plate to measure small samples. Never cover the proximity window with anything other than the sample.

Solution 2

Clean the proximity window with a dry cloth. Make sure that the proximity sensor works correctly. Refer to: *Check The Proximity Sensor* on page 93.

The Protective Film Window Is Broken

Problem

An operator must never use the X-MET8000 series when the protective film window is broken.

Solution

Press the release button to release the front plate which retain the protective film window. Check whether the window on the detector is pierced, broken, damaged or corroded. If it is, contact the local Oxford Instruments representative to arrange a repair. Only if the detector window is intact, use a new protective film window, and lock the front plate to hold it in place.

The X-MET8000 Series Is Damaged

Problem 1

The X-MET8000 series suffered light damage, but continues to operate.

Solution 1

Do not continue to use the X-MET8000 series. It must be fully checked and verified. Contact the local Oxford Instruments representative for assistance.

Problem 2

The X-MET8000 series suffered significant damage, and cannot operate.

Solution 2

The X-MET8000 series must be fully checked and verified. Contact the local Oxford Instruments representative for assistance.

Recertification

The X-MET8000 series provides accurate and reliable measurements for many years with minimal maintenance. Recertification verifies the accuracy of the X-MET8000 series with a series of known, traceable standard samples. Oxford Instruments recommends annual recertification. Please contact the local Oxford Instruments representative for additional information.

End Of Life

Use this information when the X-MET8000 series reaches the end of its useful life.

Resale, Loss Or Theft

It may be necessary to register the change of ownership of the X-MET8000 series with a regulatory organization. Contact the local Oxford Instruments representative for assistance.

Disposal Of The X-MET8000 Series

Contact the local Oxford Instruments representative for assistance.

WEEE: Within the EU, return the X-MET8000 series, batteries, DC power supply and battery chargers to the local Oxford Instruments representative for proper disposal in accordance with WEEE regulations.

This symbol means that used electrical and electronic products should not be mixed with general household waste. For proper treatment, recovery and recycling, return to the local Oxford Instruments representative. The correct disposal of this product will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling. Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

Technical Specifications

Technical Specifications, X-MET8000 Series

Proximity sensor distance	15 mm, maximum
	12.0V - 15.0V
Operating temperature range	-10° C - +50° C
Storage temperature range	-10° C - +50° C
Operating humidity range	20 % RH - 95 % RH
Maximum operating altitude	2000m
Ingress protection	IP54
Weight	1.5 kg, maximum
Weight including case	5.0 kg, maximum

Technical Specifications, Battery

Battery part number	OI IA, 000000-xxx
Battery type	Lithium ion
Battery voltage	7.2 V
Battery capacity	6.8 Ah

Technical Specifications, Battery Charger

The battery charger is designed for indoor use only	
Battery charger part number	OI IA, 0000000-xxx
Operating temperature range	-10° C - +50° C

Storage temperature range	-10° C - +50° C
Operating humidity range	20 % RH - 95 % RH
	12.0 VDC - 15.0 VDC
Maximum operating altitude	2000m

Technical Specifications, DC Power Supply

The DC Power Supply is designed for indoor use only

Battery charger part number	OI IA, 0000000-xxx
	12 VDC
Operating temperature range	-10° C - +50° C
Storage temperature range	-10° C - +50° C
Mains supply voltage range	100 VAC - 240 VAC
Mains supply current	0.35 A, maximum
Mains supply frequency range	50 Hz - 60 Hz
Maximum operating altitude	2000m

EC Declaration of Conformity, X-MET8000

We:

Oxford Instruments Industrial Products Limited

Of:

Tubney Woods, Abingdon, Oxfordshire, OX13 5QX, UK

In accordance with the following Directives:

The Low Voltage Directive 2006/95/EC
The Electromagnetic Compatibility Directive 2004/108/EC
R&TTE Directive 1999/5/EC

Declare under our sole responsibility that the following equipment:

X-MET8000, Type Number: XMDS 2770

Is in conformity with the applicable requirements of the following standards:

EN 61010-1 2010
EN 61326-1 2006
EN 62311 2008
EN 301 489-1 V1.8.1 April 2008
EN 301 489-17 V2.1.1 May 2009
EN 300 328 V1.7.1 October 2006