Beamex bMobile 2

Instructions

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- / bMobileuEng / Version 2.2

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Introduction

General

Beamex bMobile is an application for documenting calibration and check procedures anywhere you need to do them. **bMobile** replaces Beamex's **CMX for Pocket PC** software.

A Windows[1] 10 or an Android[2] device can be used for documenting the calibrations and checks.

Documenting calibrations of the following instrument types are supported:

- Standard industrial instruments, e.g. pressure indicators, temperature sensors and signal transmitters.
- Limit switches, e.g. pressure and temperature switches.
- Weighing Instruments.

bMobile is also a tool for doing check procedures anywhere you need.

A check can be anything from visually verifying that everything is as expected, or a complicated test routine that yields a single pass/fail answer. Both require a description of what to do or test, which can be written in **Beamex CMX Calibration Management** software and sent to **bMobile** for documenting the actual test.

bMobile works seamlessly with CMX. All instruments to be calibrated and checks that need to be done are sent from CMX to **bMobile**. When returning, the results are communicated to CMX and saved in CMX's database.

bMobile is especially suitable if you are utilizing non-documenting calibrators: Instead of writing the results on paper and then later on entering them again to a calibration database, you write them only once to **bMobile**. This reduces writing errors.

Notes.
Beamex CMX Calibration Management software is the "master" software where you create, maintain and send instruments for calibration to **bMobile**, compatible calibrators etc. **bMobile** is for documenting calibrations/checks according to settings in CMX. Instruments cannot be created, edited or copied in **bMobile**. Those utilities are available in CMX.
To fully utilize **bMobile**, you need to be familiar with instruments, calibration and calibration procedures. Also: CMX must be available for communicating data to/from **bMobile**.

[1] Windows is a trademark of *Microsoft Corporation*
[2] Android is a trademark of Google Inc.

bMobile and CMX Requirements

bMobile requirements

- Screen size: 4 inch or higher.
- Network connectivity.
- CWSI Server for communication between **bMobile** and **CMX**
- Either a **Windows 10*** tablet, Windows 10 (1703 or newer) and .net framework 4.6.1…
  Recommended hardware:
  - Intel® Quad-Core Atom processor, Z3795
  - 128 GB storage / 4 GB RAM
- or an **Android*** tablet, operating system version 5.1 or later.
  Recommended hardware:
  - Quad-core 2.5 GHz Krait 400
  - 16 GB storage / 3 GB RAM

* With above mentioned devices, there should not be any significant performance reduction when a device contains 50 instruments, 200 references, 30 users and 15 results. Less performant devices will work but can slow down.

Requirements in CMX (version 2.11 or later):

- **bMobile** Communication option,
- Weighing Instrument option for calibrating Weighing Instruments and
- Maintenance Inspection option for doing checklist runs.
- Mobile Security Plus option is not required, but recommended.

Notes.
Instruments and checks are created in **CMX**. **bMobile** receives necessary data from **CMX** and communicates the results to **CMX**.

Installing bMobile

bMobile is available in Google Play store. Find the App there, select and download it. The installation should start automatically and **bMobile** is immediately available for use.

A Windows® version is also available. The installation software is available at Beamex's web site https://www.beamex.com Look for **Downloads**. Then install the software on your computer.

Note.
See also chapter **Windows® Installation Specifics** on page 28.

Communicating With CMX

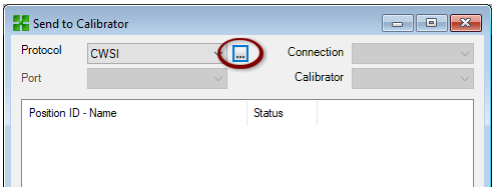
As previously mentioned, **bMobile** communicates with **CMX** Calibration Management Software. They both use **CWSI** (Calibration Web Service Interface) for communicating between themselves.

CWSI is provided by Beamex on CMX's Installation Disk. CWSI Server and CWSI Client are installed separately. The installation instructions are available in CMX Installation Manual.

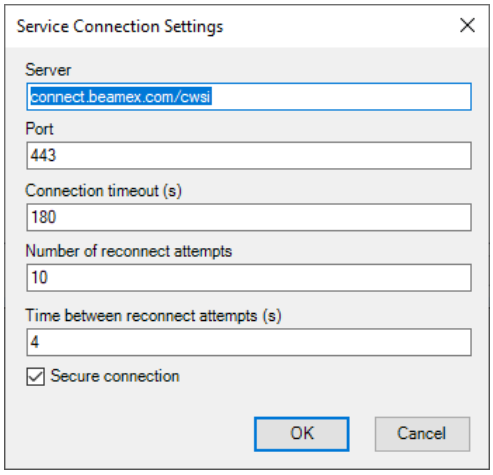
Communication Settings in CMX

When sending instruments to **bMobile**:

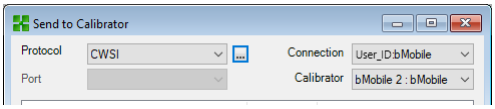
In CMX's **Send to Calibrator** window, select CWSI as **Protocol**. Then check the settings by clicking the button with three dots (highlighted in the adjacent picture).



The settings should be as shown in **Service Connection Settings** window.



If you then get connected with **bMobile**, the **Connection** field shows your **User ID** and the **Calibrator** field shows **bMobile**.



Then you can send instruments from CMX to **bMobile** as is normally done in CMX. Note, however that, when sending/receiving, you need to have the **Connection** window open in **bMobile**. See chapter **Connect** on page 10.

Receiving results to CMX is done similarly.

Note.
The server address (connect.beamex.com/cwsi) may be replaced with the address where your organisation's own cwsi server is installed.

For more information, see CMX Installation Manual and the addendum of this document.

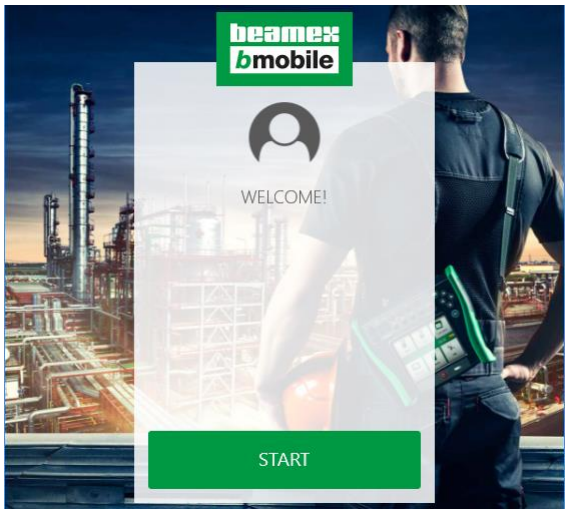
Starting bMobile

General

Starting **bMobile** varies depending on whether there are any instruments or users available.

Note.
Ensure that CMX is running before starting **bMobile**.

Additionally, the startup depends on whether **Mobile Security Plus** option is installed in CMX.



Welcome screen, when no instruments or users are available.

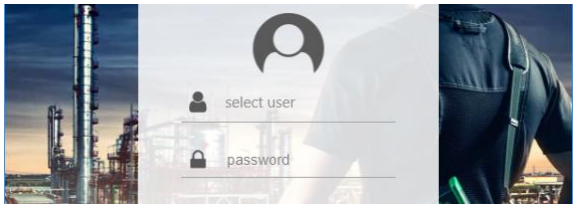
No Mobile Security Plus

When Mobile Security Plus option is not installed/active, the logon screen is simple. Select user and login to open **Home View / Instrument List**.

Login when there is no Mobile Security Plus.

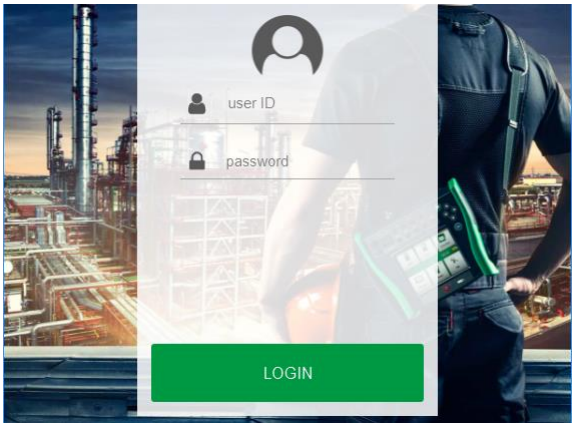
Mobile Security Plus In Use

When Mobile Security Plus option is active, the logon screen depends on whether the settings in CMX require that the user enters the User ID or whether the User ID can be selected from a list.



User ID available in a list.

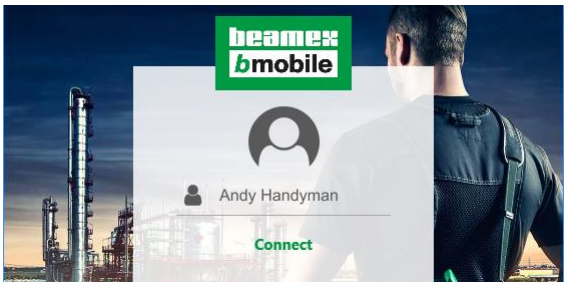
In both cases, when necessary data is entered/selected: Tap on **Login** button to continue to **Home View / Instrument List**.



Login when User ID has to be entered.

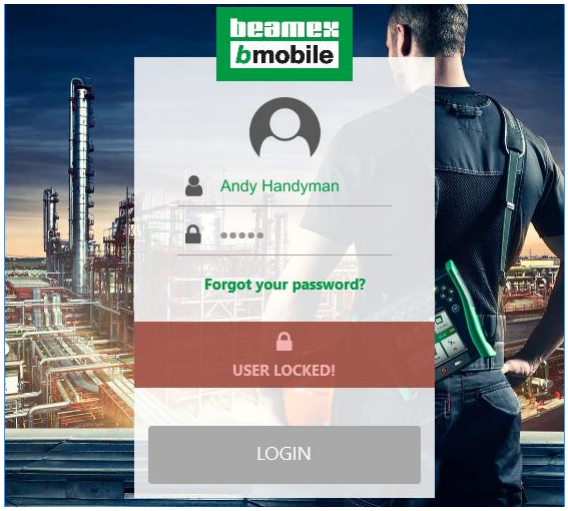
Solving Login Problems

In case the data in your application is not accesible, you must click/tap **Connect** or **Forgot Your Password?** link to continue.
Which one is shown depends on whether Mobile Security Plus is in use or not.



*Connection problem when Mobile Security Plus is **NOT** in use.*

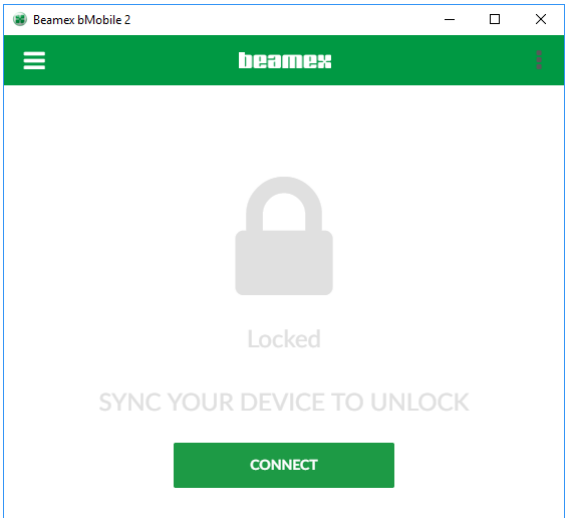
Note.
If instrument data sent from CMX does not include users, a dialog opens asking you to re-send the instruments/users.



*Connection problem when Mobile Security Plus **IS** in use*

Note that the picture above also applies to the situation where password is forgotten. The way to reconnect is similar in all the above mentioned situations.

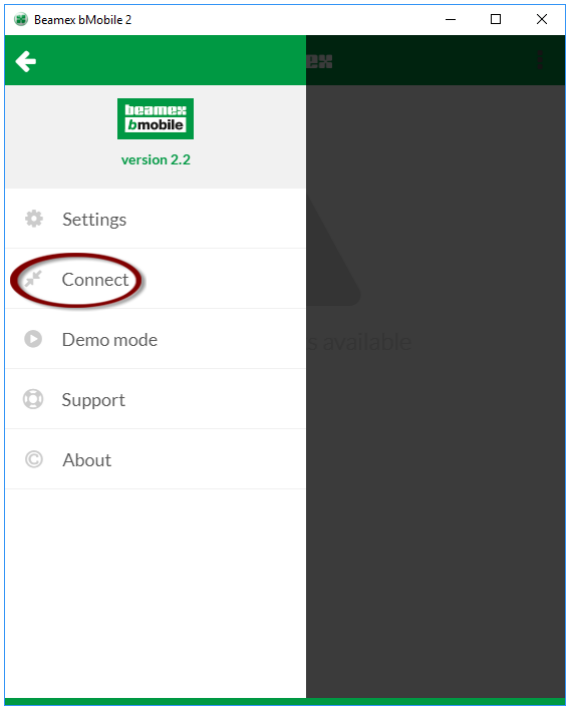
After clicking/tapping on **Connect** or **Forgot Your Password?**, the following window opens:



Lock window.

The lock symbol means that there are instruments/results in **bMobile** that are not accesible without login.

Tap **Connect** in the **Lock** window or select **Connect** from the menu to reconnect (and unlock password). See adjacent picture.



Menu with Connect option highlighted.

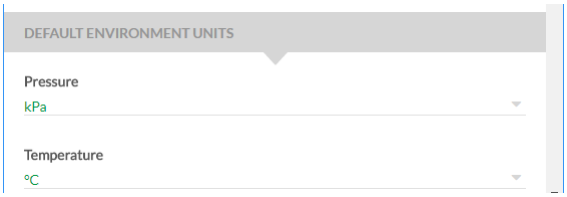
Note.
If you have totally forgotten your mobile password, reset it in CMX, then reconnect and send an instrument to **bMobile**.

About the User Interface

General

One of the frequently seen elements in **bMobile**'s user interface is the accordion. An accordion can be identified from its gray bar. It shows/hides data presented below the accordion's gray bar/tab.

Tap/click the gray bar/tab to open a hidden accordion. Similarly, close the accordion by tapping/clicking the gray bar/tab.



Default Environment Units accordion opened.

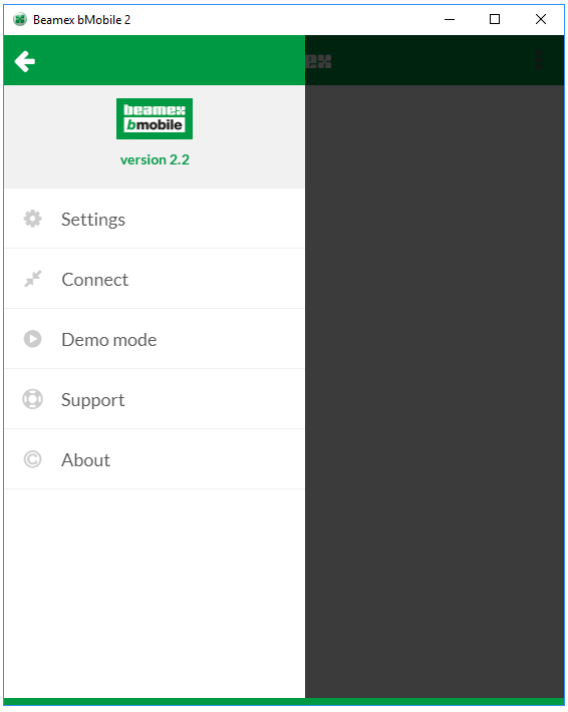
Home View Menus

Main Menu

Main menu opens from Home View's upper left corner (three stacked lines). The menu may be closed, when needed, using the back arrow that replaced the three stacked lines.

Generally: Whenever you need to go back to Home View, use the back arrow(s) to return there.

The main menu items are explained below.



Main menu opened.

Settings

Main Menu's **Settings** option opens a window for defining **bMobile's** settings.

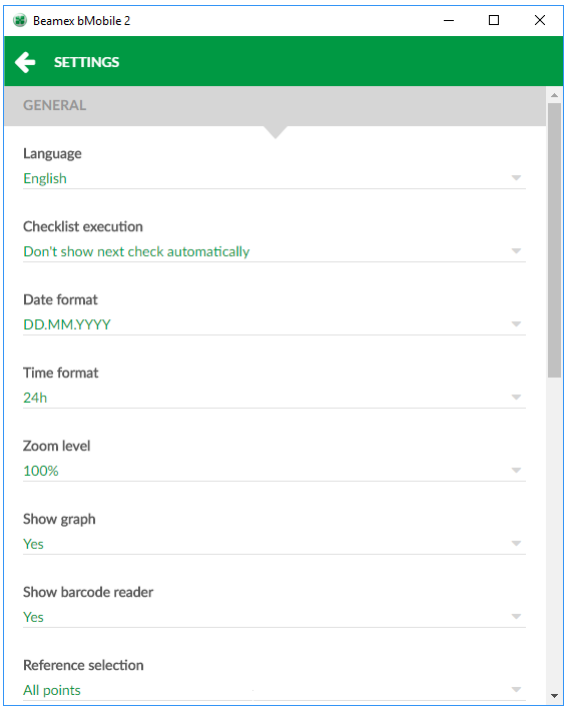
General settings:

- **Language**.
  Select the User Interface language.
- **Checklist execution**.
  How the checklist run advances: automatically or manually.
  If the checklist requires comments for all checks, use manual advancement to be able to add the required comments.
- **Date format**.
  Select a suitable date format from the available options.
- **Time format**.
  Select either 12 h or 24 h format.
- **Zoom level**.
  Select one of the available zoom levels:
  70 %, 85 %,100 %, 115 % or 130 %
- **Show Graph**.
  Defines whether the calibration graph is shown simultaneously while entering numeric calibration results.
  Options: No, Yes or Auto.
  The visibility also depends on the size of the screen used. The graph can always be seen using the graph toggle button presented on page 16.
- **Show barcode reader**.
  Allows you to choose whether to show or not show the scan tool on Home View.
- **Reference selection**.
  The default value when selecting references. Options:
  Not defined, *All points* or *This point*.

Default environment units:

- **Pressure**.
  The atmospheric pressure unit.
- **Temperature.**
  The default temperature unit.

Note.
In order to establish a secure connection, CWSI server needs to have an official certificate installed.



Settings window.

Backend Settings:

- **Server address***.
  Default value: connect.beamex.com.
  Optionally: The location (url) where your own cwsi server resides.
- **Port***.
  Default value: 443.
- **Endpoint***.
  Default value: cwsi.
- **CMX User ID**
  Default value: admin.
- **Description**.
  Default value: bMobile.
- **Secure connection***.
  Default value: On.
  See also note below.
- **Secret**.
  Password for connecting to cwsi/CMX. Required when connecting to default server.

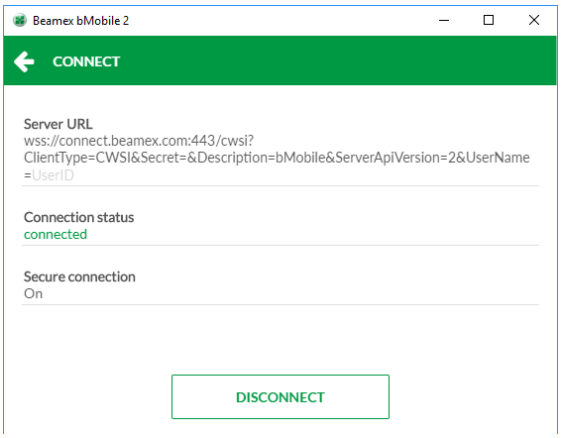
Notes.
If Mobile Security Plus is in use, Mobile Supervisors are the only ones allowed to change bMobile's communication settings, marked with an asterisk (*) in the above list.
See also **Windows® Installation Specifics** on page **28**.

Connect

This page is for connecting or disconnecting to/from CWSI server. **This window must be open, when receiving instruments from CMX and sending results to CMX.**

All settings are defined in **Settings** page. Here the server url as well as the connection type are presented in read-only mode.

Note.
This menu item is not visible when in **Demo mode**.



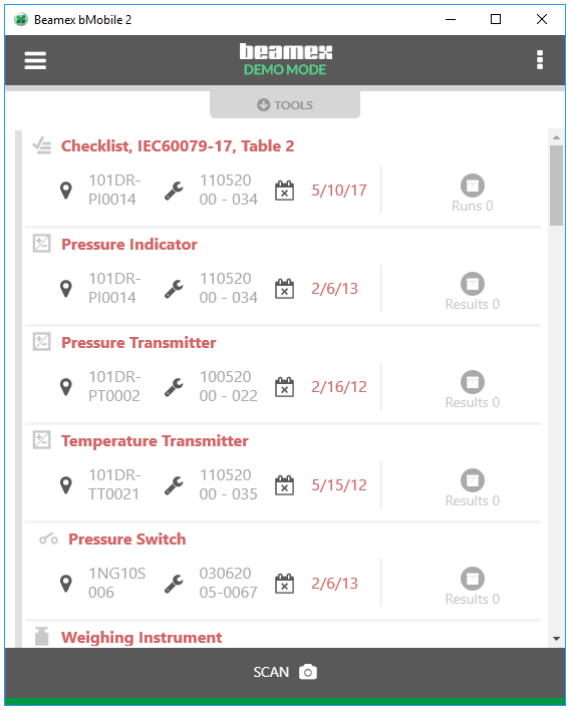
Connect window.

Demo mode

The demo mode allows you to test **bMobile**'s functionality locally, without a connection to CWSI/CMX.

It includes some example instruments and a checklist to experiment with the **bMobile** and also for training purposes.

Notes.
To indicate that you are in Demo Mode, **bMobile**'s upper banner is gray. When not in Demo Mode, Home View's upper banner is green.
When ending Demo Mode, all demo instruments' results are cleared.
The instruments seen in Demo Mode cannot be transferred to CMX.

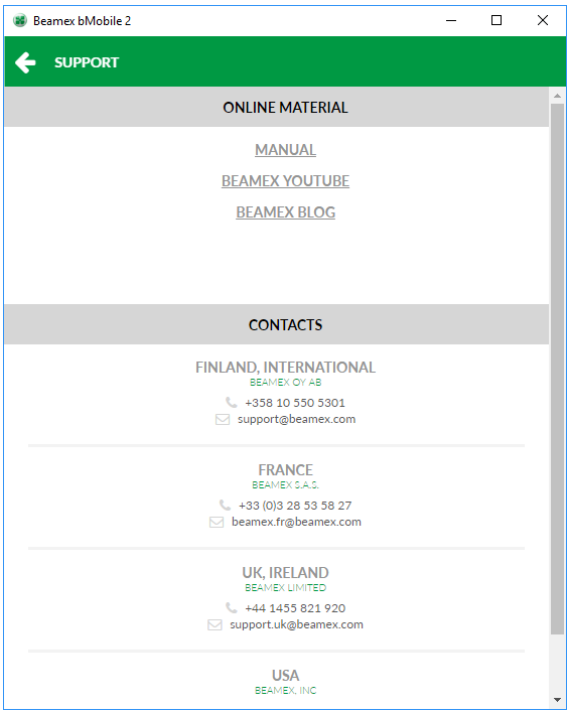


Demo window.

Support

Presents contact info to Beamex headquarters in Finland and subsidiaries.

Also links to manual, Beamex Youtube page and Beamex blog page. See adjacent picture.



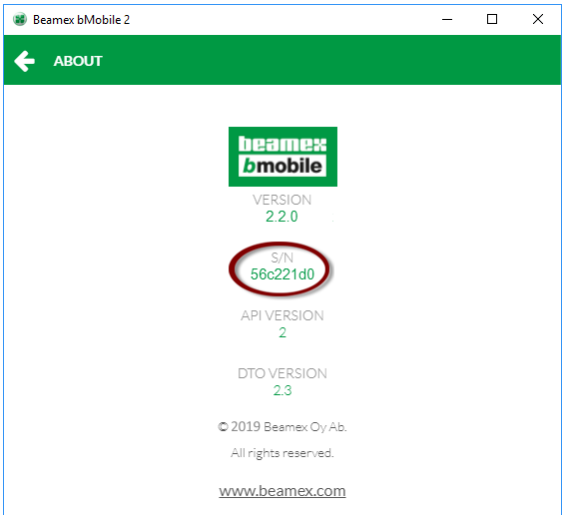
Support window.

About

Presents information of the **bMobile** software at hand.

The serial number (highlighted in the adjacent picture) is unique for each user/installation.

The serial number is shown in CMX's send /receive window, when connecting to **bMobile**. This identifies the connection, when, e.g. multiple **bMobile** software are connected to CMX.



*About window of **bMobile.***

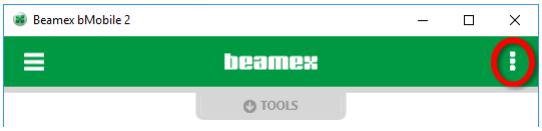
Log Out

Logs user out from **bMobile**.

Context Menu

A Context menu is available in Home View's upper right corner (three stacked dots). The Context menu is also available elsewhere in **bMobile**.

The available items in the context menu depends on the situation. Often it includes a possibility to delete instrument(s) from **bMobile**, provided you have the rights to do it.



Context menu button highlighted.

Note.
CMX's **Mobile Security Plus** settings may prevent you from opening this menu or may require your password before opening the menu.

Home View / Instrument List

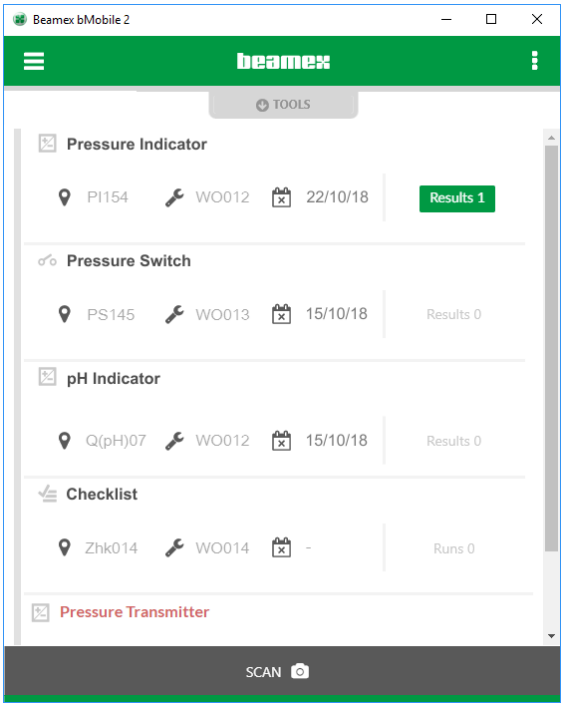
bMobile's Home View contains the list of instruments to be calibrated and checklists to be run.

Items with a red heading indicates that the calibration/check is overdue. The fields shown in the Instrument list:

- Instrument's Position ID (Tag),
- Device ID,
- Work Order Number,
- Due Date and
- Results.

Tap on any of the instruments to calibrate it or run the appropriate checklist.

Note.
If an instrument already has calibration results, tap on the **Results #** to see calibration history. More in chapter **Calibration History Window** on page 26.

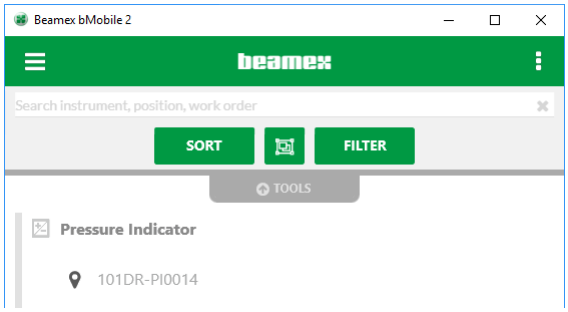


Example of Home view.

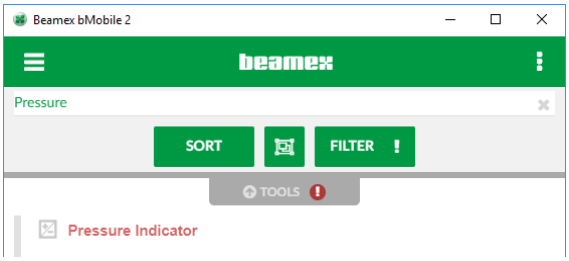
Tools in Home View

Tap on the Tools accordion to open a list of tools available in Home View. They are

- Free text search tool. You can search for any field, or any part of it, seen in the instrument list.
- Sorting tool. Allows you to order the list according to the identification (Position ID / Tag), Work Order, Name, Due Date or Instrument type. They can be presented on the order "A to Z" or "Z to A".
- Grouping tool. Presents instruments grouped as follows: Open, In progress, Passed and Failed.
- Filtering tool. Allows you to view, e.g. failed calibrations/checks only.



Tools in Home view.



Indication when filter is active.

QR Code & Barcode Reader

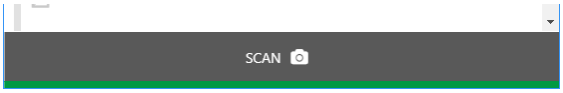
bMobile includes a built in reader for QR codes and barcodes. CMX can be used to create a Position or Device label with a QR code and this label is attached to the instrument in the field. bMobile can identify the instrument to be calibrated based on the QR code.

Requirements:

- A mobile device including **bMobile**,
- A high resolution camera in the mobile device and
- Adequate lighting conditions in the environment.

To scan a QR code or a barcode, do as follows:

When in **bMobile**'s instrument list (Home View), tap on the SCAN bar at the bottom of the view.

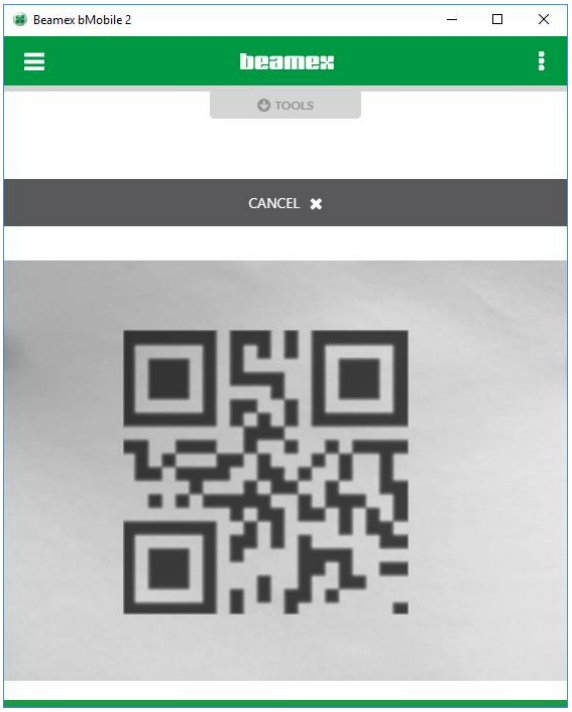


Lower part of Instrument List (Home View)

The camera view opens. Point the camera towards the barcode. If conditions are right, the barcode reader automatically recognizes the barcode. When the code is read **bMobile** continues depending on the code:

- If only one instrument can be paired, the instrument is selected for calibration.
- If several instruments are part of a loop and have the same Position or Device ID, the instrument list is filtered and all instruments matching the QR code or barcode are shown.
- If no instrument can be paired an error message appears.

Note.
The device where **bMobile** is installed should have a camera with autofocus.



***bMobile** found a QR Code.*

Supported barcode types:

- **QR Code,**
- **EAN 128**,
- **CODE 128 and**
- **UPC-A**

Notes.
QR codes and barcodes for the instruments can easily be created in CMX.
CMX supports up to 65 characters in its Position ID's and Device ID's. Wide barcodes may be hard to read for mobile device cameras. Beamex recommends using a barcode type which keeps the barcode width small, such as the QR code.
If the Scan bar is missing in your **bMobile**, it is disabled in **Settings** on page 9. Enable it and you're ready to scan QR codes and barcodes.

Calibration / Checklist Run

General

When you have selected an instrument or checklist from the instrument list, the instrument overview window opens. Select the start button to start the calibration / checklist run.

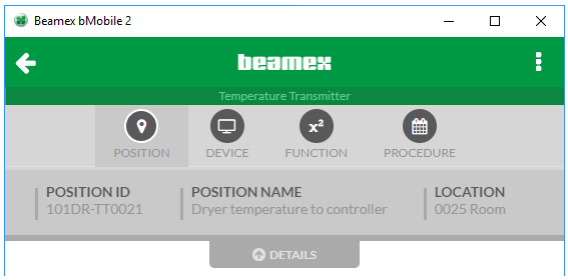
bMobile supports calibrating / checking many types of instruments. The user interface adapts to the instrument at hand during calibration / checklist run. Each case is presented further on.

Common Features

Details Accordion

When calibrating / checking and instrument, the **Details** accordion at the top of the window contains instrument data retrieved from CMX. It is always available during Calibration.

If there is more data for, e.g. a function, than can be seen, scroll the lowermost data row horizontally to see more.



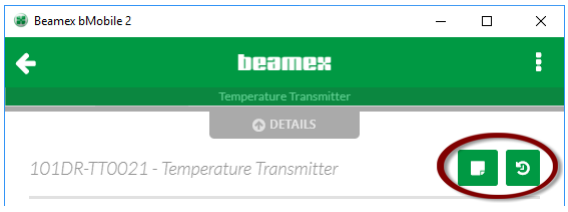
Opened Details Accordion.

Notes and Calibration History

When viewing an instrument overview window, before starting the calibration, **Notes** and **Calibration History** buttons are available.

When tapping the leftmost button, you can view Notes written for the cuurrent instrument. See chapter **Notes** on page 17.

When tapping the rightmost button, you can view calibration history currently available in **bMobile**. More of calibration history in chapter **Calibration History Window** on page 26.

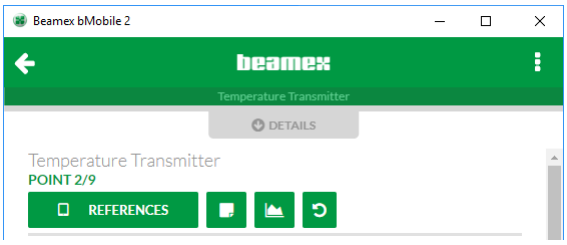


Notes and Calibration History buttons.

Notes.
The Calibration History button is not available during a calibration / checklist run.
The viewed calibration history data is in read only mode.

Common Elements Seen During a Calibration / Checklist Run

The following elements are seen in a calibration window's upper part during calibration / checklist run (left to right):



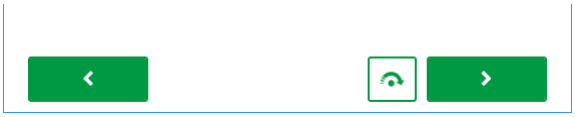
Upper part of a calibration window.

- **References** button. A link to a window where you can define used references (calibrators).
  See also **Adding References** on page 19
  Exceptions:
  - When calibrating Weighing Instruments, the references button is replaced by a **Weight Sets** button.
  - The References button is not available when doing a checklist run.
- **Notes** button. Allows you to write comments on calibration point level. When a note has been written, the button displays an exclamation point:

  See also chapter **Notes** on page 17.
- **Graph** toggle button. A possibility to view a graph of the current calibration. When the graph is open, the keyboard button returns you to the numeric data entry window.

  Exceptions:
  - When calibrating Weighing Instruments, the graph is seen during Weighing test only.
  - No graph during a checklist run.
- **Undo** button. A possibility to undo current calibration point.
  See also note below.
  Not available when doing a checklist run.

The following elements are seen in a calibration window's upper part during calibration / checklist run (left to right):



Lower part of a calibration window.

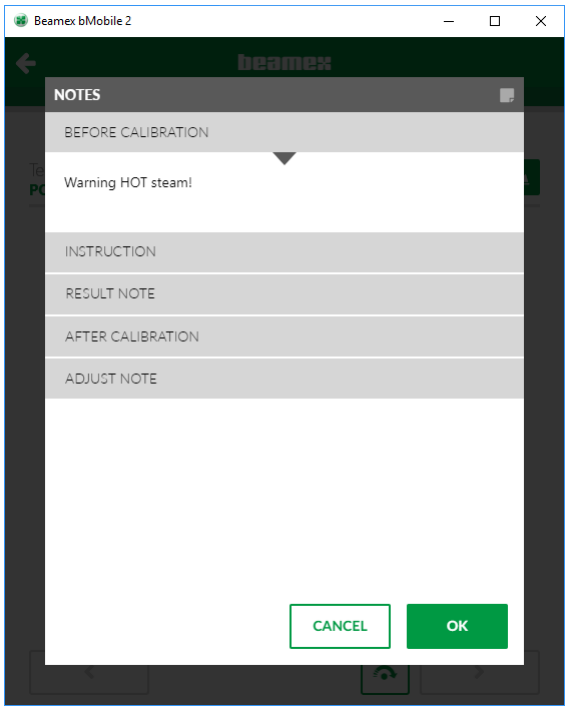
- **Back** button. Transfers you back to the previous calibration point.
  The current results are not deleted.
  Compare with **Undo** button, which does delete current point's results.
  See also adjacent note.
- **Skip Point** button. Skips the current calibration point and advances to next calibration point without saving the current point's results.
  See also adjacent note.
  Exception:
  - When doing a checklist run, the skip point button is "raised" to join other buttons being part of a checklist run. More of it in chapter **Doing a Checklist Run** on page 23.
- **Advance** button. Moves you to next calibration point. This button is enabled when necessary data has been entered.

Note.
Depending on available CMX options and configuration, the following buttons in bMobile may be disabled:
- Undo,
- Back and
- Skip

Notes

As previously mentioned, you can enter notes during a calibration / checklist run.

Additionally, if any instructions/notes are added to an instrument in CMX, they are delivered to **bMobile**. Instructions or notes are displayed at the appropriate moment during calibration / checklist run.



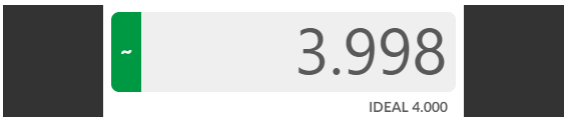
*Before calibration note shown in **bMobile**.*

Note.
In CMX: It is possible to configure a checklist to require comment for passed, skipped or failed checks individually.

Entering Readings to Calibrations

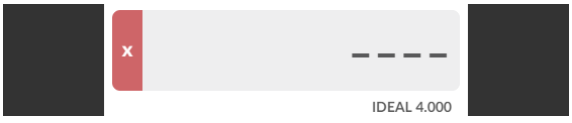
When you tap on a numeric field, a numeric keypad opens where you can enter the reading. See adjacent picture.

If the reading is unstable, tap on the equal sign beside the entered value. The equal sign changes to a tilde (~) sign. See the detail picture below.

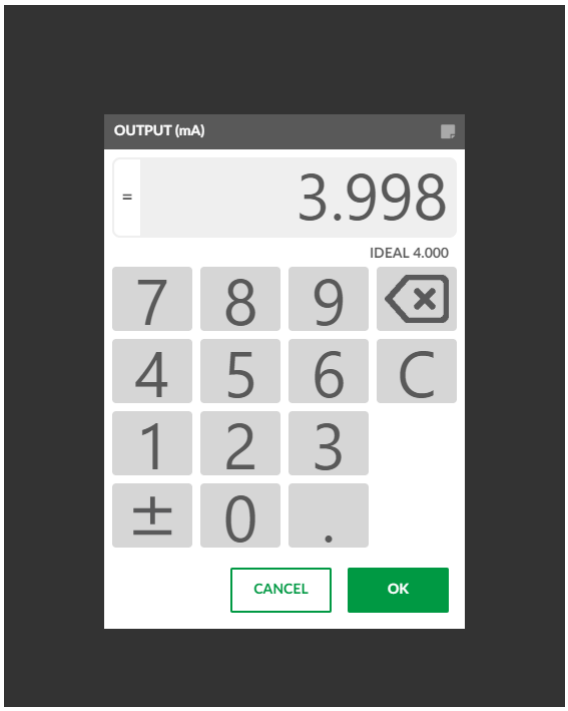


Unstable reading.

If the reading is for some reason abnormal, tap on the tilde sign, which changes to an "x". The value is removed and dashes are shown instead. See the detail picture below.



Abnormal reading.



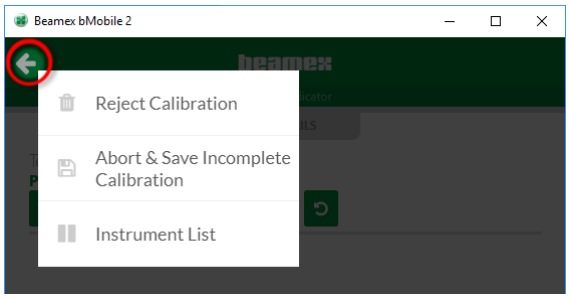
Numeric keypad.

Note.
When you enter an **input** reading and press **OK**, the numeric keypad stays open and waits for you to enter the corresponding **output** reading.

Pausing a Calibration / Checklist Run

Tapping the back arrow during a Calibration run opens a pop-up menu. Together with the possibility to reject the calibration or aborting & saving an incomplete calibration, you may pause the calibration and return to the home view / instrument list.

During a Checklist run, no pop-up menu appears. Instead the Checklist Start page opens. There you can either continue the Checklist run or return to the instrument list.

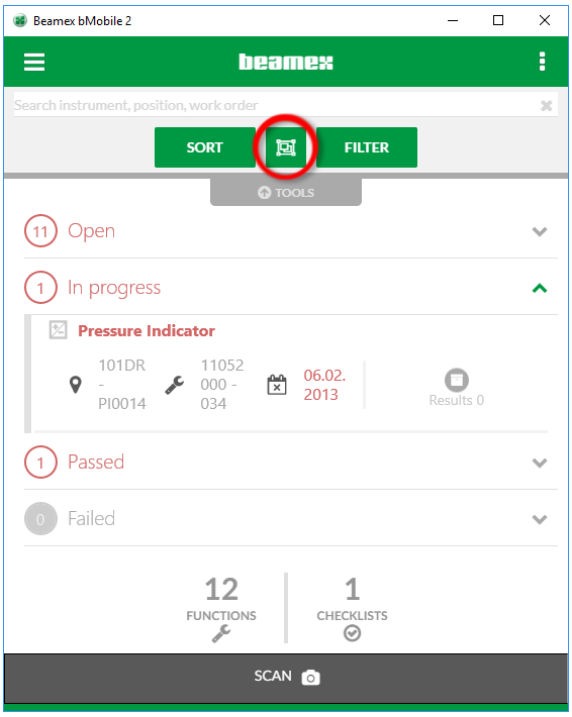


Menu during Calibration run

In instrument list:

If you have activated group view, the paused Calibration / Checklist run is seen in the "In Progress" group.

To continue the Calibration / Checklist run, tap on the instrument in the home view / instrument list.



Grouping tool button highlighted.

In group view:

Instrument's state changes from **Open** to **In progress** in the following cases:

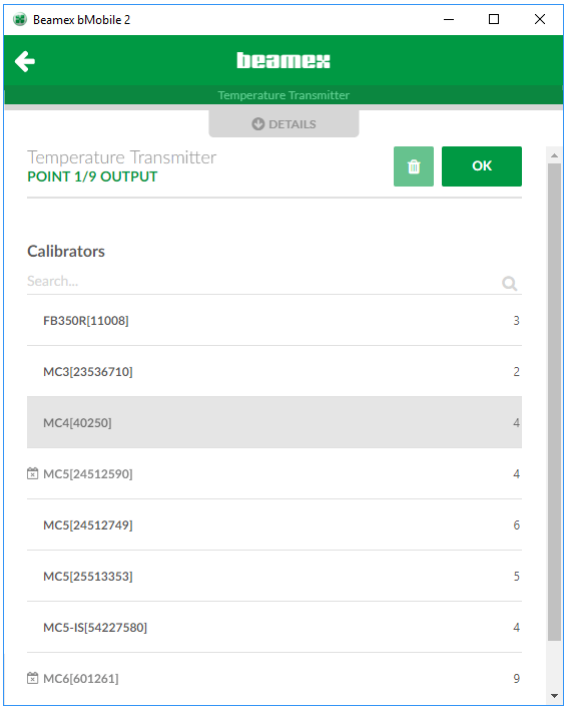
- **Checklists**:
  When first check value (to any check) is set.
- **Standard intruments** and **Weighing Instruments** when:
  - Input and output values of first point are entered and user moves to next point or
  - the first point is skipped.
- **Switches** when:
  - Set and reset values of first point are entered and user moves to next point or
  - the first point is skipped.

Adding References

When tapping on the **References** button in the calibration / checklist run window, the references pop-up window opens. See adjacent picture.

Notes.
For, e.g. indicators there is no possibility to select output reference, because there is none.
For checklists, there are no possibility to select references, because it is not relevant.

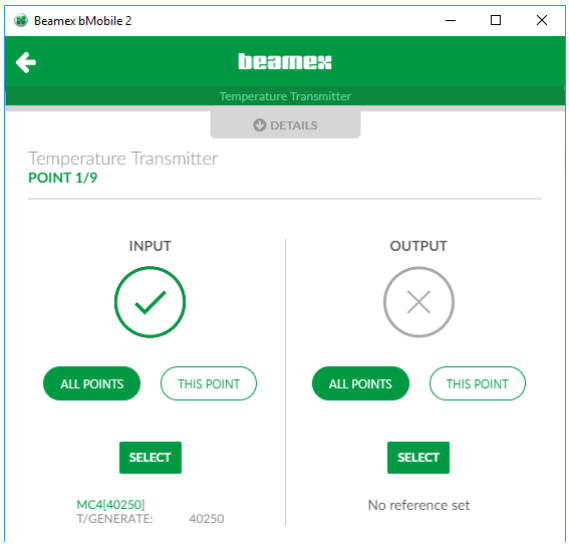
First, select whether the reference applies to input or output, for current calibration point only, or to all calibration points. (See picture below).



Selecting the reference.

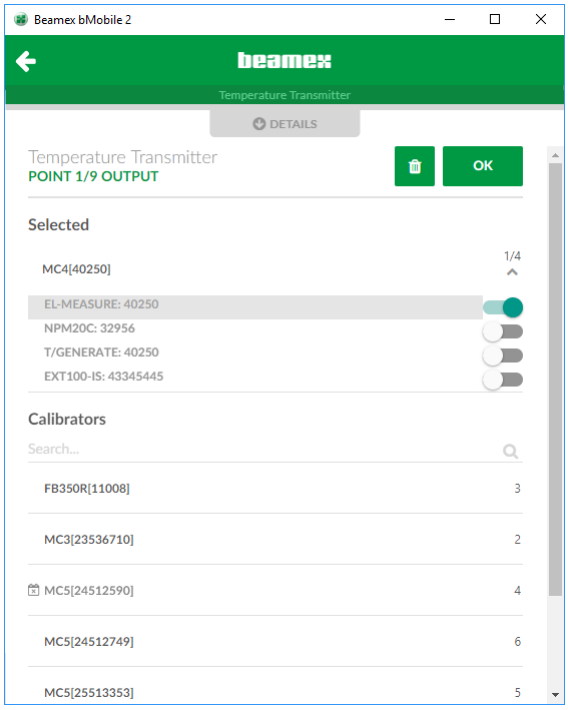
Notes.
If the calibration due date is passed for a reference, it is shown in red in the list of references. **bMobile** warns you if you try to use an overdue calibrator.

When a calibrator is selected, one or more of the modules it contains can be selected. See adjacent picture.



Selecting what the reference applies to: Input or Output, Current or All point(s).

Notes.
Depending on CMX's settings, adding references may be required. When references are required, both calibrator and module must be selected.



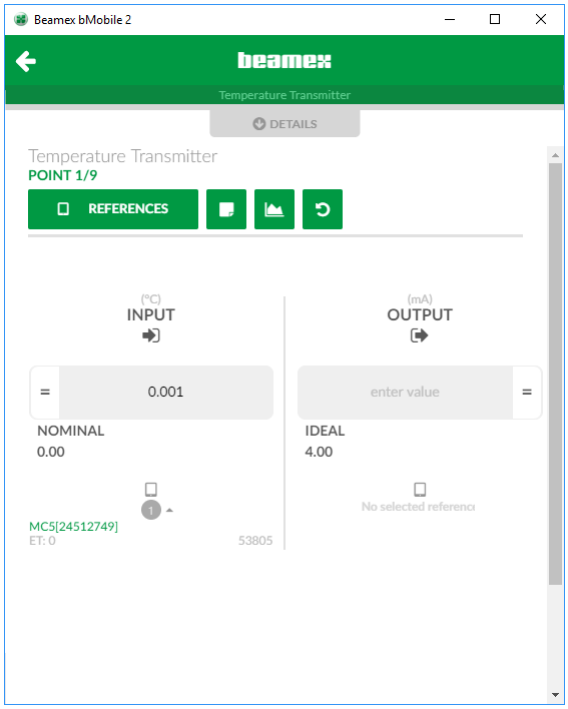
Selecting the module.

Calibrating Standard Instruments

The adjacent picture presents the calibration of a temperature transmitter. The input reference is already defined, but not the output reference. Make sure the references are entered if you want CMX to calculate the uncertainties based on the calibration results.

Once the references are defined, enter input and output readings. Then the advance button is active and you can start entering the readings of the next calibration point.

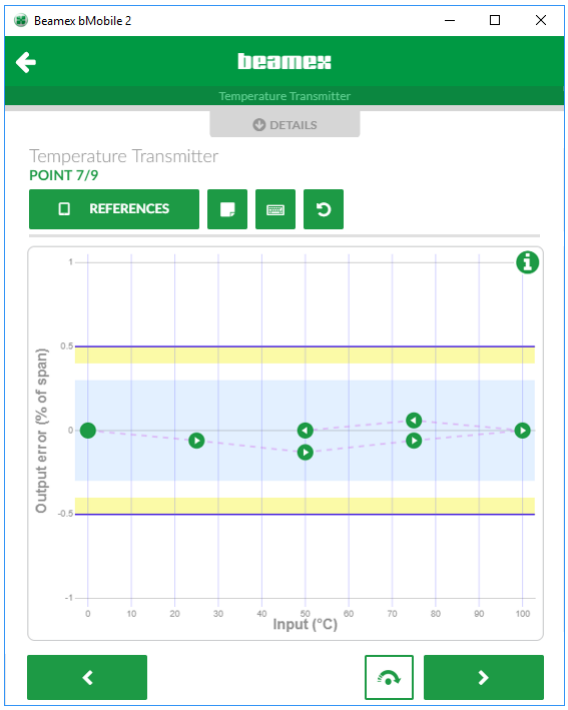
As the calibration advances, you can see which point you are currently entering results for from the text in the upper part of the window. In the adjacent picture:
"**POINT 1/9**".



Calibrating a temperature transmitter.

If you change to graph view, the graph looks something like the adjacent picture.

Continue through all calibration points to advance to **Ending a Calibration/Checklist Run** view presented on page 25.



Calibration graph.

Note.
All indicators may be calibrated the same way as this temperature transmitter, except there is no need to select an output reference. Just enter the output reading.

Hints.
Tap on a point in graph to see point details.
Tap on the info button to see reference details.

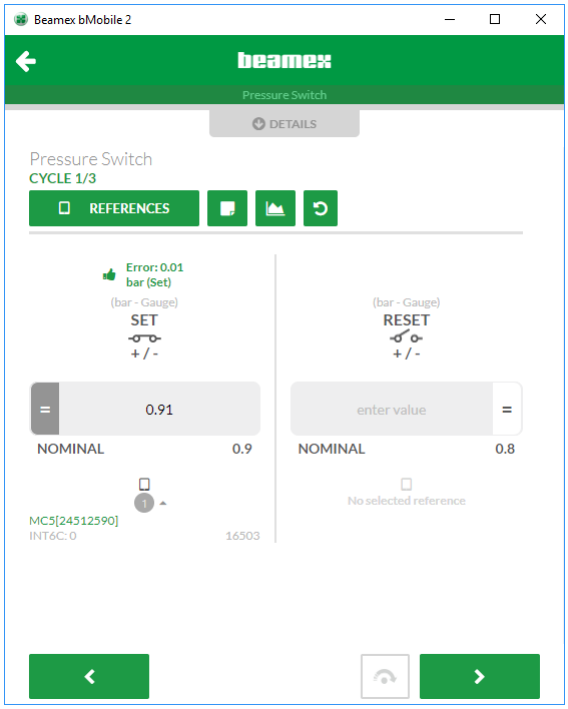
Calibrating Switches

The adjacent picture presents the calibration of a pressure switch. The set point reference is already defined, but not the reset point reference. Make sure the references are entered if you want CMX to calculate the uncertainties based on the calibration results.

Once the references are defined, enter set point and reset point readings. Then the advance button is active and you can start entering the readings of the next calibration point.

As the calibration advances, you can see which point you are currently entering results for from the text in the upper part of the window. In the adjacent picture:
"**CYCLE 1/3**".

If the set point or reset point reading is unstable, tap on the equal sign beside the entered value. The equal sign changes to a tilde (~) sign. See the set point value in the adjacent picture.



Calibrating a switch.

If you change to graph view, the graph looks something like the adjacent picture.

Continue through all calibration points to advance to **Ending a Calibration/Checklist Run** view presented on page 25.

In the adjacent graph:
A closed circle = switch "closed"
An open circle = switch "opened"
The upper part of the graph always presents set point data and the lower reset point data.

Calibration graph for a switch.

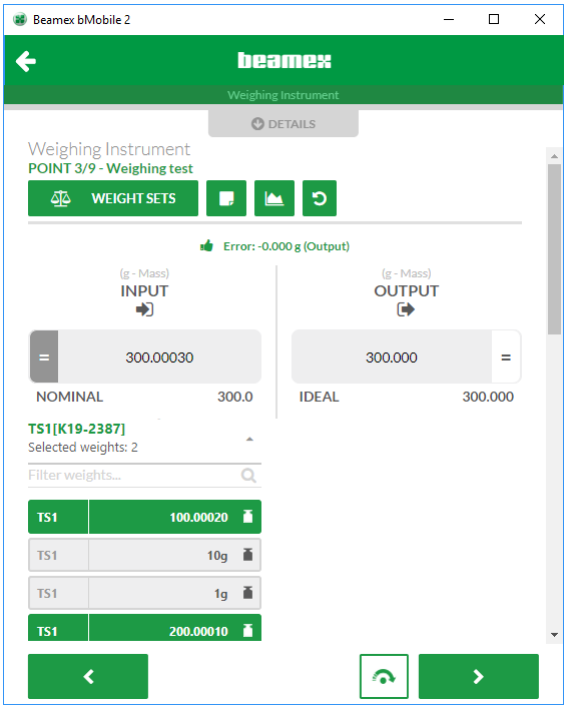
Calibrating Weighing Instruments

Weighing instruments have four types of tests. See adjacent picture. Select the test to be done first. Then start the calibration.

Weighing test is the one that is similar to the calibration of, e.g. a standard indicator. Although the other tests are somewhat different, the actual test points require the same procedure:

- Selecting the weights (references) used for the current test point.
- Entering the output reading.

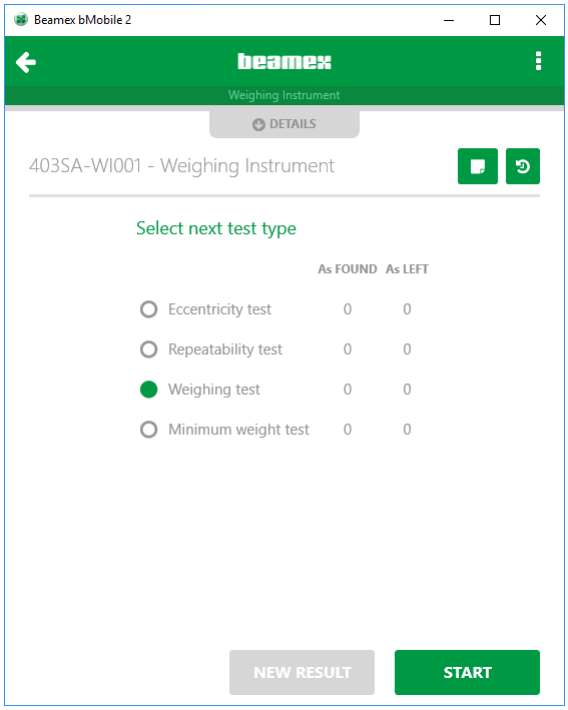
See picture below.



Weighing test of a weighing instrument.

During the eccentricity test **bMobile** indicates the location/order of the test points. You may also define which point is the centric point.

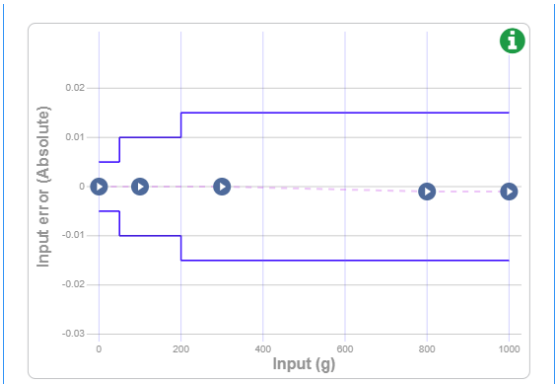
Centric point selected in eccentricity test.



Types of weighing tests.

Note.
Weighing Instrument calibration requires applicable option in CMX.
You can do one As Found test and one As Left test for Eccentricity, Repeatability, and Weighing tests. You may however do several As Found and As Left Minimum Weight tests. After the first As Left test is saved, you may only do As Left tests.

The graph of a weighing test looks as shown in the picture below.

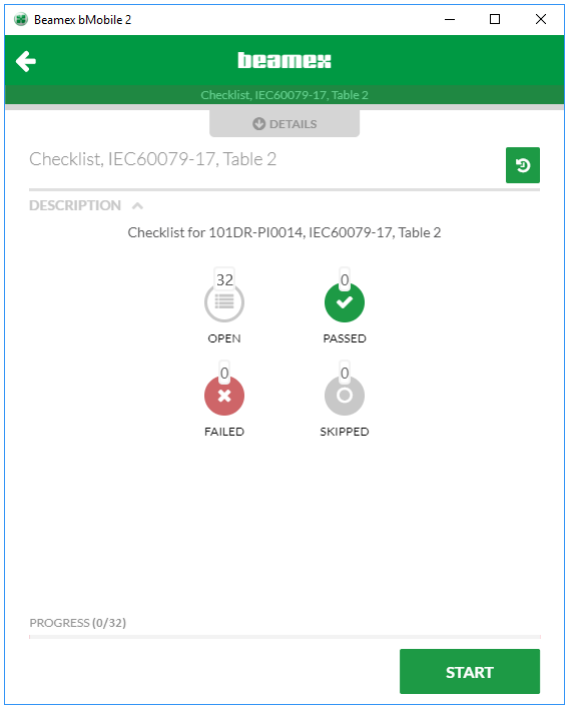


Weighing test graph.

Doing a Checklist Run

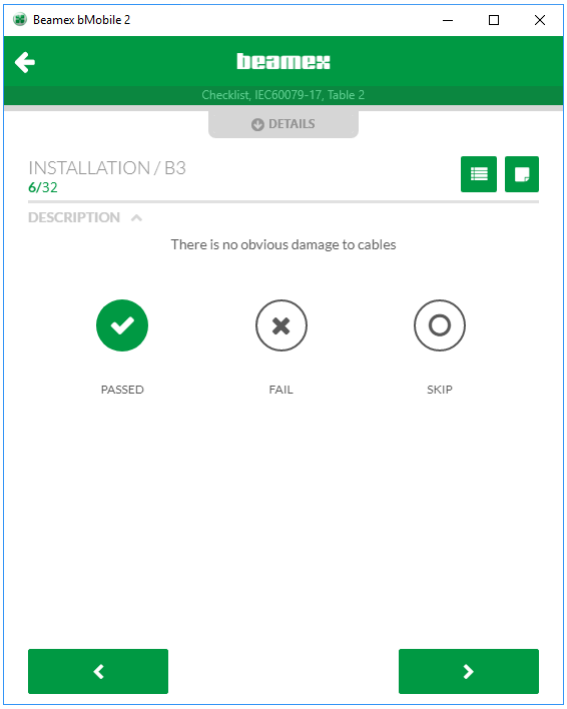
Checklist runs differ from calibrating instruments. Instead of going through measurements, each check is presented with the possibility to enter the test's status as Pass, Fail or Skip. Tap Start to begin the checklist run.

Note.
Doing checklist runs requires Maintenance Inspection option in CMX.
Depending on settings in CMX, there is a possibility that skipping points is prohibited.
Also: You may have to add notes to all passed skipped and/or failed checks.



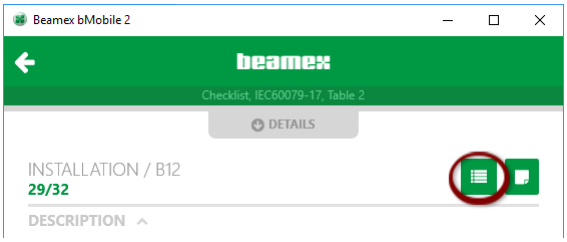
Checklist start page.

During Checklist run:
As long as you are not pressing the Advance button, you are able to change the status.
See pictures below.



Passed check.

Failed check with an added note.

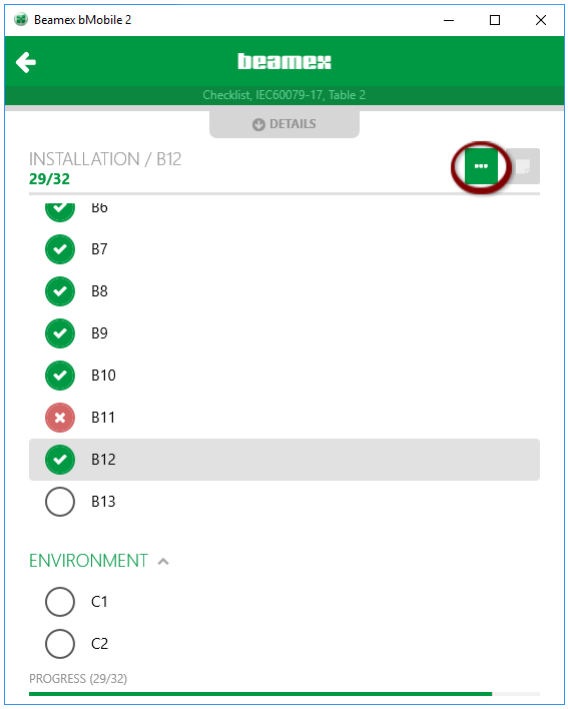


At check B12, 29 of 32,
Overview button is highlighted.

During a checklist run, you may look at the overview of the checklist by tapping the highlighted button in the picture above.

The overview window is presented in the adjacent picture. You may return to check view using the check view button highlighted in the adjacent picture.

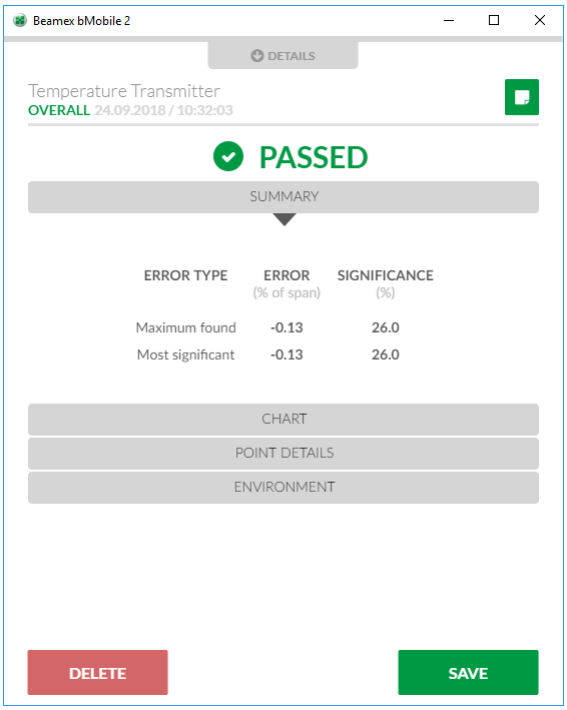
Continue through all checks to advance to **Ending a Calibration/Checklist Run** view presented on page 25.



Overview selected.
Check view button is highlighted.

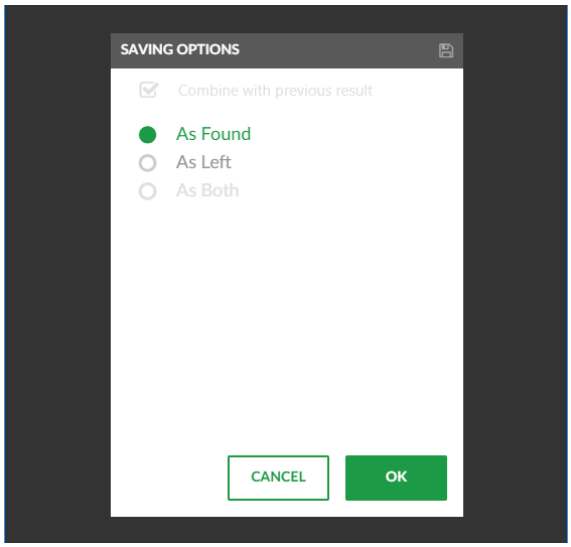
Ending a Calibration/Checklist Run

The picture below is an example of an overall calibration result window, after a calibration run. Here you can enter environment data, check the point details and view the calibration graph. Then either save or delete the results. See also note below.



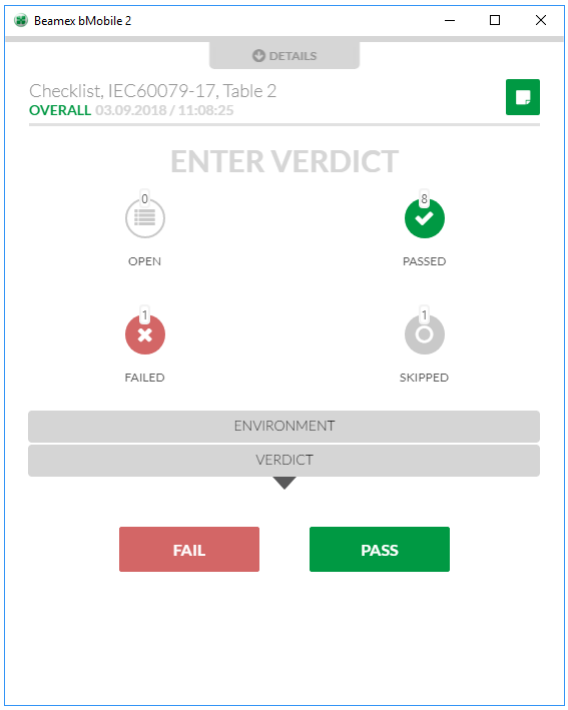
Calibration summary for a temperature transmitter.

For calibrations, other that checklist runs, a save pop-up dialog opens. See picture below.

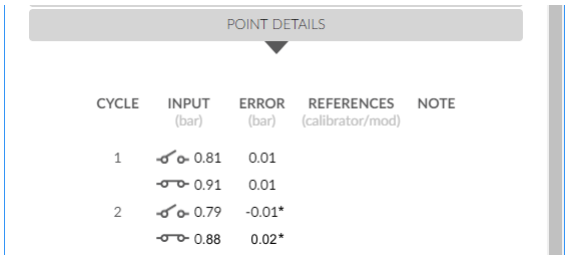


Options for saving a calibration.

For checklist runs, the overall checklist results looks as shown below. After entering environment data, enter the master pass or fail verdict by tapping one of the buttons.



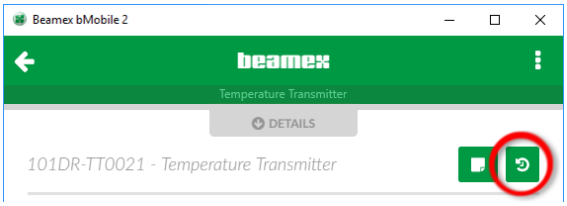
Checklist run's overall view.



Notes.
An asterisk (*) in Switch point detais indicates that the error is not relevant (defined in CMX).
Deleting calibration results may be restricted based on settings in CMX's **Mobile Security Plus** option.

Calibration History Window

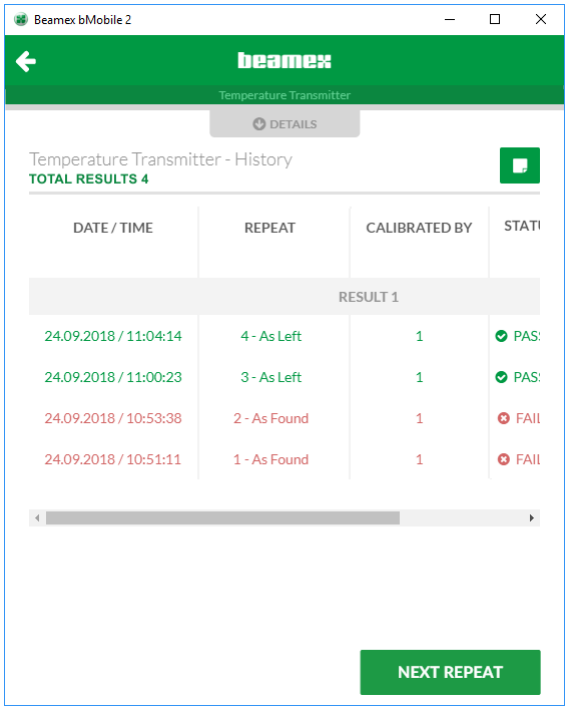
As previously mentioned, before starting a calibration / checklist run, while looking at the instrument's overview window, a calibration history button is available. See picture below.



Calibration history button highlighted.

Tapping the button opens the calibration history window. An example of a calibration history window is in the adjacent picture. There is a pressure transmitter with two failed as found calibrations and two passed as left calibrations.

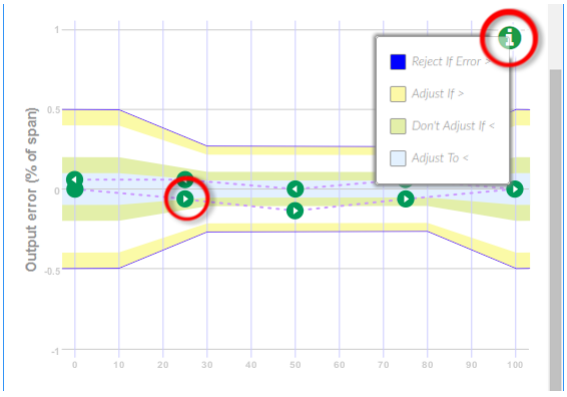
Click on one of the rows to see detailed information of that particular calibration. The window is similar to the overall view shown after a calibration / checklist run, except all data is read-only now. No environment data etc. may be edited anymore.



Calibration history for a Temperature transmitter.

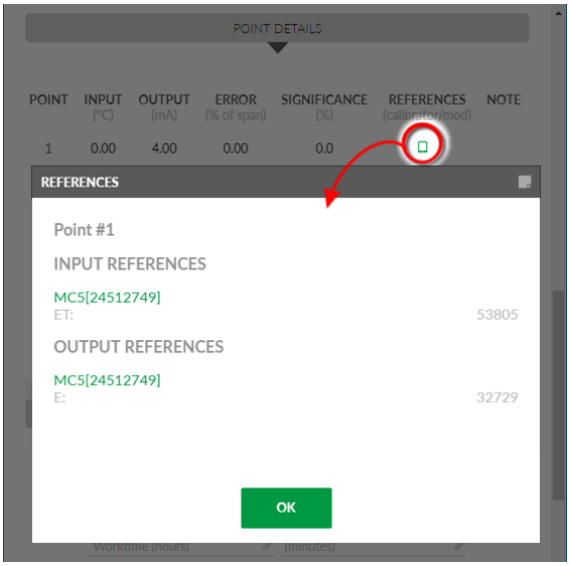
From the calibration history window, you can also return to the instrument overview window (back arrow) or start a new calibration / checklist run.

Tap on a point in a graph to see point details. Tap on the info button to see details of error limits. See picture below.



Graphic results with info pop-up opened.

Among numeric calibration results: Tap on a calibration result's reference icon to see reference info. See picture below.



Numeric results with reference info opened.

Appendix

The following section presents additional information related to **bMobile**. They are

- **Windows® Installation Specifics**
  - **Default Settings**
  - **Silent Install**
- **Calibration Web Service Interface (CWSI)**,
- **CMX and CWSI** and
- **Troubleshooting**

Windows® Installation Specifics

Overriding Default Settings During Installation

The application can be installed with specific values, overriding the default ones. This needs to be done from the command prompt (Powershell).

Open up a command prompt in the directory containing the bmobile2Setup.msi file. Run command:
msiexec /i bmobile2Setup.msi /quiet PARAMETER="*value*"
Available parameters are:

- **INSTALLFOLDER**
- **SERVERADDRESS**
- **PORT**
- **ENDPOINT**
- **SECURECONNECTION**
- **DEFAULTPRESSUREUNIT**
- **DEFAULTTEMPERATUREUNIT**
- **DATEFORMAT**
- **BARCODEREADERVISIBILITY**
- **REFERENCESELECTION**

Command example for changing the target installation directory:

msiexec /i bmobile2Setup.msi /quiet INSTALLFOLDER="*c:\path*"

Command example using all available parameters:

msiexec /i bmobile2Setup.msi /quiet INSTALLFOLDER="*c:\path*" SERVERADDRESS="*connect.beamex.com*" PORT="*443*" ENDPOINT="*cwsi*" SECURECONNECTION="*true*" DEFAULTPRESSUREUNIT="*kPa*" DEFAULTTEMPERATUREUNIT="*°C*" DATEFORMAT="*YYYY.MM.DD*" BARCODEREADERVISIBILITY="*true*" REFERENCESELECTION="*1*"

Note.
The whole command should be written in one line.

Overriding Default Settings After Installation

When **bMobile** is installed, a file called "**defaultsettings.xml**" is located in the installation folder. Editing this file before starting **bMobile** for the first time allows you to create custom default settings.

If you do multiple installations, copy the customized "**defaultsettings.xml**" to all devices where you have installed **bMobile**. Just remember not to start **bMobile** before the customized custom default settings are saved on the device.

Default path:
C:\Program Files (x86)\Beamex\bMobile 2\defaultSettings

Example of **defaultsettings.xml**:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <backendSettings>
    <serverAddress>connect.beamex.com</serverAddress>
    <port>443</port>
    <endPoint>cwsi</endPoint>
    <secureConnection>true</secureConnection>
  </backendSettings>
  <environmentSettings>
    <defaultPressureUnit>kPa</defaultPressureUnit>
    <defaultTemperatureUnit>°C</defaultTemperatureUnit>
  </environmentSettings>
  <generalSettings>
    <dateFormat>DD.MM.YYYY</dateFormat>
    <barcodeReaderVisibility>true</barcodeReaderVisibility>
    <referenceSelection>1</referenceSelection>
  </generalSettings>
</configuration>
```

Available Default Settings and Their Options

The following options are available when installing bMobile using MSIEXEC in command prompt or in "**defaultsettings.xml**". See chapters **Overriding Default Settings During Installation** and **Overriding Default Settings After Installation**.

Parameter in bMobile User Interface	Options in User Interface	Parameter Name when using MSIEXEC	Parameter Name in XML	Corresponding options in MSIEXEC and XML
Date Format DD = Numeric date MM = Numeric month MMM = Alphabetic month, e.g. "April" YYYY = Numeric year	DD.MM.YYYY MM.DD.YYYY YYYY.MM.DD DD/MM/YYYY MM/DD/YYYY YYYY/MM/DD DD-MM-YYYY MM-DD-YYYY YYYY-MM-DD DD MMM YYYY MMM DD YYYY	DATEFORMAT	dateFormat	DD.MM.YYYY MM.DD.YYYY YYYY.MM.DD DD/MM/YYYY MM/DD/YYYY YYYY/MM/DD DD-MM-YYYY MM-DD-YYYY YYYY-MM-DD DD MMM YYYY MMM DD YYYY
Show barcode reader	Yes No	BARCODEREADERVISIBILITY	barcodeReaderVisibility	true false
Reference selection	Not defined All points This point	REFERENCESELECTION	referenceSelection	0 1 2
Pressure	kPa hPa Pa mbar mmHg torr inHg psi atm	DEFAULTPRESSUREUNIT	defaultPressureUnit	kPa hPa Pa mbar mmHg torr inHg psi atm
Temperature	°C °F	DEFAULTTEMPERATUREUNIT	defaultTemperatureUnit	°C °F
Server address	*Address to any server where CWSI server is installed.*	SERVERADDRESS	serverAddress	*E.g. "connect.beamex.com", a string*
Port	*Port available in CWSI server.*	PORT	port	*E.g. "443", a number*
Endpoint	*Endpoint defined in CWSI server.*	ENDPOINT	endPoint	*E.g. "cwsi", a string*
Secure connection	On Off	SECURECONNECTION	secureConnection	true false

Calibration Web Service Interface (CWSI)

General

These instructions are written for the Calibration Web Service Interface (CWSI) shipped with CMX.

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Beamex Oy Ab

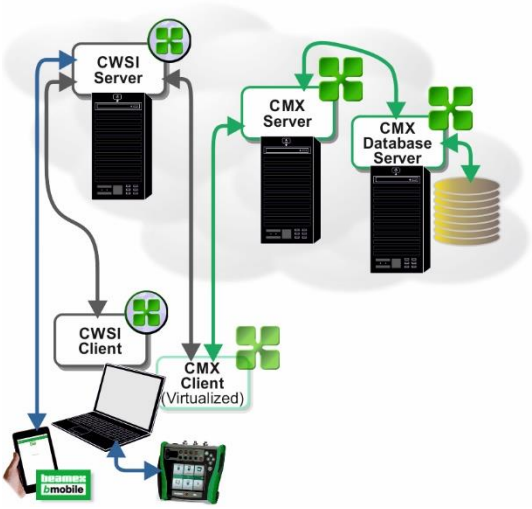
Architecture

CWSI includes two components: the **CWSI Client**, which is locally installed on every computer that is physically connected to a calibrator and the **CWSI Server**, which is a common gateway for all CWSI Clients. In addition to this, CWSI support is implemented into the CMX Client, which enables CMX to communicate with calibrators connected to CWSI clients via the familiar Send/Receive window.

It is recommended to virtualize the CMX Client to reduce latency for database communication. While the CWSI Client must be installed on multiple computers, only one CWSI Server installation is needed. The CWSI Server can be installed on e.g. same server as CMX Server. CWSI Server is installed as a Windows Service, just like the CMX Server.

Communication between CWSI client, CWSI server and CMX client utilises the WebSocket protocol (RFC 6455, http://tools.ietf.org/html/rfc6455), which enables two-way communication without the need for complex Firewall rules.

Instructions on how to install CWSI Server and CWSI Client is included in the **CMX Installation Manual**.



CWSI Structure.

Note.
bMobile includes in its software the CWSI Client. To communicate with a CWSI Server, enter the server URL and parameters as described in chapters **Settings** and **Connect** on page 9 and also chapter **CWSI Server** on page 31.

CWSI Server

The CWSI Server consists of two executables:

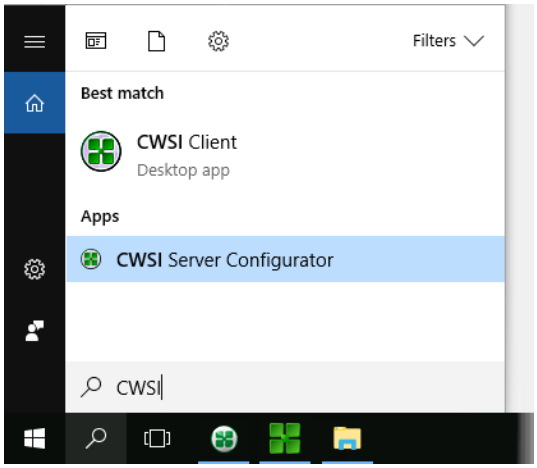
- **Beamex.CWSI.WebSocketServer.Service.exe**, which is installed as a Windows Service (CWSI service).
- **Beamex.CWSI.Server.Configurator.exe**, which is a graphical tool to configure parameters for the Windows Service.

Configuring CWSI Server

To configure the CWSI Server service, start "**CWSI Server Configurator**". Use Windows' search tool to locate CWSI Server Configurator.

How to invoke the search tool depends on the operating system version.

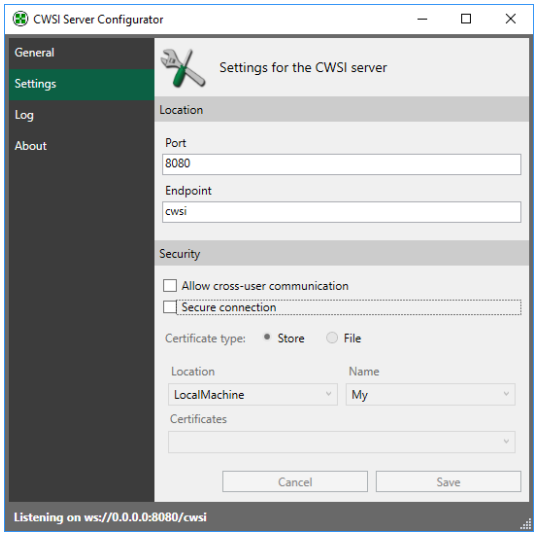
The picture on the right is from Windows® 10.



Windows search tool.

CWSI Server's Settings

- **Port**, this is the TCP port that the server is listening on. Make sure that no other applications on the same machine is listening on the same port. Default port is **8080**.
- **Endpoint**, this is the endpoint that the server is listening on. Default is value **cwsi**.
- **Allow Cross-User communication**, if checked, this provides the opportunity for a user with supervisor privileges in CMX to communicate with all CWSI Clients connected to the CWSI Server.
- **Secure connection**, if checked, communication will be secured using SSL/TLS. A X.509 Certificate is required. This is highly recommended in production usage.



CWSI Server Configurator's Settings page.

- **Certificate type**, if secure connection is checked, a X.509 Certificate is required. A certificate can either be loaded from a Certificate Store or from a Local File. File is recommended for test usage only.
- **Store Parameters**
  - **Location**, specifies the X.509 Certificate Store Location to be used as search parameter. Local Machine is recommended, since Current User can only be used if the CWSI Server Configurator and CWSI Server Service is executed as the same user.
  - **Name**, specifies the X.509 Certificate Store Name to be used as search parameter.
  - **Certificate**, specifies the X.509 Certificate to be used. Please note that the CN attribute specified in the certificates subject distinguished name must match the server location used by CWSI client and CMX.
- **File Parameters**
  - **File**, the absolute path to the pfx-file. Please note that the CN attribute specified in the certificates subject distinguished name must match the server location used by CWSI client and CMX.
  - **Password**, the password for the pfx-file. Please note that this password is stored in plain text on the machine running the CWSI Server. This option should therefore be used with caution.

Please note that any changes made to the configuration won't be taken into use until the CWSI Server Service is restarted.

Starting and Stopping CWSI Server

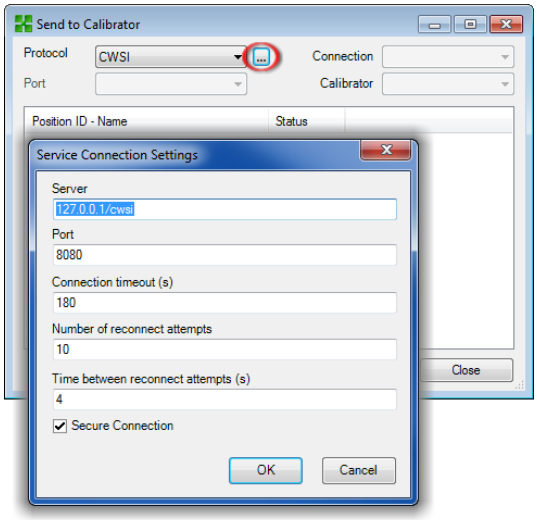
Starting and stopping the CWSI Server service can be done either via the CWSI Server Configurator or via the Services snap-in in Microsoft Management Console.

For advanced startup configuration (startup type, logon, etc.), use Services snap-in in Microsoft Management Console. Look for "Beamex CWSI Server Service".

CMX and CWSI

CWSI is integrated as a new protocol (Web Service) in both the **Send** and **Receive** windows of **CMX**. To configure the CWSI parameters, open Send or Receive window, select CWSI as protocol and click the button with three dots next to the protocol:

- **Server**, this specifies the location of the CWSI Server (including the endpoint specified in server). If secure connection is used, this would most likely correspond to the CN of the Certificates subject distinguished name used by the server.
- **Port** specifies the TCP port that the CWSI Server is listening on.
- **Connection timeout** specifies the amount of seconds the CMX will wait before cancelling a request.
- **Number of reconnect attempts** and **Time between reconnect attempts** settings need normally not be changed. IT specialist may want to change these if communication problems exist.
- **Secure Connection** specifies if the server is using secure connection (SSL/TLS). This must correspond to the CWSI Server settings.



CWSI communication settings in CMX.

When CWSI is correctly configured, and one or more matching CWSI Clients are found (e.g. **CMX user id** in CWSI is same as **User ID** in CMX), then they are listed in the **Connection** combo box. Each connected calibrator of the CWSI Client is listed in the Calibrator combo box. Both send and Receive window can be used normally.

If the CWSI Client have specified a secret, then the secret is prompted when selecting the client connection.

Troubleshooting

CWSI Server

If the server is having issues loading a configured X.509 certificate: Please note that CWSI Server Configurator and CWSI Server Service might be executed as different users. By default, the CWSI Server Service is configured to be executed by the LocalSystem Account and might not have access to the configured file.

This might also be an issue if Certificate Store Location is set to Current User.

CMX

All configuration changes made in the CMX are stored individually per user under

%APPDATA%\Beamex Oy Ab\...
CMX Calibration Management Software\... <version>\ServiceConnectionSettings.xml

Where:

%APPDATA% is currently logged user's application data directory.
<version> is the current software version number of CMX.

If CMX for some reasons crashes during opening of Send or Receive window, try to delete the file above in order to load the factory defaults.

To copy CWSI settings between user profiles, simply copy the ServiceConnectionSettings.xml between the user profiles.

To modify default CWSI settings, modify ServiceConnectionDefaults section in file BxbMUIPD.exe.config located in CMX installation directory.

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base-64

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Present in bMobile's Windows version only.

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prop-types

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react-redux

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transit-immutable-js

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