



Beamex bMobile

Instructions

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Table of Contents

Introduction.....	4
bMobile and CMX Requirements.....	5
Installing bMobile.....	5
Communicating With CMX.....	6
Communication Settings in CMX.....	6
Starting bMobile.....	8
CMX Operating Mode.....	8
No Mobile Security Plus.....	9
Mobile Security Plus In Use.....	10
Solving Login Problems.....	12
LOGiCAL Operating Mode.....	14
About the User Interface.....	15
Home View Menus.....	15
Main Menu.....	15
Settings.....	17
Connect.....	19
Demo mode.....	20
Support.....	21
About.....	22
Sign Out.....	23
Context Menu.....	23
Home View / Instrument List.....	24
Tools in Home View.....	25
QR Code & Barcode Reader.....	26
Calibration / Checklist Run.....	29
Common Features.....	29
Details expansion panels.....	29
Notes and Calibration History.....	29
Common Elements Seen During a Calibration / Checklist Run.....	30
Notes.....	32
Entering Readings to Calibrations.....	32
Pausing a Calibration / Checklist Run.....	34
Adding References.....	36
Calibrating Standard Instruments.....	39
Calibrating Switches.....	40
Calibrating Weighing Instruments.....	42
Doing a Checklist Run.....	45
Ending a Calibration/Checklist Run.....	49
Calibration History Window.....	52

Appendix.....	55
Windows® Installation Specifics.....	56
Overriding Default Settings During Installation.....	56
Overriding Default Settings After Installation.....	57
Available Default Settings and Their Options.....	57
Calibration Web Service Interface (CWSI).....	59
Architecture.....	59
CWSI Server.....	60
Configuring CWSI Server.....	60
CWSI Server's Settings.....	61
Starting and Stopping CWSI Server.....	62
CMX and CWSI.....	63
Troubleshooting.....	64
CWSI Server.....	64
CMX.....	64
Index.....	106

Introduction

The **Beamex bMobile Calibration Application** is an intuitive, multi-platform solution for guided execution and documentation of field calibrations.

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.

With **bMobile** you can also carry out maintenance inspections (checklists).

You can use either Beamex CMX or Beamex LOGiCAL Calibration Management Software to manage what to calibrate and when, and then assign the work and send the instruments to be calibrated to your mobile device running **bMobile**. Field calibrations can be executed offline with step-by-step guidance from **bMobile**. The application documents and stores the calibration results securely and, when online, results can be transferred back to Beamex CMX or LOGiCAL for further data analysis or calibration certificate printing. Together, **bMobile** and CMX form a powerful solution for maintenance-related inspections and weighing instrument calibrations and also reduce the risk of violating the ALCOA data principles by ensuring data integrity.

bMobile is available for iOS, Android¹, and Windows² 10 platforms and can be downloaded for free from Apple App Store, Google Play, or the Beamex website Download Center. You can try out **bMobile** without CMX or LOGiCAL using the demonstration mode. **bMobile** is compatible with LOGiCAL and with CMX version 2.11 or later. Weighing Instrument Calibration, Maintenance Inspection, and Beamex Mobile Security Plus options are supported in **bMobile** if activated in CMX.



Note: Beamex CMX and LOGiCAL are calibration management systems where you create, maintain and send instruments for calibration to **bMobile**. Instruments cannot be created, edited or copied in **bMobile**. Those utilities are available in CMX and LOGiCAL.

To fully utilize **bMobile**, you need to be familiar with instruments, calibration and calibration procedures.

[1] Android is a trademark of Google Inc.

[2] Windows is a trademark of *Microsoft Corporation*

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*** device, operating system version 5.1 or later.

Recommended hardware:

- Quad-core 2.5 GHz Krait 400
- 16 GB storage / 3 GB RAM

- or an **iOS*** device, operating system version iOS 13, iPadOS 13 or later.

Requirements in CMX (version 2.11 or later):

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



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

*) 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.

Installing bMobile

bMobile is available in Google Play store and in Apple App 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> in **Downloads**. Then install the software on your computer.



Note: See also chapter [Windows® Installation Specifics](#).

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 this button .

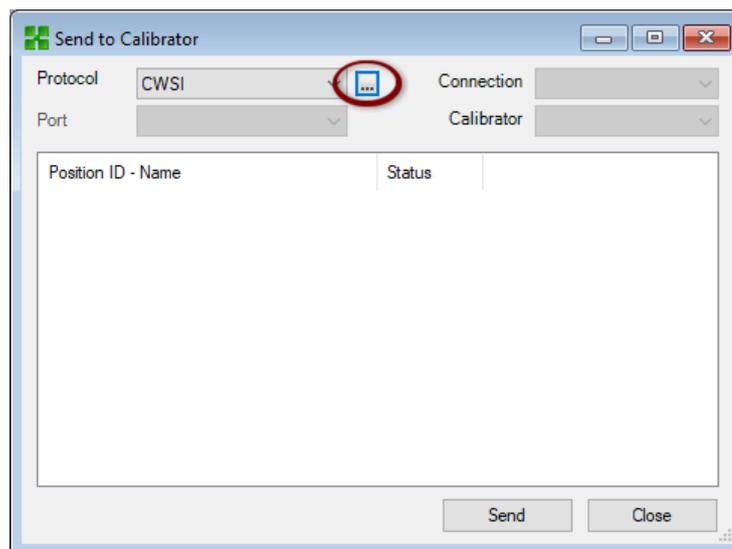


Figure 1: Send to Calibrator window

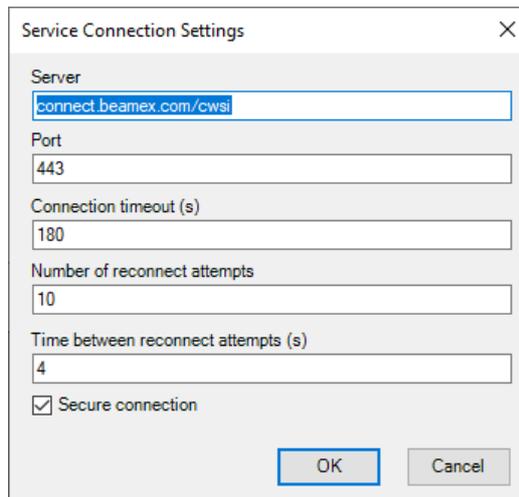


Figure 2: Service Connection Settings window

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

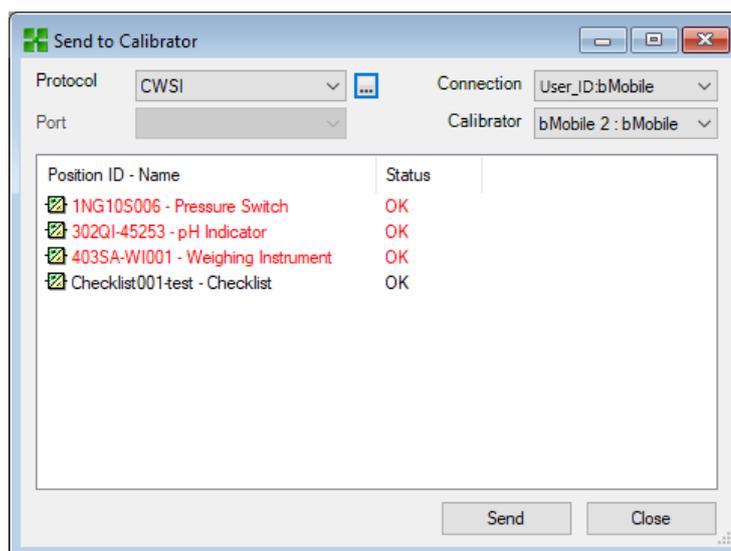


Figure 3: Send to Calibrator window after connecting

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](#).

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.



Note: For more information, see CMX Installation Manual and the Appendix of this document.

Starting bMobile

bMobile can communicate with two Beamex calibration management systems: CMX and LOGiCAL. This initial selection defines which one will be used. See following subchapters for more specific information about both systems. To change previously selected communication mode, see subchapter [Settings](#).

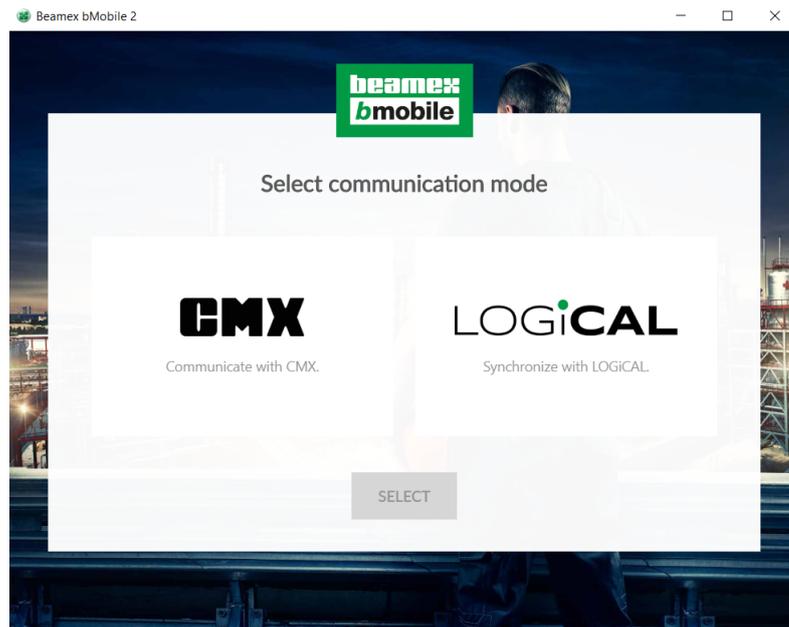


Figure 4: Communication mode selection screen

CMX Operating Mode

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

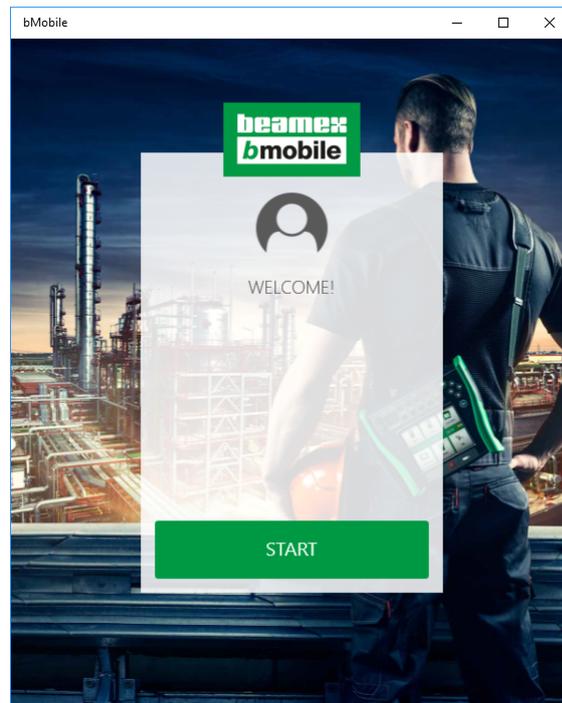


Figure 5: Welcome screen, when no instruments or users are available

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

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](#).

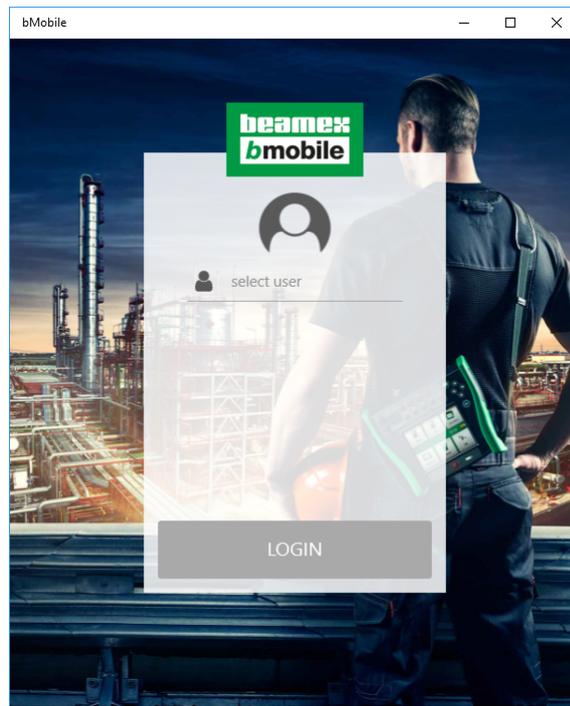


Figure 6: Login when there is no Mobile Security Plus

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.

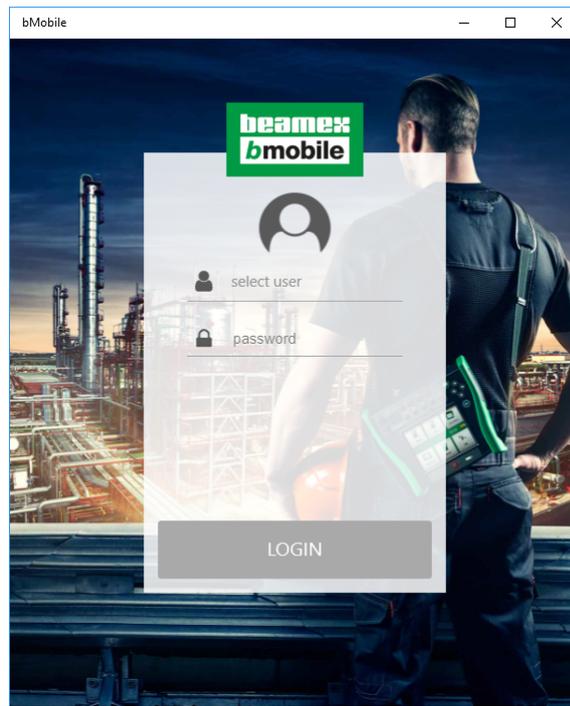


Figure 7: User ID available in a list

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

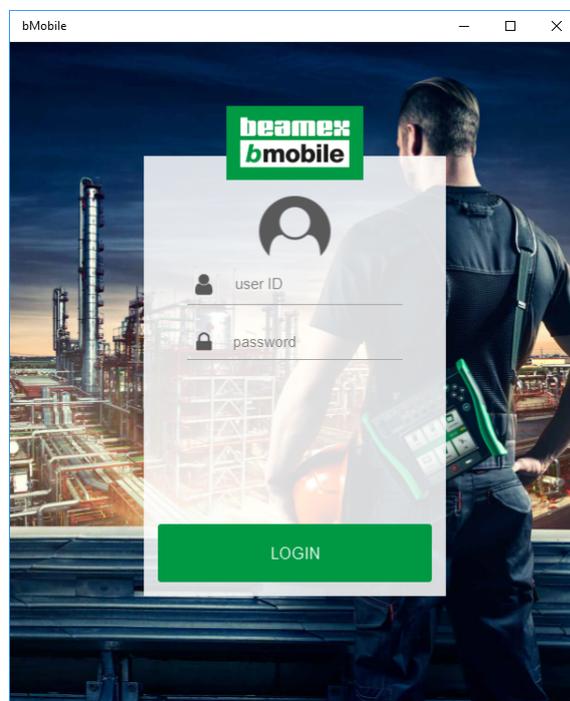


Figure 8: Login when User ID has to be entered

Solving Login Problems

In case the data in your application is not accessible, 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.

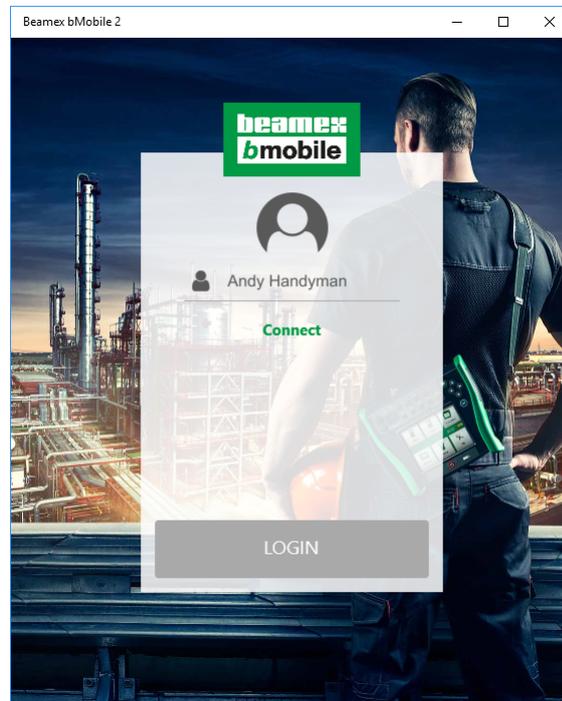


Figure 9: Connection problem when Mobile Security Plus is NOT in use

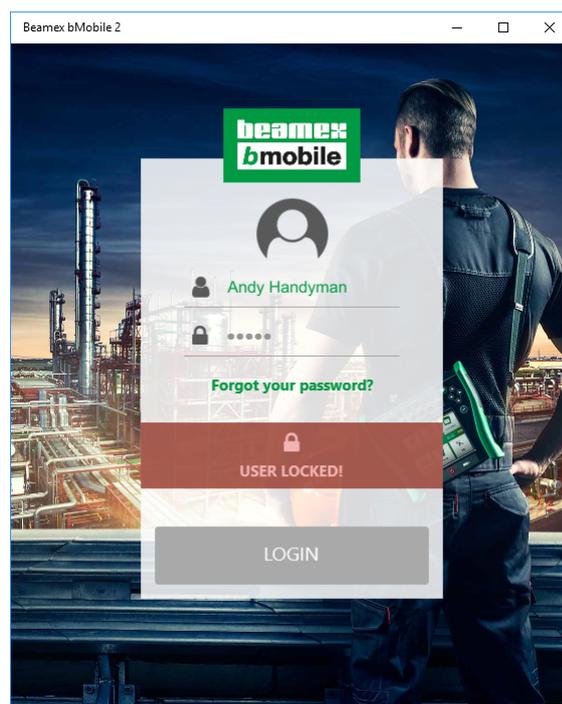


Figure 10: Connection problem when Mobile Security Plus IS in use

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



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

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

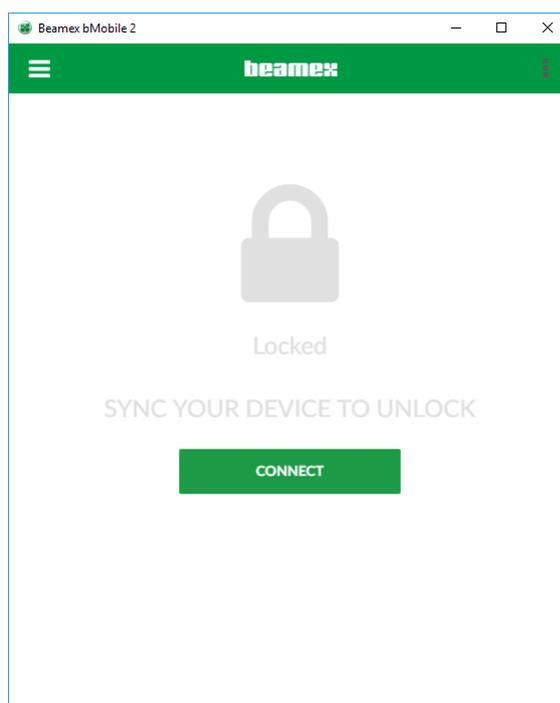


Figure 11: Lock window

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

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

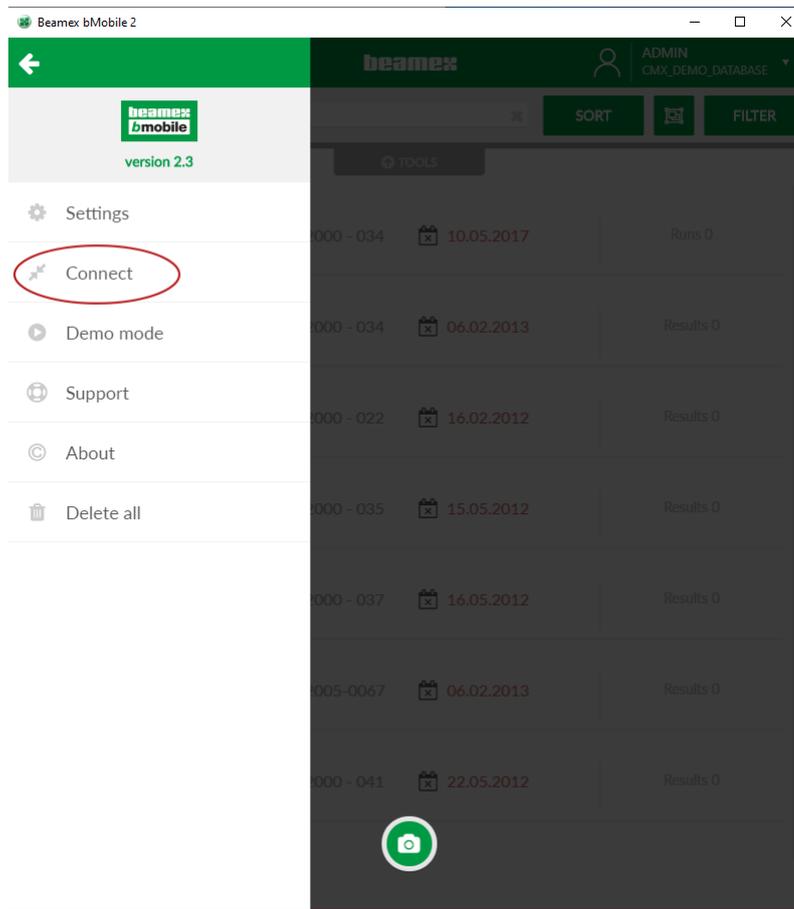


Figure 12: Menu with Connect option highlighted



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

LOGiCAL Operating Mode

By selecting LOGiCAL operating mode as described in [Starting bMobile](#), **bMobile** will communicate with LOGiCAL. Beamex **LOGiCAL** is a cloud-based calibration management software. You can store your instruments and references in the LOGiCAL database and use them as a basis for calibration tasks. The intuitive dashboard will let you know when your instruments are due for calibration.

You can plan your calibration work in LOGiCAL and assign the work to people doing the calibration. Once the calibration work is done, the results can be synchronized from the calibrator or mobile device to LOGiCAL.

You can find more information about LOGiCAL at <https://www.beamex.com/software/logical-calibration-software/>.

If you wish to exit LOGiCAL mode, see subchapter [Settings](#).

About the User Interface

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

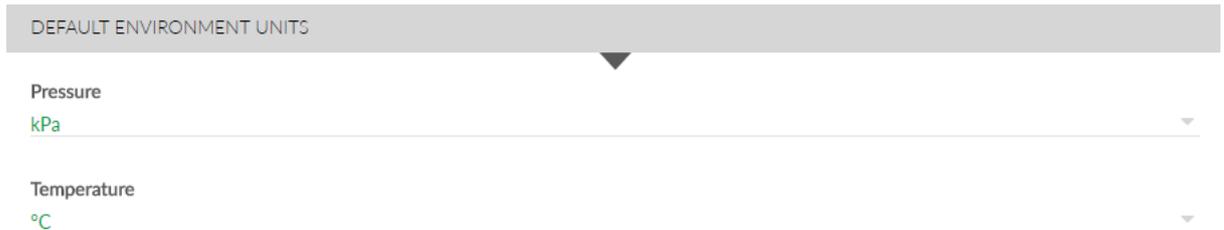


Figure 13: Default Environment Units expansion panel opened

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

Home View Menu

Main Menu

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

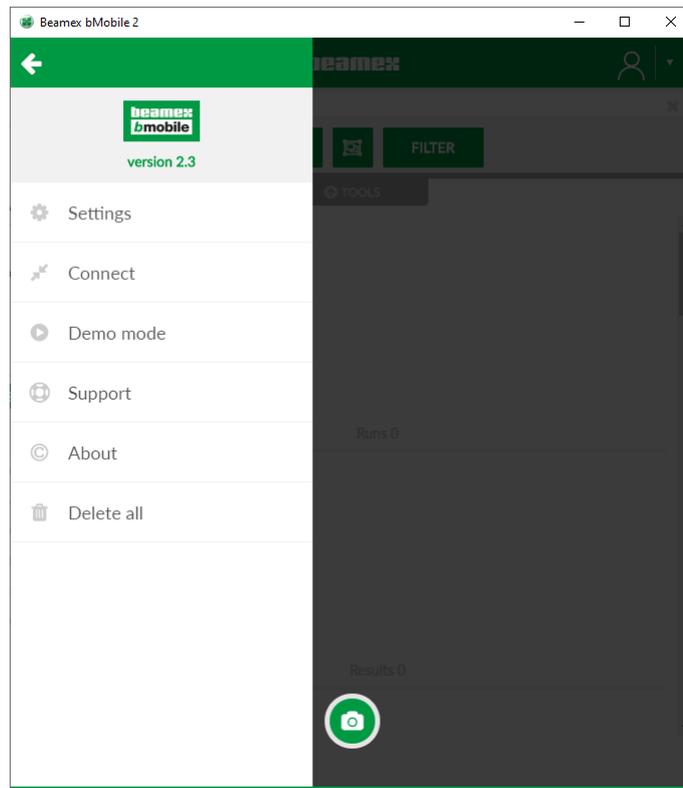


Figure 14: Main menu opened

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.

Settings

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

- **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.

- **Restore factory settings**

To switch between CMX and LOGiCAL operating modes, a “Restore Factory Settings” action needs to be performed. You will lose all the information after restoring. Access that setting from the context menu (three dots at the top right corner) see [Figure 15: Settings window](#).

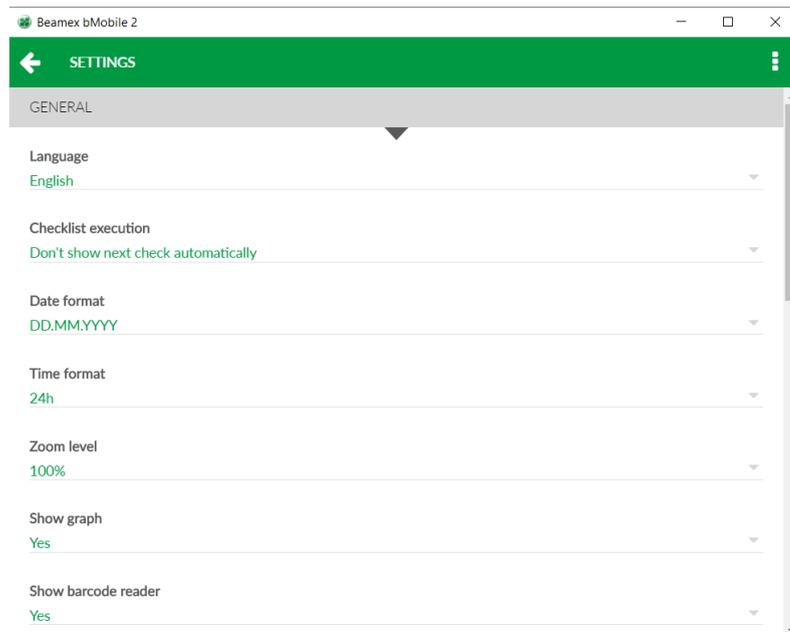


Figure 15: Settings window

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.

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.



Note: 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](#).

Connect

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

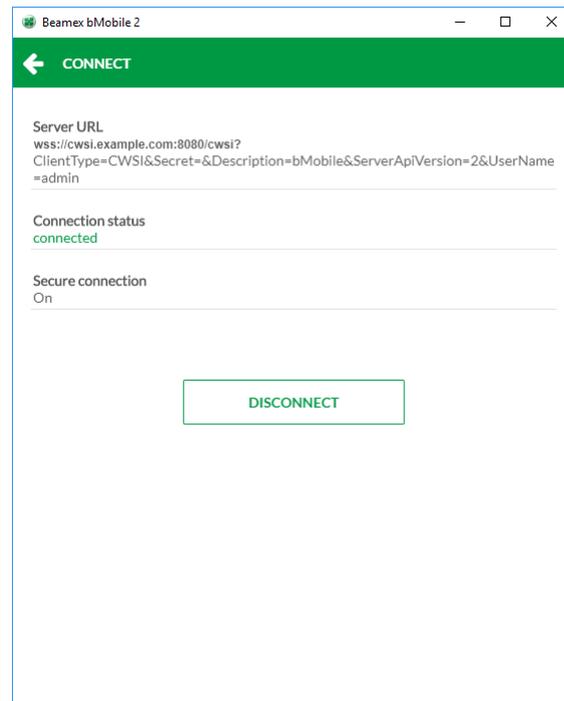


Figure 16: Connect window

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**.

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.

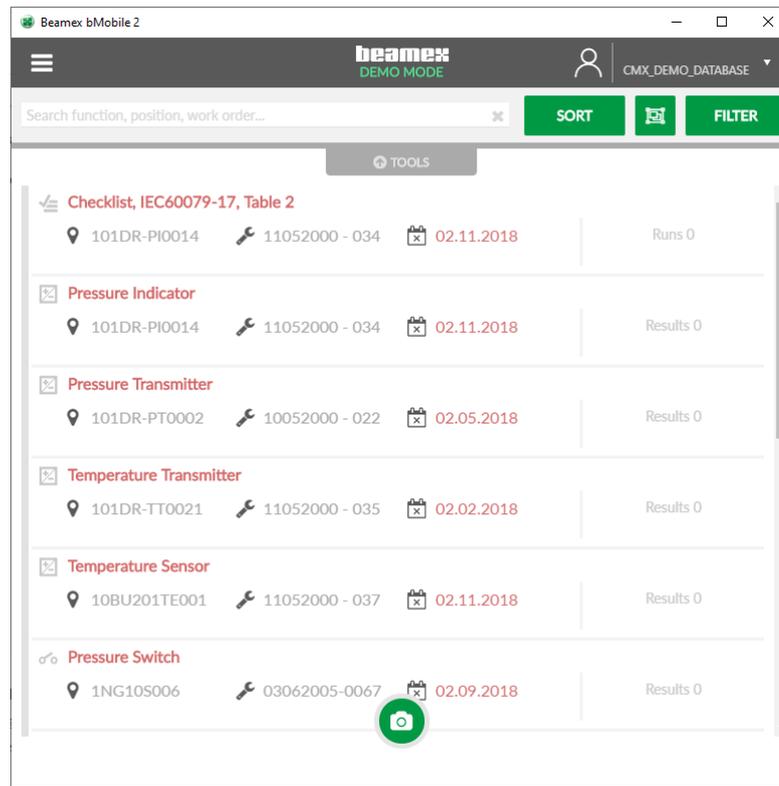


Figure 17: Demo mode window



Note: 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.

Support

Presents contact info to Beamex headquarters in Finland and subsidiaries.
Also links to manual, Beamex Youtube page and Beamex blog page.

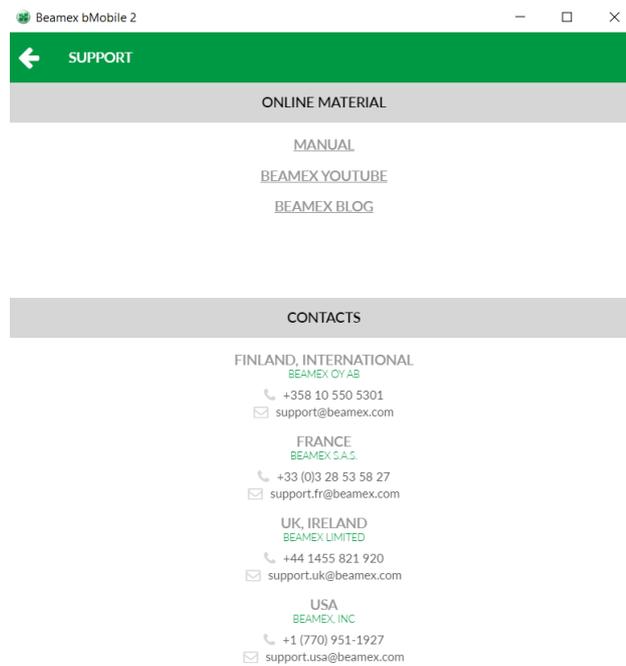


Figure 18: Support window

About

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

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

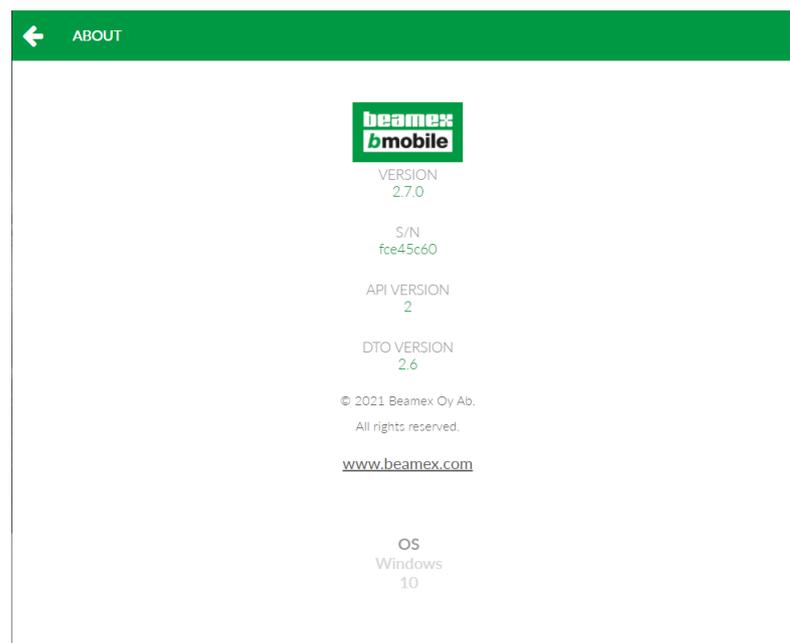


Figure 19: About window of bMobile

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.

Sign Out

Signs user out from **bMobile**.

Context Menu

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

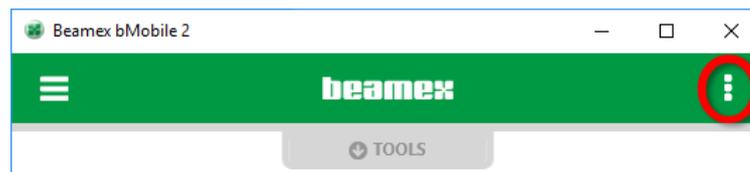


Figure 20: Context menu button highlighted

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.



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.

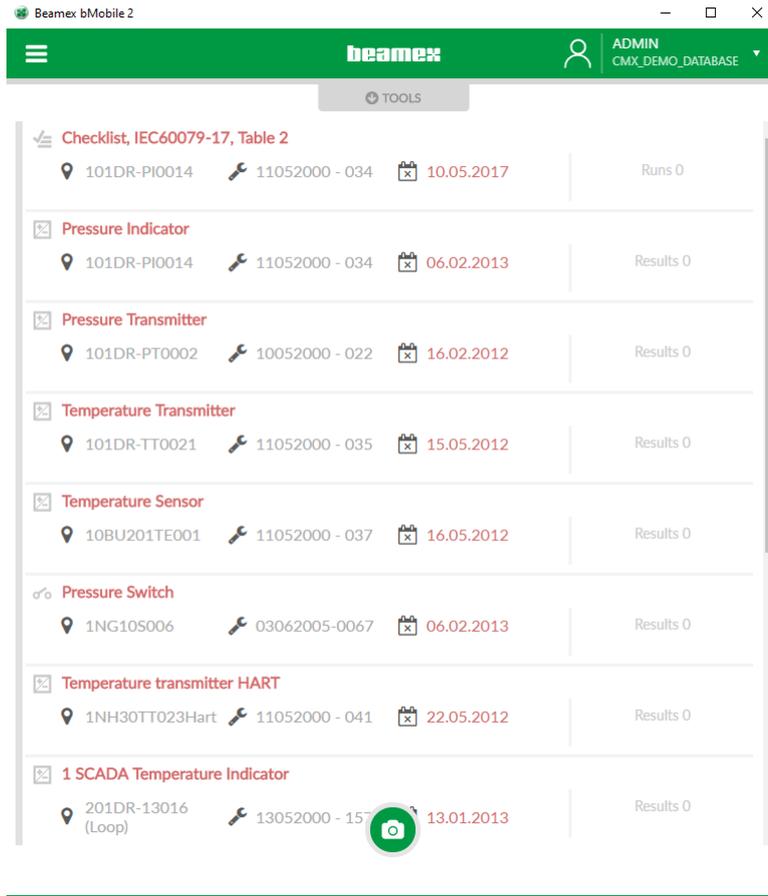


Figure 21: Example of Home view

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](#).

Tools in Home View

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

- 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.



Figure 22: Tools in Home view

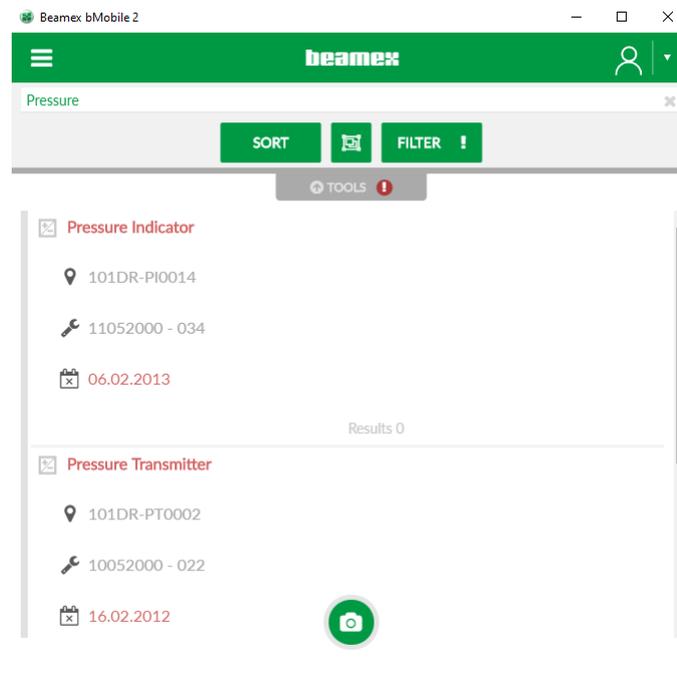


Figure 23: Indication when filter is active

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 CAMERA icon at the bottom of the view.

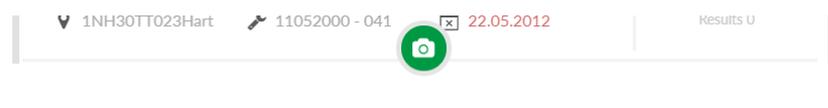


Figure 24: Lower part of Instrument List (Home View)

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.

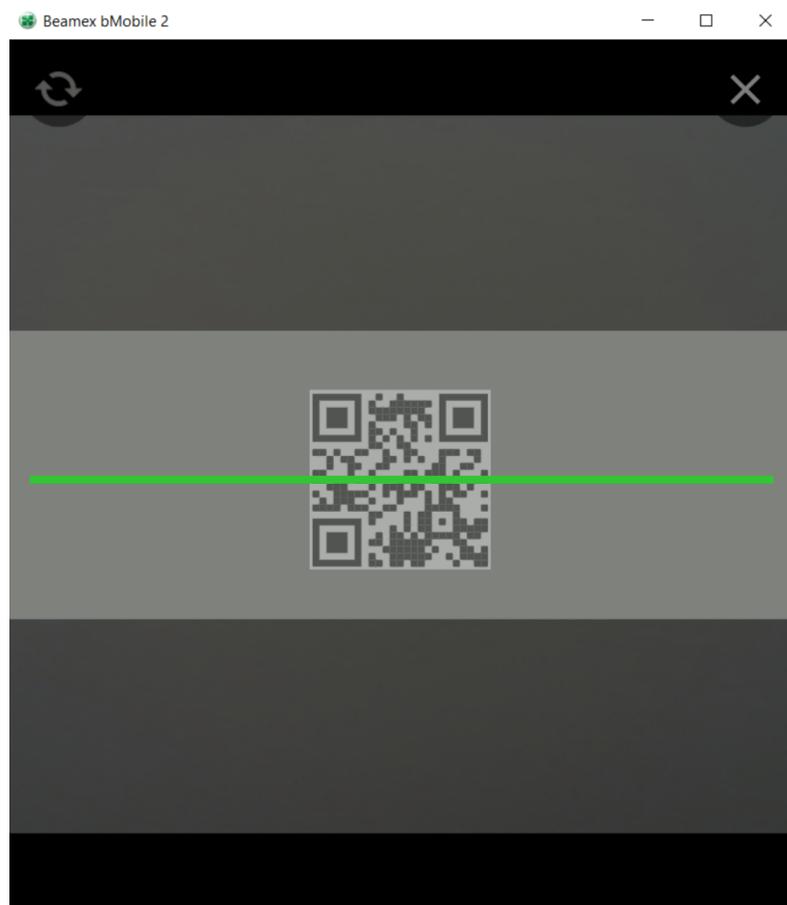


Figure 25: bMobile found a QR Code

Supported barcode types:

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



Note: 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](#). Enable it and you're ready to scan QR codes and barcodes.

Calibration / Checklist Run

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 expansion panels

When calibrating / checking an instrument, the **Details** expansion panels at the top of the window contain 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.

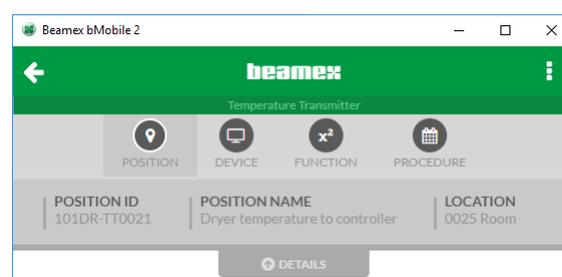


Figure 26: Opened Details expansion panels

Notes and Calibration History

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

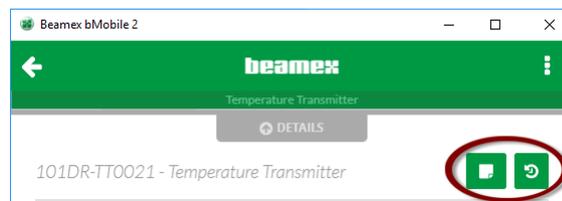


Figure 27: Notes and Calibration History buttons

When tapping the leftmost button, you can view Notes written for the current instrument. See chapter [Notes](#) .

When tapping the rightmost button, you can view calibration history currently available in **bMobile**. More of calibration history in chapter [Calibration History Window](#).



Note: 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):

- **References** button. A link to a window where you can define used references (calibrators). See also [Adding References](#). 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](#) .

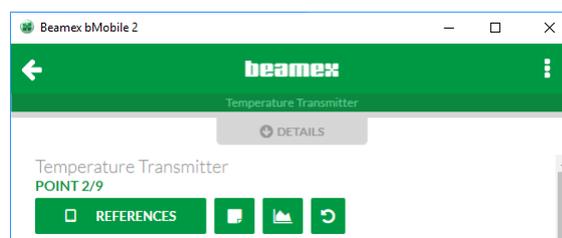


Figure 28: Upper part of a calibration window

- **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):

- **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 note below.

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](#).
- **Advance** button. Moves you to next calibration point. This button is enabled when necessary data has been entered.



Figure 29: Lower part of a calibration window



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.

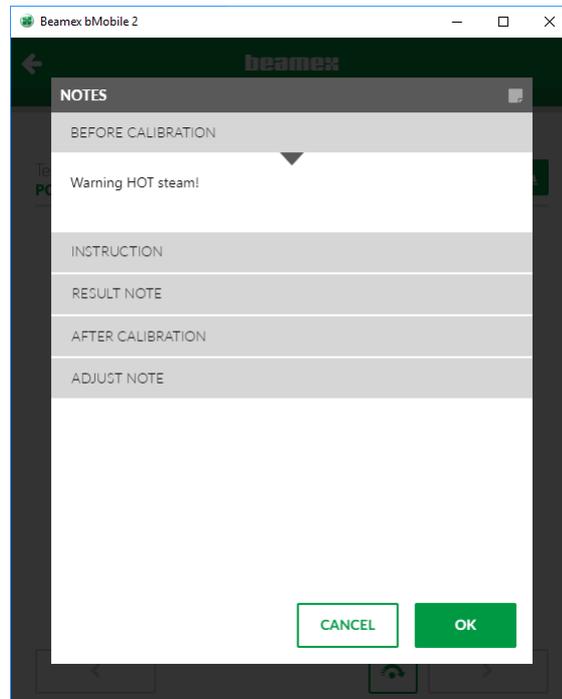


Figure 30: Before calibration note shown in bMobile



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.

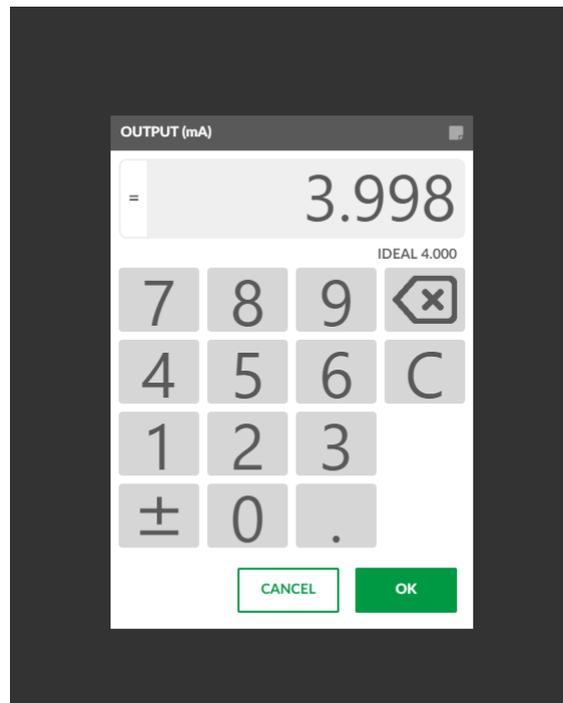


Figure 31: Numeric keypad



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.

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.

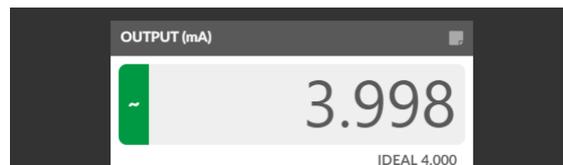


Figure 32: Unstable reading

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.

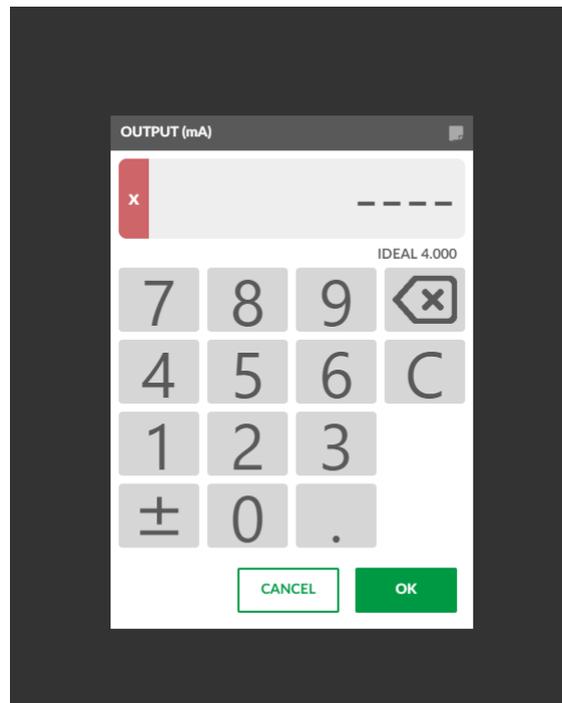


Figure 33: Abnormal reading

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.

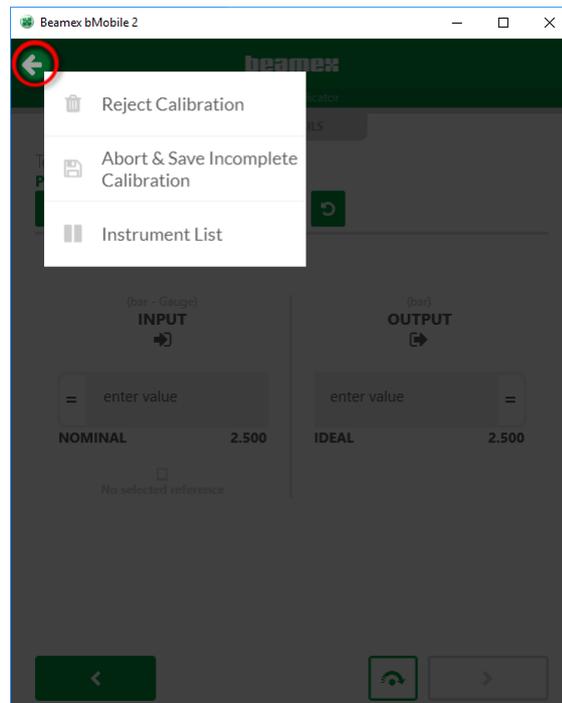


Figure 34: Menu during Calibration run

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.

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.

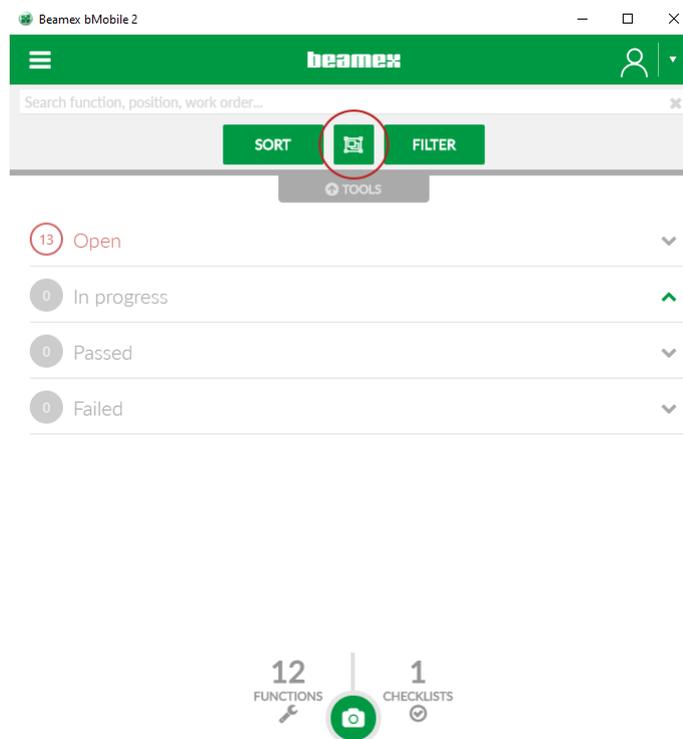


Figure 35: Grouping tool button highlighted

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 instruments** 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.



Note: 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.

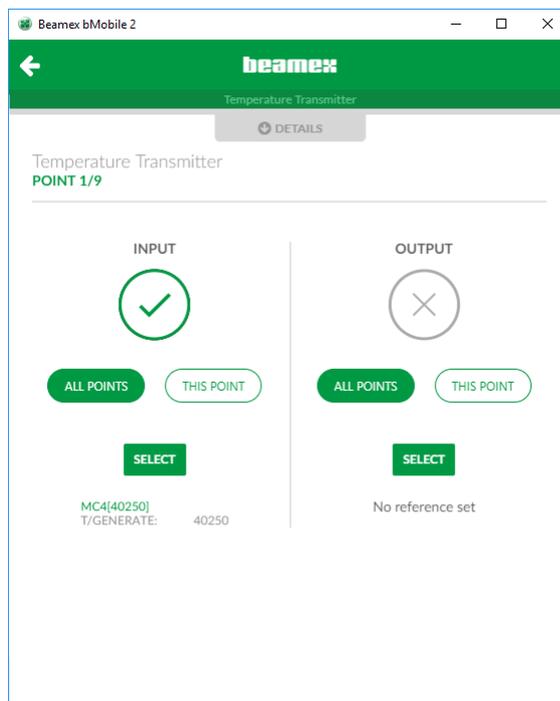


Figure 36: Selecting what the reference applies to: Input or Output, Current or All point(s)



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

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

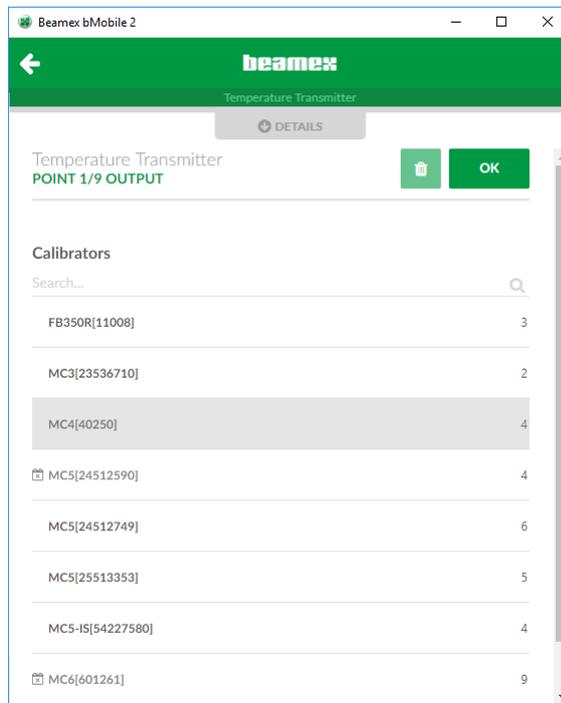


Figure 37: Selecting the reference



Note: 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.

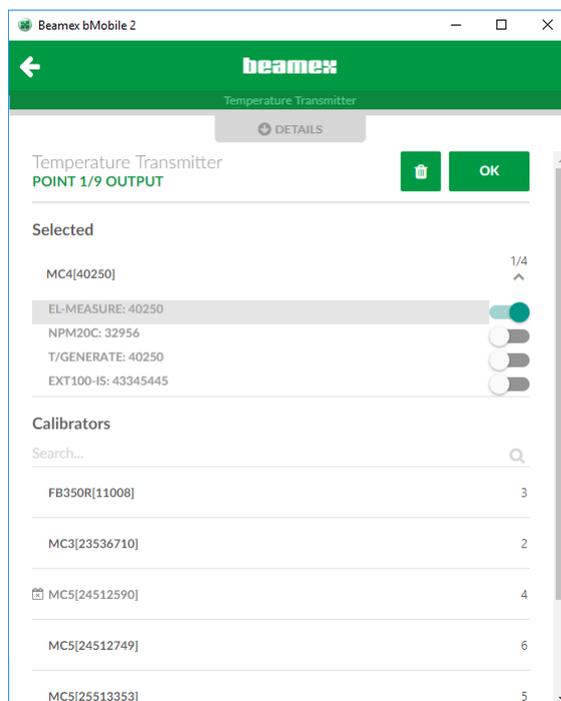


Figure 38: Selecting the module

Calibrating Standard Instruments

The [Figure 39: Calibrating a temperature transmitter](#) 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.

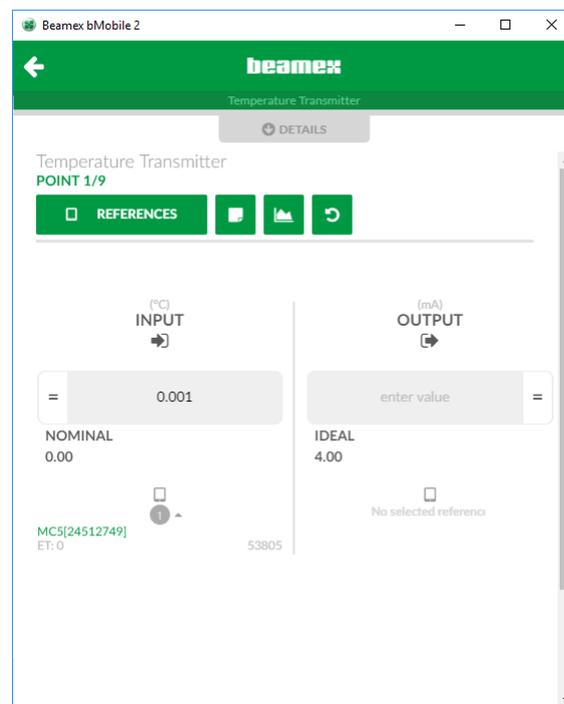


Figure 39: Calibrating a temperature transmitter

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:

"POINT 1/9".

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

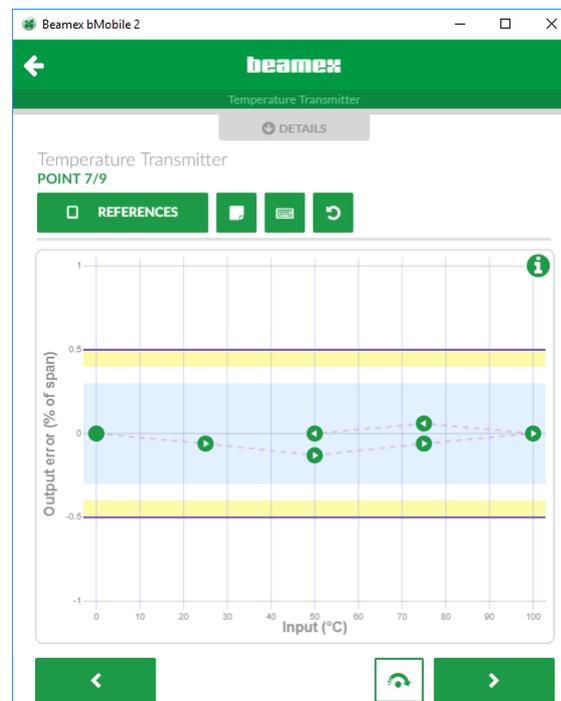


Figure 40: Calibration graph



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

Continue through all calibration points to advance to [Ending a Calibration/Checklist Run](#).



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.

Calibrating Switches

The [Figure 41: Calibrating a switch](#) 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.

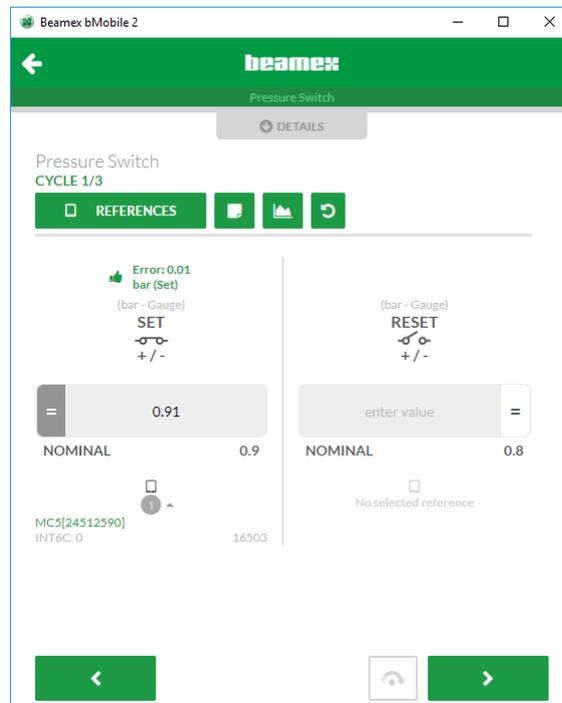


Figure 41: Calibrating a switch

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:

"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 picture above.

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

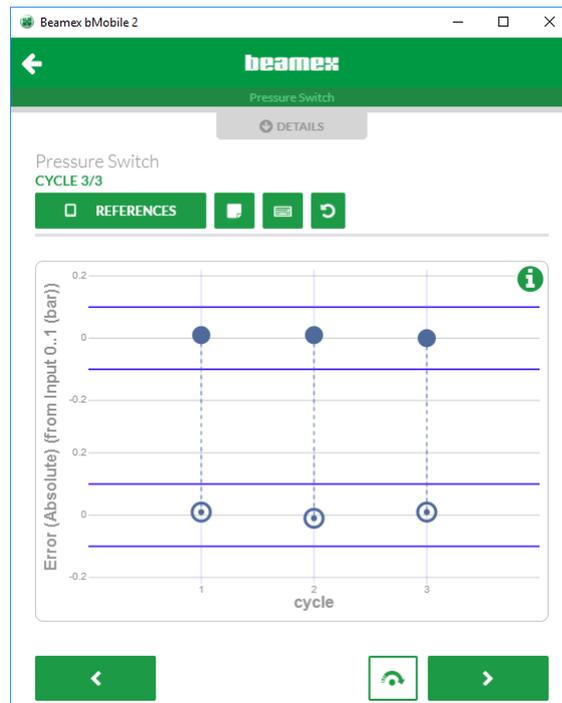


Figure 42: Calibration graph for a switch

Continue through all calibration points to advance to [Ending a Calibration/Checklist Run](#).

In the graph above:

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.

Calibrating Weighing Instruments

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

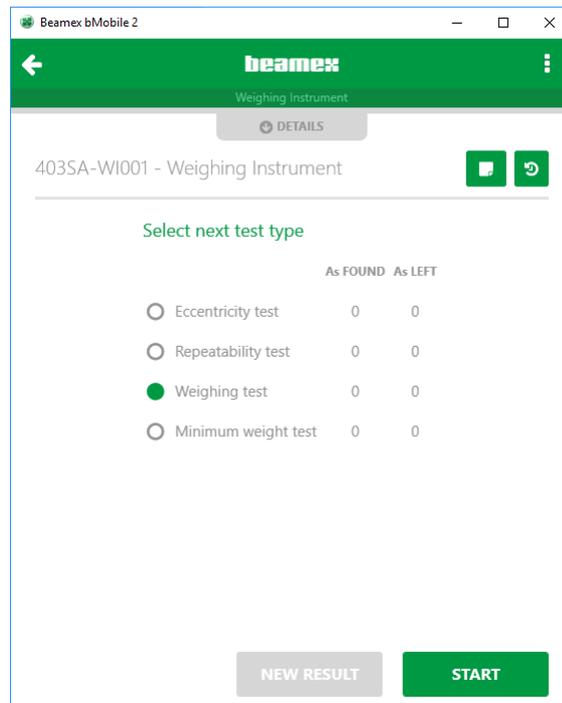


Figure 43: Types of weighing tests



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.

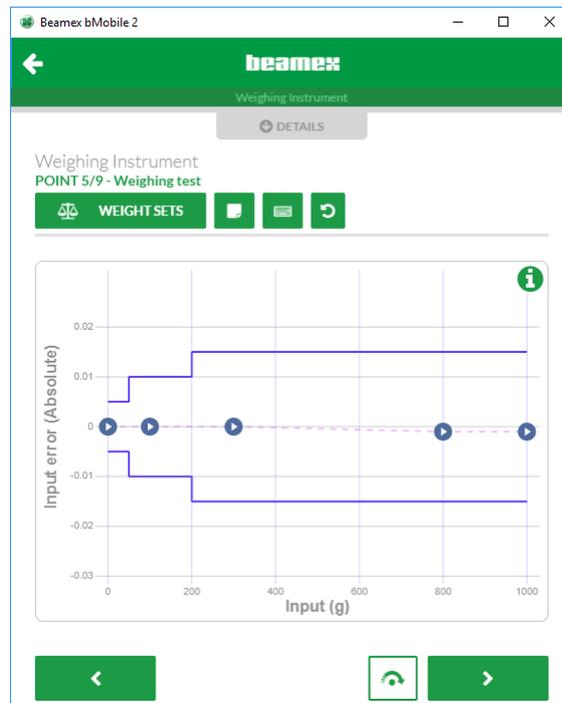


Figure 44: Weighing test graph

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.

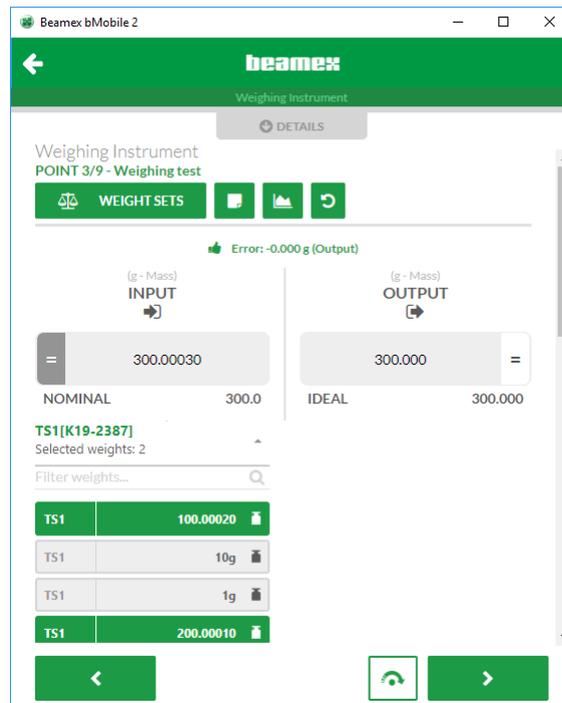


Figure 45: Weighing test of a weighing instrument

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



Figure 46: Centric point selected in eccentricity test

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.

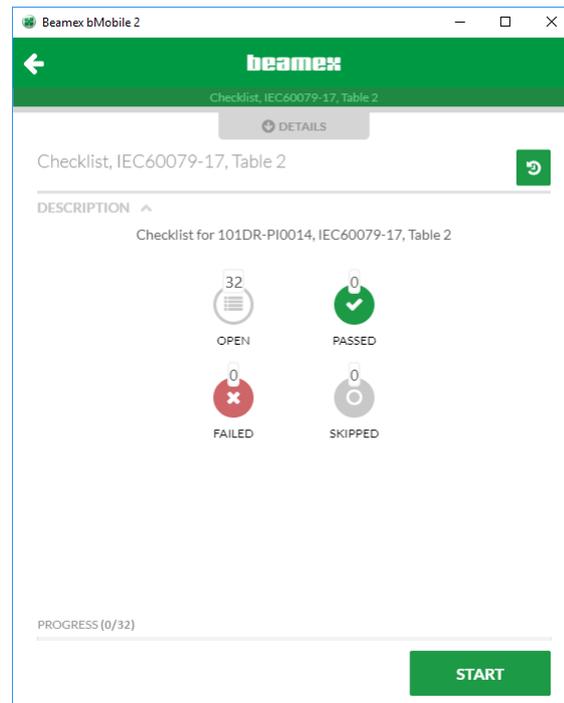


Figure 47: Checklist start page



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.

During Checklist run:

As long as you are not pressing the Advance button, you are able to change the status.

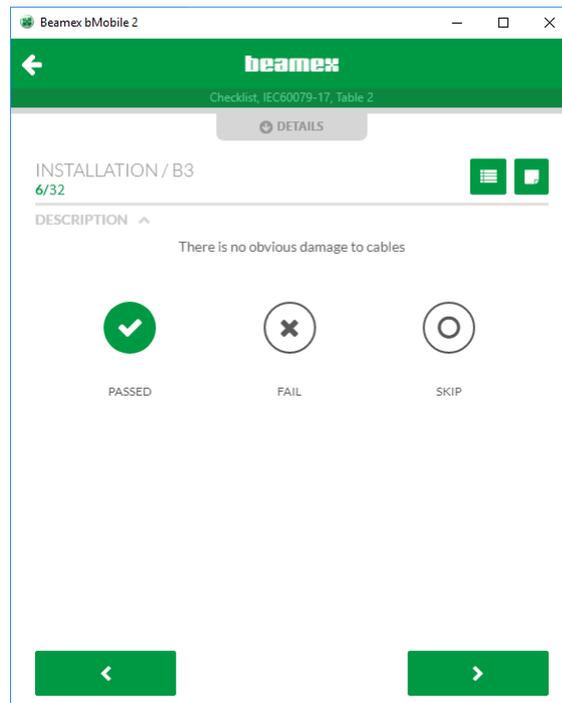


Figure 48: Passed check

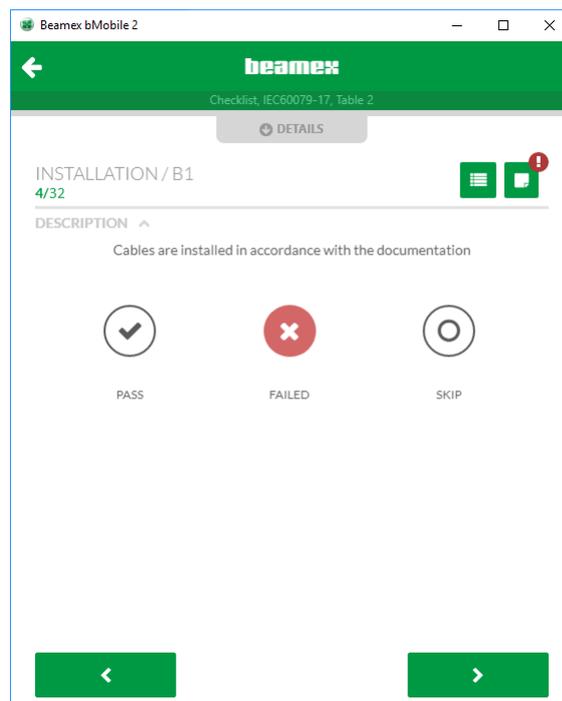


Figure 49: Failed check with an added note

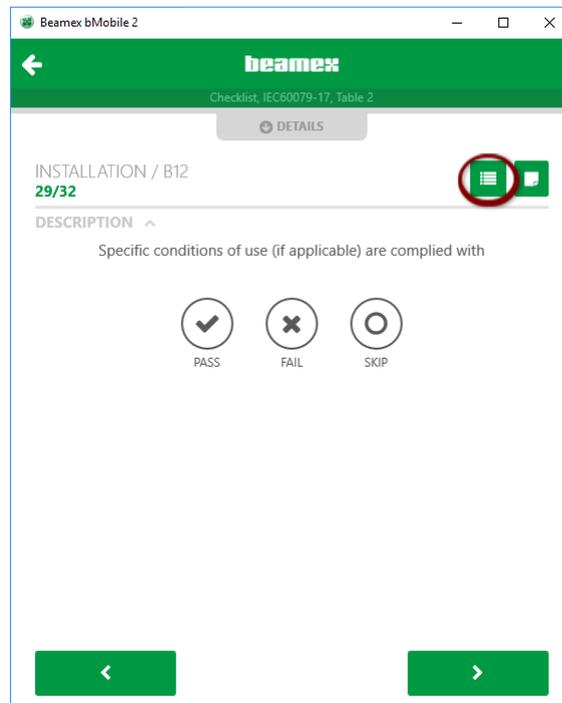


Figure 50: At check B12, 29 of 32, Overview button is highlighted

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 picture below. You may return to check view using the check view button highlighted in the picture below.

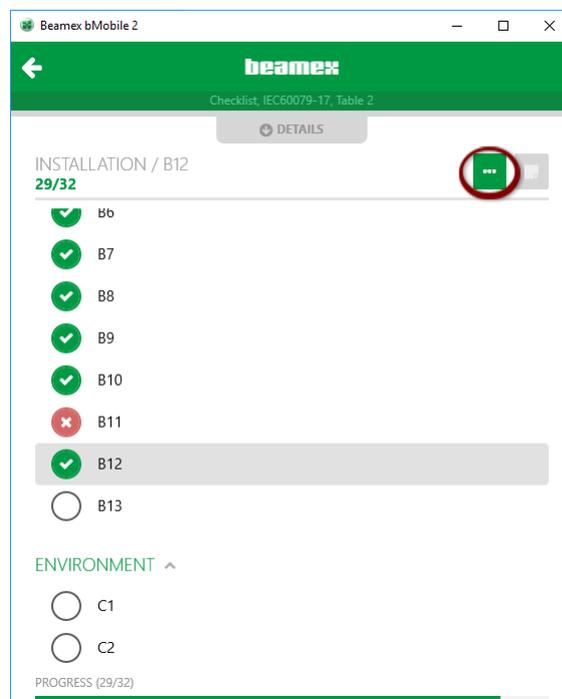


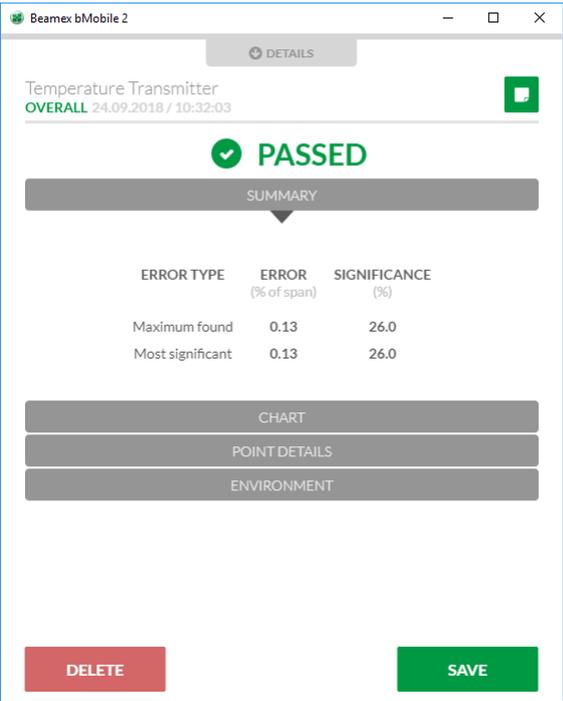
Figure 51: Overview selected. Check view button is highlighted

Continue through all checks to advance to [Ending a Calibration/Checklist Run](#).

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.

Figure 52: Calibration summary for a temperature transmitter



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.

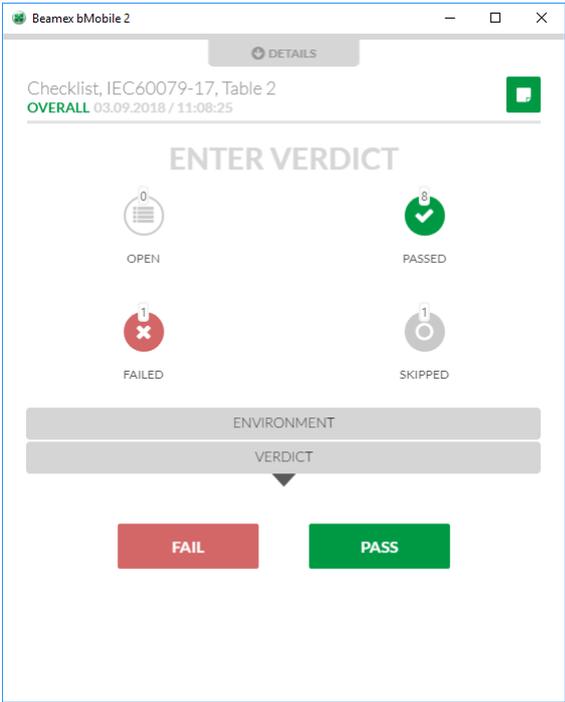
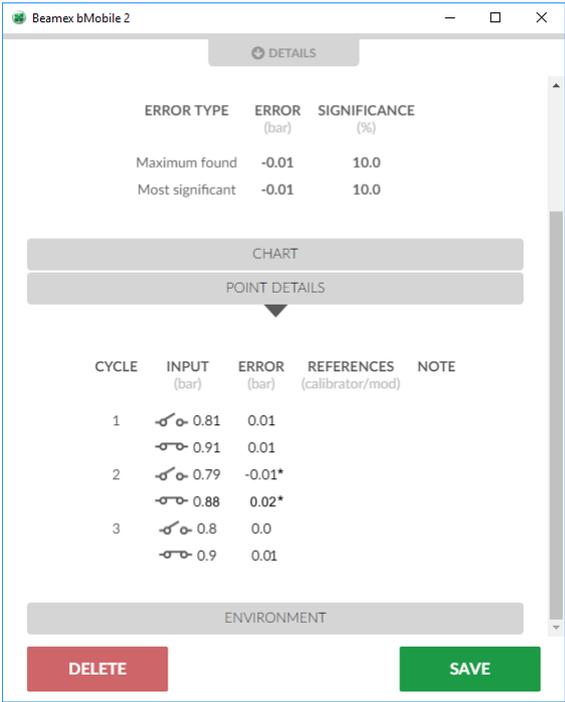


Figure 53: Checklist run's overall view



 **Note:** An asterisk (*) in Switch point details 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.

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

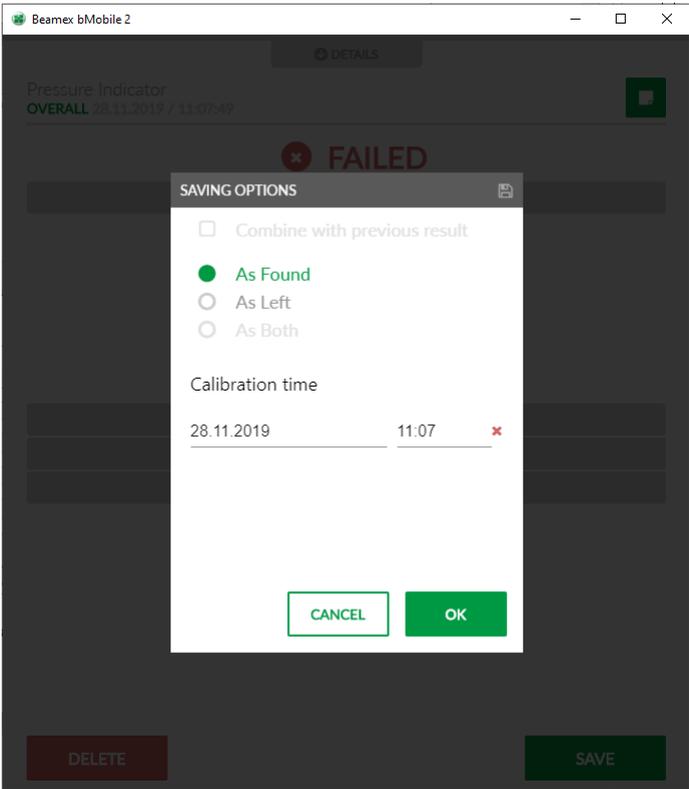


Figure 54: Options for saving a calibration

Change of calibration time from present to past is possible (with CMX version 2.12 or higher), but the availability of this feature depends on "Manual Entry - Calibration time edit" user group permission and *Mobile Security Plus* license option. See CMX user manual for more information.

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.

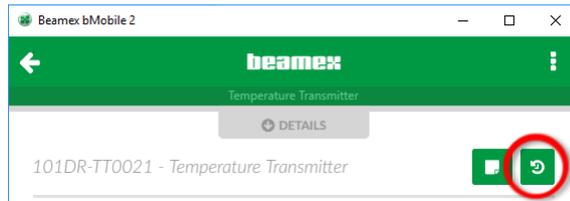


Figure 55: Calibration history button highlighted

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

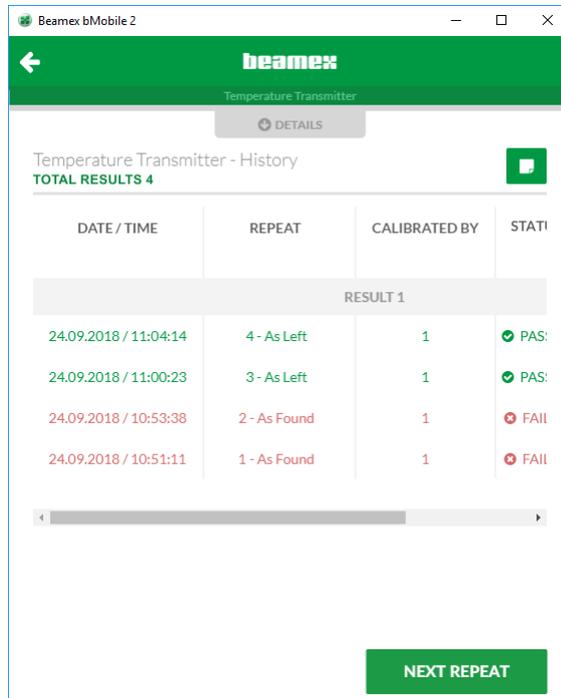


Figure 56: Calibration history for a Temperature transmitter

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

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.

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

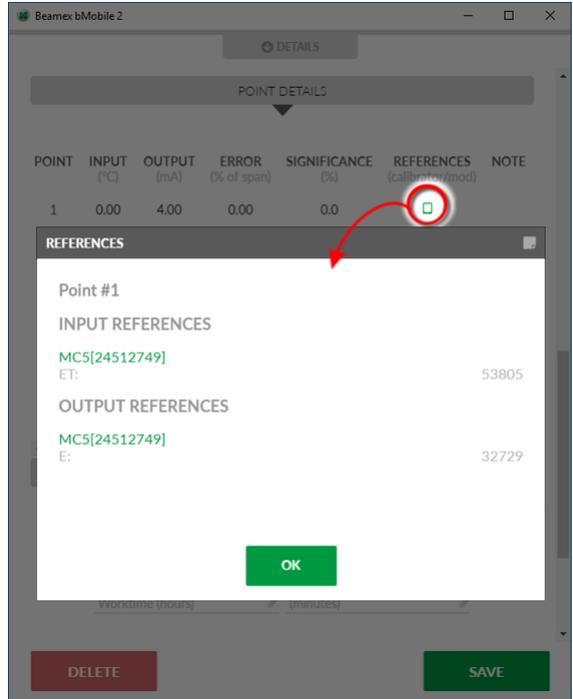


Figure 57: Numeric results with reference info opened

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.



Figure 58: Graphic results with info pop-up 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**
- **APPLICATIONMODE**

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="I"
```

```
APPLICATIONMODE="logical"
```



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>cwsic</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>
      <applicationMode>cmx</applicationMode>
    </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 MSIEEXEC	Parameter Name in XML	Corresponding options in MSIEEXEC 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	<i>Address to any server where CWSI server is installed.</i>	SERVERADDRESS	serverAddress	<i>E.g. "connect.beamex.com", a string</i>
Port	<i>Port available in CWSI server.</i>	PORT	port	<i>E.g. "443", a number</i>
Endpoint	<i>Endpoint defined in CWSI server.</i>	ENDPOINT	endPoint	<i>E.g. "cwsI", a string</i>
Secure connection	On Off	SECURECONNECTION	secureConnection	true false
Application mode selection	CMX/LOGICAL	APPLICATIONMODE	applicationMode	undefined cmx logical

Calibration Web Service Interface (CWSI)

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

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.

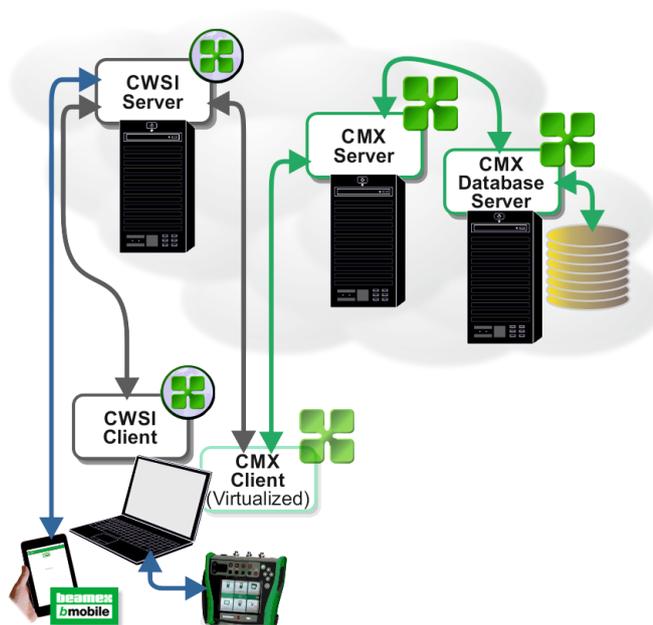


Figure 59: CWSI Structure

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**.



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** and also chapter **CWSI Server**.

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 below is from Windows[®] 10.

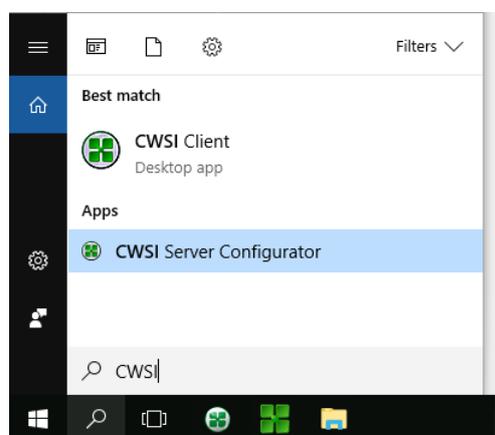


Figure 60: Windows search tool

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.

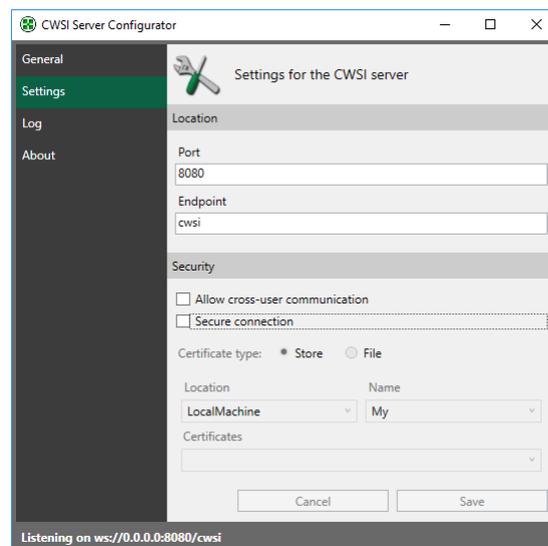


Figure 61: CWSI Server Configurator's Settings page

- **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. |keyword=File Parameters,File |keyword=CWSI Server,File Parameters,File
 - **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.



Note: 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.

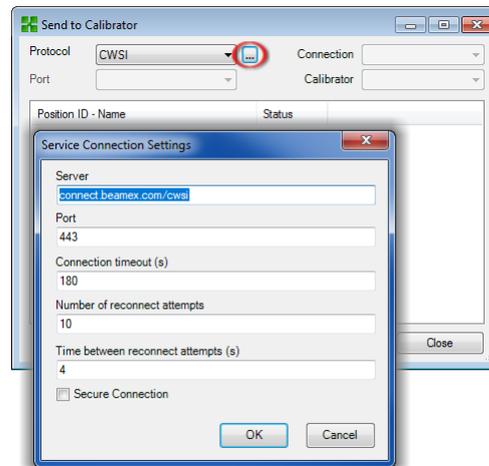


Figure 62: CWSI communication settings in CMX

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.

3rd Party Licenses

The third party licenses are presented in alphabetic order.

@date-io

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Index

A

Abnormal reading.....	32
Appendix.....	55

B

Barcode reader.....	26
Button.....	
Advance.....	30
Back.....	30
Graph toggle.....	30
Grouping tool.....	34
Notes.....	30
References.....	30
Skip point.....	30
Undo.....	30
Weight set.....	30

C

Calibrating.....	
Standard Instruments.....	39
Switches.....	40
Weighing Instruments.....	42
Calibration history window.....	24, 52
Calibration results.....	24
Calibration run.....	34
Check status.....	
Fail.....	45
Pass.....	45
Skip.....	45
Checklist Run.....	29, 45, 49
Common features.....	
Entering readings.....	32
Notes.....	32
Notes and calibration history.....	29
Pausing a calibration.....	34
CWSI.....	
Client.....	59
Server.....	59
CWSI Architecture.....	59

E

Environment data.....	49
Environment units.....	17

G

Google play.....	5
Graph view.....	39
Group view.....	34

H

Home view.....	
About.....	22
Connect.....	19
Context menu.....	23
Demo mode.....	20
Main Menu.....	15
Mobile Security Plus.....	9
Settings.....	17
Sign out.....	23
Support.....	21
Tools.....	25

I

Installation.....	5
Instrument list.....	24
Introduction.....	4

L

Language.....	17
Login Problems.....	12

M

Maintenance inspection.....	45
Mobile Security Plus.....	
Login.....	10

N

Numeric keypad.....	32
---------------------	----

Q

QR Code.....	26
--------------	----

R

References.....	36
Result window.....	49

S

Send/Receive window.....	59
Server address.....	17
Service Connection Settings.....	6
Supported barcode types.....	26
Supported instrument types.....	4
Supported platforms.....	4
System requirements.....	5

T

Troubleshooting.....	
CMX.....	64
CWSI server.....	64

U

Unstable reading.....	32
User Interface.....	15

W

Work order number.....	24
------------------------	----