

eyeD User Manual

Version	Date	By
01.00.003	July 2019	SMT

Manual for operators of the eyeD

1. VERSION HISTORY.

Version	Date	ID	Comment
01.00.003	Jul. 2019	JDP	Added some pictures
01.00.002	Nov. 2016	JDP	Added some screencopies
01.00.001	Mar. 2016	BPR	Removed dummy pictures for first use.
01.00.000	Dec. 2015	SMT	Initial release.

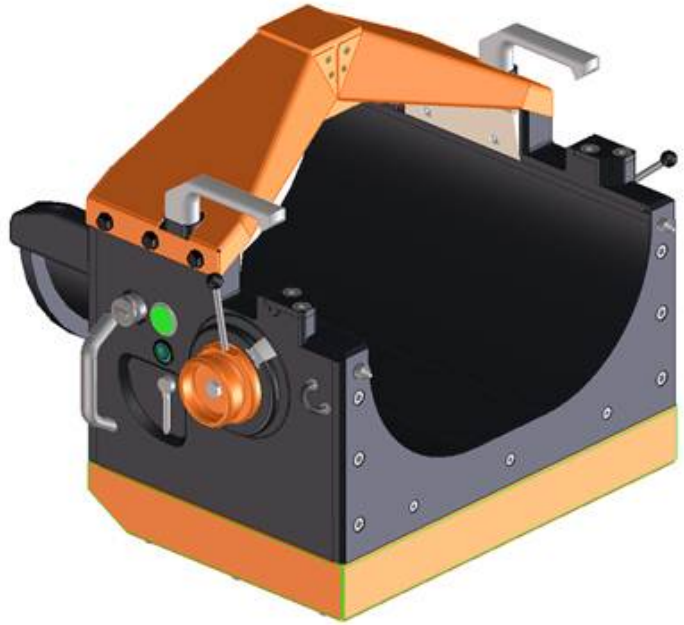
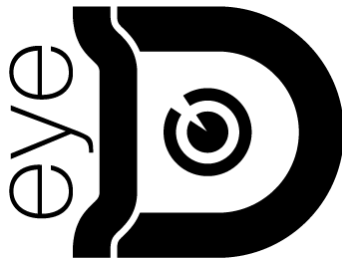
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3. REFERENCED DOCUMENTS

4. OVERVIEW

This document describes the use of the eyeD device for operators.



5. QUICK STEP BY STEP INSTRUCTIONS

- Switch on the device by pressing the green button
- Wait until the indicator starts flashing red (slowly)
- Connect (via Wi-Fi) to the eyeD with your smartphone, tablet,...
- Login to the device
- Set the default settings for the measurements
- Wait until the indicator is continuously green
- For each measurement (truck)
 - Make sure the eyeD is empty (no remaining concrete in the chute) and clean
 - Hook the device to the truck
 - Check if the indicator blinks green for correct hooking
 - Observe the unload (e.g. balling)
 - Enter mandatory and specific info about the unload using your phone or tablet
 - Unhook the device
 - Check the measurement results
- Switch of the device

6. PARTS OF THE EYED

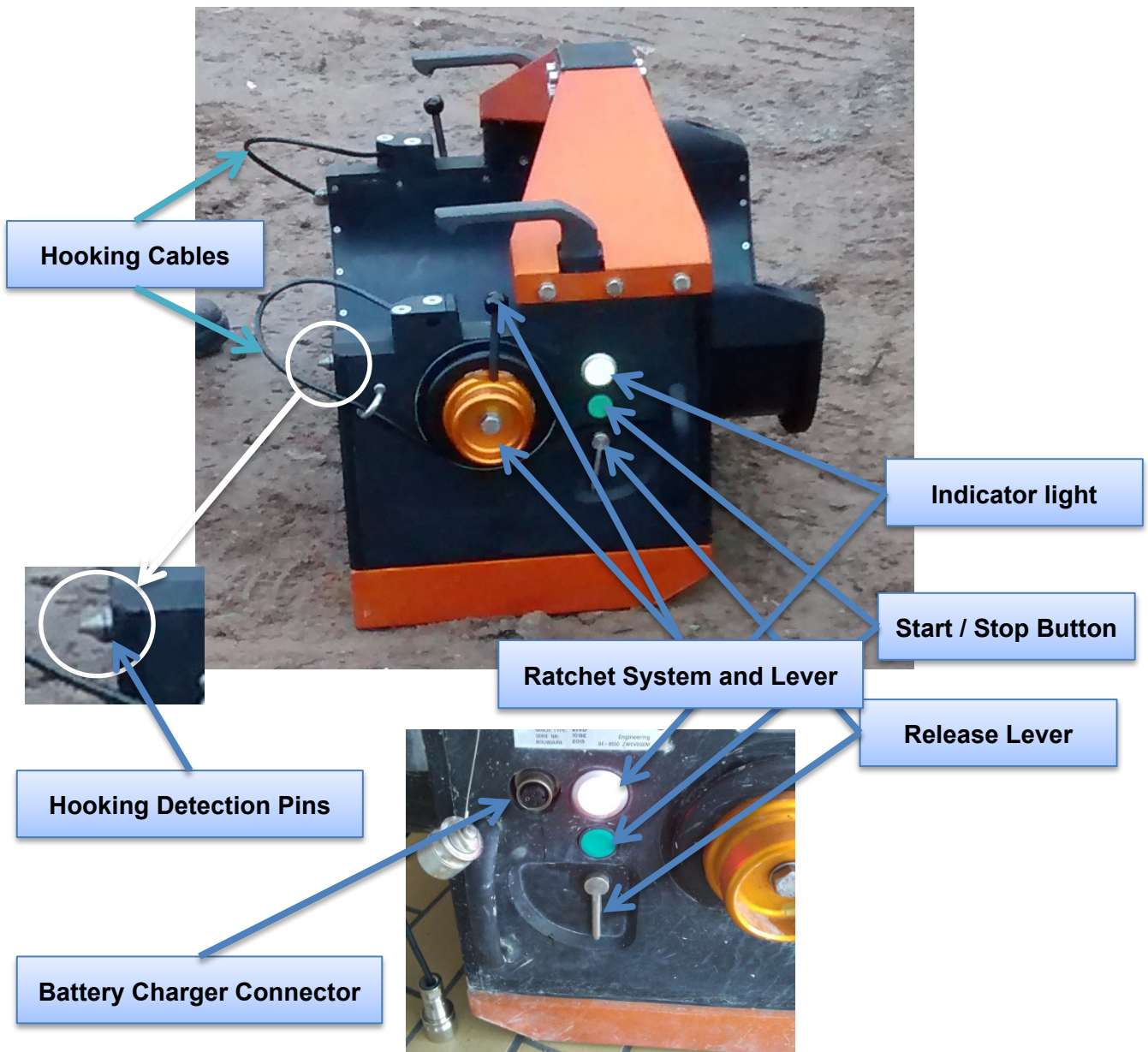


Figure 1 : Parts of the eyed

7. INDICATOR LIGHT

The indicator light(s) on the side of the device are used to signal the status to the operator.

Following conditions are possible

Initialization of the device (continuous red)

Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Heat-up phase (slow blinking red)

Red	Red	Red	Red	Red	Off	Off	Off	Off	Off
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Stand-by, Ready for measurement and operator logged in (continuous green)

Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Stand-by, Ready for use but operator NOT logged in (fast blinking green)

Green	Off	Green	Off	Green	Off	Green	Off	Green	Off
-------	-----	-------	-----	-------	-----	-------	-----	-------	-----

Measurement mode (slow blinking green)

Green	Green	Green	Green	Green	Off	Off	Off	Off	Off
-------	-------	-------	-------	-------	-----	-----	-----	-----	-----

Switching off or defect in the device (fast blinking red)

Red	Off	Red	Off	Red	Off	Red	Off	Red	Off
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Switching Off, battery dead (alternating fast red/green blinking)

Red	Green	Red	Green	Red	Green	Red	Green	Red	Green
-----	-------	-----	-------	-----	-------	-----	-------	-----	-------

8. EYED USE

8.1. POWER ON

Switch on the device by pressing the green button.



Figure 2 : Power On of the eyeD

The indicator light goes red indicating the start-up phase.

Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

After a short while the indicator goes to slowly blinking red indicating the heat-up phase.

Red	Red	Red	Red	Red	Off	Off	Off	Off	Off
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

During the heat-up phase the eyeD is ready to log-in via tablet or smartphone (see 9.3. for detailed information)

When the heat-up phase is done (up to 5 minutes) the indicator light changes to green, either continuously or fast blinking indicating the ready state of the eyeD. (see 9.3. for detailed information)

Continuous = eyeD ready for measurement and operator logged in

Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Fast blinking = eyeD ready for measurement but no operator logged in.

Green	Off	Green	Off	Green	Off	Green	Off	Green	Off
-------	-----	-------	-----	-------	-----	-------	-----	-------	-----

8.2. HOOKING & MEASURING

The eyeD can be hooked to the last chute of a mixer by using the ratchets and cables on both sides of the eyeD. When the eyeD is hooked it will automatically start a measurement.

Note : A limited number of chutes with a specific shape (rectangular, too narrow, ...) cannot be fit to the eyeD.

Step 1 : Loosen the cables by using the release levers on both sides of the eyeD. Pull the cable while pulling the release lever.



Figure 3 : Releasing lever and cables

Step 2 : Make sure the eyeD is empty and clean. No remaining concrete and/or Dramix fibres can be left in the chute



Do not hook the eyeD in this condition. Clean and remove the remaining concrete first. If not cleaned, results will be unreliable.



Clean eyeD, ready for hooking (if the indicator light is green)

Figure 4 : Clean eyeD

Step 3 : Hook the eyeD to the last chute of a truck-mixer

It will automatically detect if it's hooked (and start measuring) by means of both pins being pressed.



Hook the cables over the hooks of the truck-chute.


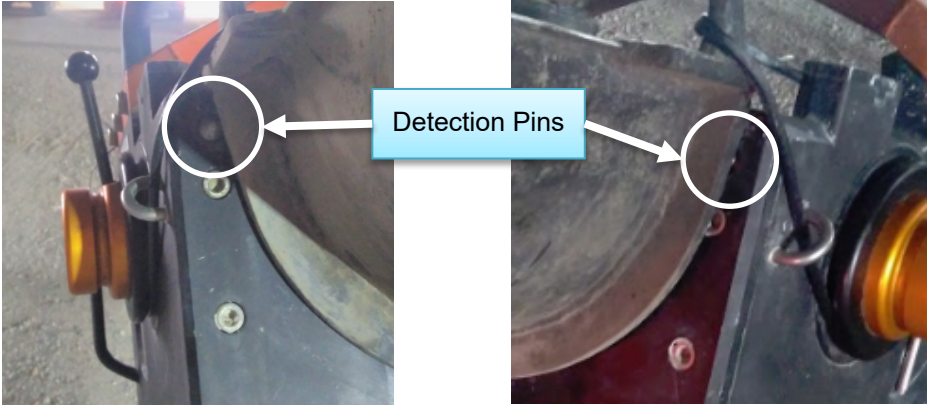

	<p>Tighten the cables with the ratchets on both sides of the EyeD. Make sure the EyeD is centered on the truck-chute</p>
	<p>Make sure both detection pins are pressed by the truck-chute. If the EyeD is centered both pins are pressed equally. (this is not the case in the example pictures)</p>
	<p>Make sure there's no gap at the bottom to avoid spillage of concrete. If there's a gap, tighten the cables. If that doesn't help it is possible that the EyeD is not fitted to use on that brand of chute.</p>

Figure 5 : Hooking the EyeD

Step 3 : Measurement is automatically started when both pins are depressed. To allow for some positioning and adjusting the measurement is only started when both pins are depressed continuously during 10 seconds. This is indicated by the light blinking slowly green.



Figure 6 : Detection pins

Slow blinking LED indicating a measurement is busy

Green	Green	Green	Green	Green	Off	Off	Off	Off	Off
-------	-------	-------	-------	-------	-----	-----	-----	-----	-----

Step 4 : Enter mandatory data of the measurement during the unload using your smartphone or tablet. (See 9. For more information)



Figure 7 : Concrete flowing

8.3. UNHOOKING

When the eyeD is unhooked it will automatically end the measurement. This is detected by both pins being released during 10 seconds. Unhooking can be done by lifting the eyeD or loosening the cables by using the release levers.



Pull the release lever to release the cable tension.



Lift the EyeD and detach it from the truck-chute.

Figure 8 : Unhooking

When unhooked the indicator will change from slow blinking green to slow blinking red, indicating a short processing/initialisation phase

Red	Red	Red	Red	Red	Off	Off	Off	Off	Off
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

After this phase the indicator will return to green fast blinking or green continuously indicating that the eyeD is ready for a next measurement.

Continuous = eyeD ready for measurement and operator logged in

Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Fast blinking = eyeD ready for measurement but no operator logged in.

Green	Off	Green	Off	Green	Off	Green	Off	Green	Off
-------	-----	-------	-----	-------	-----	-------	-----	-------	-----

8.4. POWER OFF

Power off is simply done by pressing the green button during 10 seconds. Keep pressing the button until the indicator starts flashing red fast.

Red	Off	Red	Off	Red	Off	Red	Off	Red	Off
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

8.5. BATTERY

Battery power (when fully charged) should be enough to use the eyeD on site during a full day. In the hooked state the eyeD is capable of measuring 8 hours. In the unhooked or standby state, battery should last for at least 16 hours or more.

Whenever the battery is low, the eyeD will do an automatic shutdown. This is indicated by the indicator light, blinking red/green.

Red	Green	Red	Green	Red	Green	Red	Green	Red	Green
-----	-------	-----	-------	-----	-------	-----	-------	-----	-------

To charge the battery, just connect the battery charger to the plug and wait until LED 2 becomes green.

Note : Connect the charger to the main power before connecting to the eyeD!



Charger unit
LED 1 = Connected to mains
LED 2 = Charging
→ Red = Charging
→ Green = Finished



Connector for charging cable

Figure 9 : Battery Charging

8.6. CLEANING

When finished on a job site it's very important to make sure the eyeD is cleaned. You may use water, hoses and a brush to remove concrete in the chute.



Figure 10 : Cleaning the eyeD

9. USER INTERFACE

Next to the light indicator there's a more extended user interface which can be used from any device capable of Wi-Fi connection and running an internet browser.

Note that the device cannot be used without this extended user interface since it is needed to enter mandatory data for each measurement.

9.1. CONNECTING TO WI-FI

The eyeD has its own Wi-Fi network to which you can connect

- Network name **eyeD_xy** (where xy is the name of the specific eyeD).
- Password : **1234567890** (same password for every eyeD)

Note : since several eyeD's can be in use on a jobsite, make sure you connect to the correct eyeD Wi-Fi network to enter your data.

As an alternative to manually entering the W-Fi credentials, it is possible to use one of the QR codes on the device (if present and readable). Use a QR code read on your smartphone to establish the connection.



Figure 11 : Example of QR code

Note : Connecting to Wi-Fi via QR code may only work on Android devices.

9.2. USER INTERFACE

Once a connection is established with the eyeD Wi-Fi you can connect to the user-interface. Use any browser and enter the following URL <http://192.168.4.1/> (same URL for all eyeD's)



Figure 12 : URL of eyeD

Similar to connecting to the Wi-Fi, it's also possible to use the QR code on the device.

9.3. LOGIN

Use the credentials (customer ID and pin code) you received from your company administrator to login to the eyeD

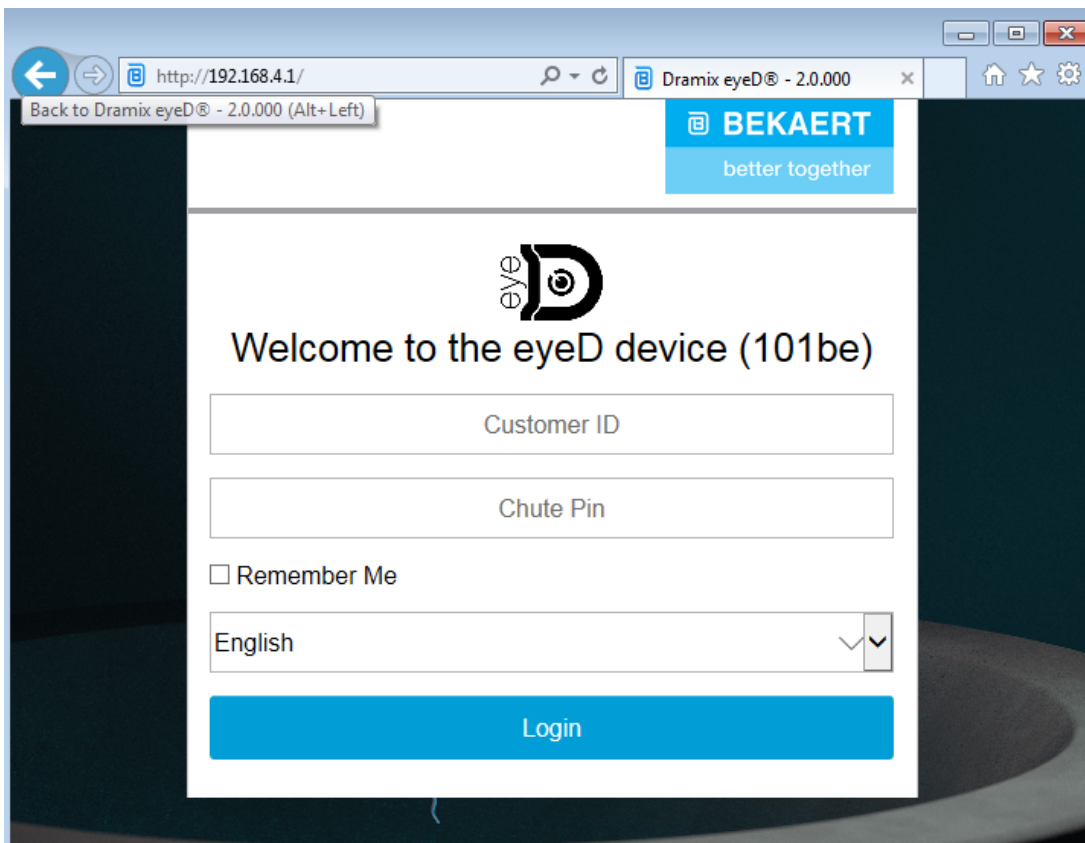


Figure 13 : eyeD Login screen

9.4. DEFAULT SETTINGS

After a successful login, the eyeD automatically shows the screen with 'Default Settings'. The 'Default' settings are used as common settings for every measurement done as long as the eyeD is not shutdown. Most settings can be selected from a dropdown list.

The content of the dropdown lists is automatically downloaded from the server and should contain the projects and sectors as defined by the customer admin. If the dropdown lists do not contain the required default settings, then a new set of defaults can be created by using the 'Create New Default Settings' button.

Select Default Settings

Successfully logged in and welcome to the eyeD.

Operator
Select a value

Project
Another Test

Sector
Sector 1

Target Fibre Type
3D 45/50BG

Dosage (kg/m³)
Target dosage in kg/m³

Create New Default Settings

Save Defaults

Use the dropdown lists to select the default parameters for all unloads.

- Operator
- Project
- Sector
- Target Fibre Type
- Dosage

Press the 'Create New Default Settings' if the dropdown list does not contain the required defaults.

Press the 'Save Defaults' button to continue to the measurements screen

Dropdown with list of fibre types.

Target Fibre Type
3D 45/50BG
3D 45/50BL
3D 55/60BL
3D 65/60BG
3D 80/60BG
4D 55/60BG
4D 65/60BG
5D 65/60BG

Figure 14 : Select Default Settings

When pressing the 'Create New Default Settings' button, a new screen will be opened where additional defaults can be entered.

The screenshot shows a mobile application screen titled "Create New Default Settings". The screen contains several input fields for setting defaults:

- Operator:** A text field containing "Johan".
- Project:** A text field containing "Another Test".
- Sector:** A text field containing "Sector 1".
- Target Fibre Type:** A dropdown menu showing "3D 45/50BG".
- Dosage (kg/m³):** A text field containing "35" with a unit indicator "kg/m³".

At the bottom of the screen are two buttons: a red "Cancel" button and a green "Save New Settings" button.

Callouts provide instructions:

- A blue box on the right states: "Enter new values which will be used as defaults for all upcoming unloads." followed by a list:
 - Operator
 - Project
 - Sector
 - Target Fibre Type
 - Dosage
- A blue box at the bottom right states: "Press 'Save New Settings' to save the entered values and use them as new set of defaults." with an arrow pointing to the green button.
- A blue box at the bottom left states: "Press 'Cancel' to return to the previous screen without saving the defaults." with an arrow pointing to the red button.

Figure 15 : Create new defaults

9.5. MAIN SCREEN

The 'Main Screen' is divided into 3 parts :

- General info and status on top of the screen
- Defaults or Unload in the centre of the screen
- List of unloads at the bottom of the screen

The screenshot displays the main interface of the BEKAERT system, divided into three distinct sections. The top section, titled '101be', shows the status as 'Standby Ready' and includes an information icon and a battery indicator. The middle section, 'Selected Defaults', lists key parameters such as Operator (Johan), Project (Another Test), Sector (Sector 1), Target Fibre Type (3D 45/50BG), and Dosage (35 kg/m³). The bottom section, 'Your Unloads', provides a detailed list of completed measurements, including their IDs, start times, and durations.

Measurement ID	Start	Duration (min)
101be_000168	2015-12-04 13:44:22	13.9
101be_000167	2015-12-04 13:04:25	8.2
101be_000166	2015-12-04 12:19:55	7.6
101be_000165	2015-12-04 11:54:18	11.1
101be_000164	2015-12-04 11:12:43	21.0
101be_000163	2015-12-04 10:27:25	19.9
101be_000162	2015-12-04 10:03:20	0.2

Figure 16 : Main Screen

9.5.1. Status & Info

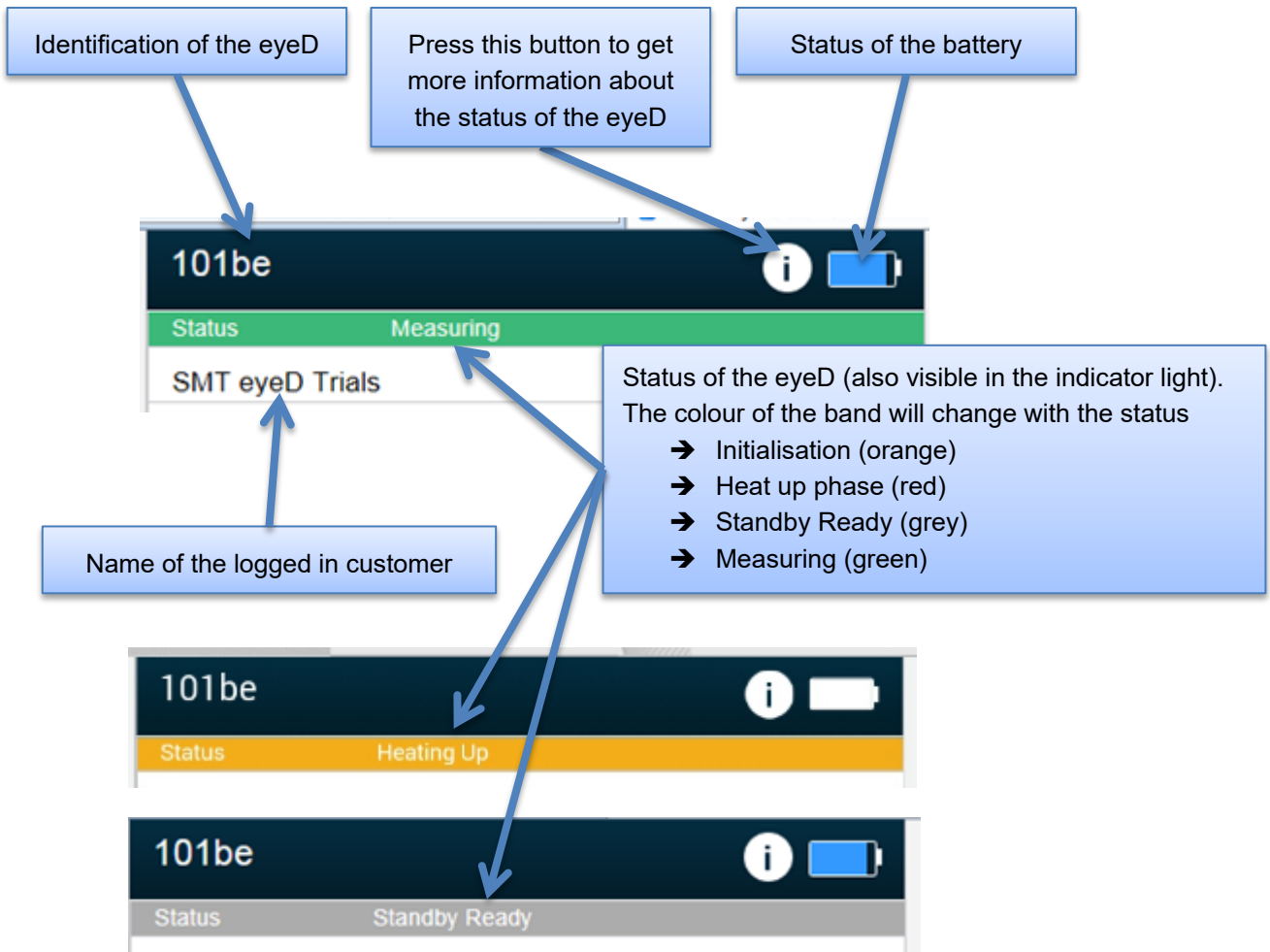


Figure 17 : Status & Info Screen

9.5.2. Default settings or Current Unload

Depending of the status of the eyeD, standby or measuring, the selected default settings or the status of the current load is shown in the centre of the screen. The information is very similar. When the eyeD is measuring it shows unique identification of the measurement. This unique identification is important to retrieve data or contact the Bekaert administrator in case of problems.

The image shows two screenshots of the Bekaert interface. The top screenshot displays the 'Selected Defaults' screen with a callout box stating: 'When no unload is busy, the selected defaults are shown'. The bottom screenshot displays the 'Current Unload' screen with a callout box stating: 'When the eyeD is in measurement mode, the settings of the unload are shown together with the unique identifier of the measurement.' The 'ID' field in the 'Current Unload' screen is highlighted with a red box, and a callout box points to it with the text: 'Unique identifier of the measurement.'

Selected Defaults	
Operator	Johan
Project	Another Test
Sector	Sector 1
Target Fibre Type	3D 45/50BG
Dosage (kg/m ³)	35 kg/m ³

Current Unload	
ID	101be_000169
Operator	Johan
Project	Another Test
Sector	Sector 1
Target Fibre Type	3D 45/50BG
Dosage (kg/m ³)	35

Figure 18 : Defaults Settings or Current Unload

9.5.3. Finished unloads

The list of unloads is limited to your own unloads/measurements. It is not possible to view measurements done by other customers. When a measurement is busy, it is clearly shown in the list and can be edited. The information of finished unloads can no longer be edited or changed.

The list shows for each unload :

- Unique measurement identification
- Start of the measurement
- Duration of the measurement

The list is always sorted on date and starts with the most recent measurement.

Your Unloads		
Measurement ID	Start	Duration (min)
101be_000168	2015-12-04 13:44:22	13.9
101be_000167	2015-12-04 13:04:25	8.2
101be_000166	2015-12-04 12:19:55	7.6
101be_000165	2015-12-04 11:54:18	11.1
101be_000164	2015-12-04 11:12:43	21.0
101be_000163	2015-12-04 10:27:25	19.9
101be_000162	2015-12-04 10:02:20	0.2

Finished measurements which can no longer be edited.

Your Unloads		
Measurement ID	Start	Duration (min)
101be_000169	2015-12-18 13:26:35	Edit
101be_000168	2015-12-04 13:44:22	13.9
101be_000167	2015-12-04 13:04:25	8.2
101be_000166	2015-12-04 12:19:55	7.6

Active measurement marked in green can be edited.

Figure 19 : List of Unloads

9.6. EDIT THE ACTIVE MEASUREMENT

By clicking on the 'Edit' button in the list of measurements the information about the unload can be updated. Some values are copied from the default settings, some values are mandatory and must be entered manually.

101be_000169

Operator: Johan

Project: Another Test

Sector: Sector 1

Target Fibre Type: 3D 45/50BG

Dosage (kg/m³): 35

Target volume: Volume of concrete in m³

Truck empty? Empty Not Empty

Balling observed? Yes No

Delivery note: Delivery note

Remarks: Observations during the unload

Cancel **Save Data**

Parameters entered (copied) automatically from the default settings.

- Operator
- Project
- Sector
- Target Fibre Type
- Dosage → Dosage is a mandatory field which has a default value.

Mandatory data that needs to be entered manually or reviewed.

- Dosage
- Target Volume
- Truck Empty → By default this value is always set to 'Empty'

Optional data

- Balling observed
- Delivery Note
- Remarks

Press 'Cancel' or 'Save Data' to return to the overview screen.

Figure 20 : Entering unload data

Note : The mandatory fields are needed for correct processing and displaying of measurements.

9.7. DETAIL SCREEN OF FINISHED MEASUREMENT

Of each finished unload a preliminary report can be viewed on the tablet or smartphone. Click any finished unload to view a plot of the measured data.

Note : A more extensive report and pdf creation can be made on the server.

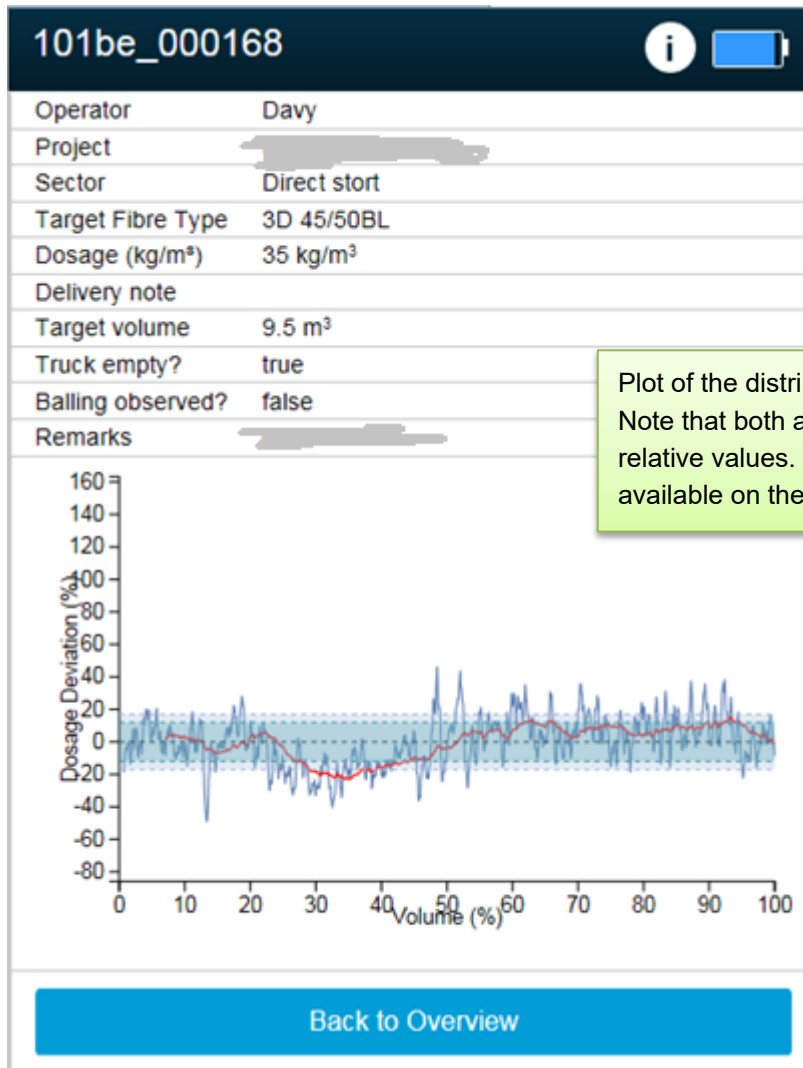


Figure 21 : Plot of an unload

10. TROUBLESHOOTING

During operation some things can go wrong, especially in a rough environment.

10.1. ERRORS ON THE DEVICE

Whenever an error occurs on the device the user-interface is automatically redirected to the error page. The error page shows, if known, the source of the error and possible solutions to solve the error.

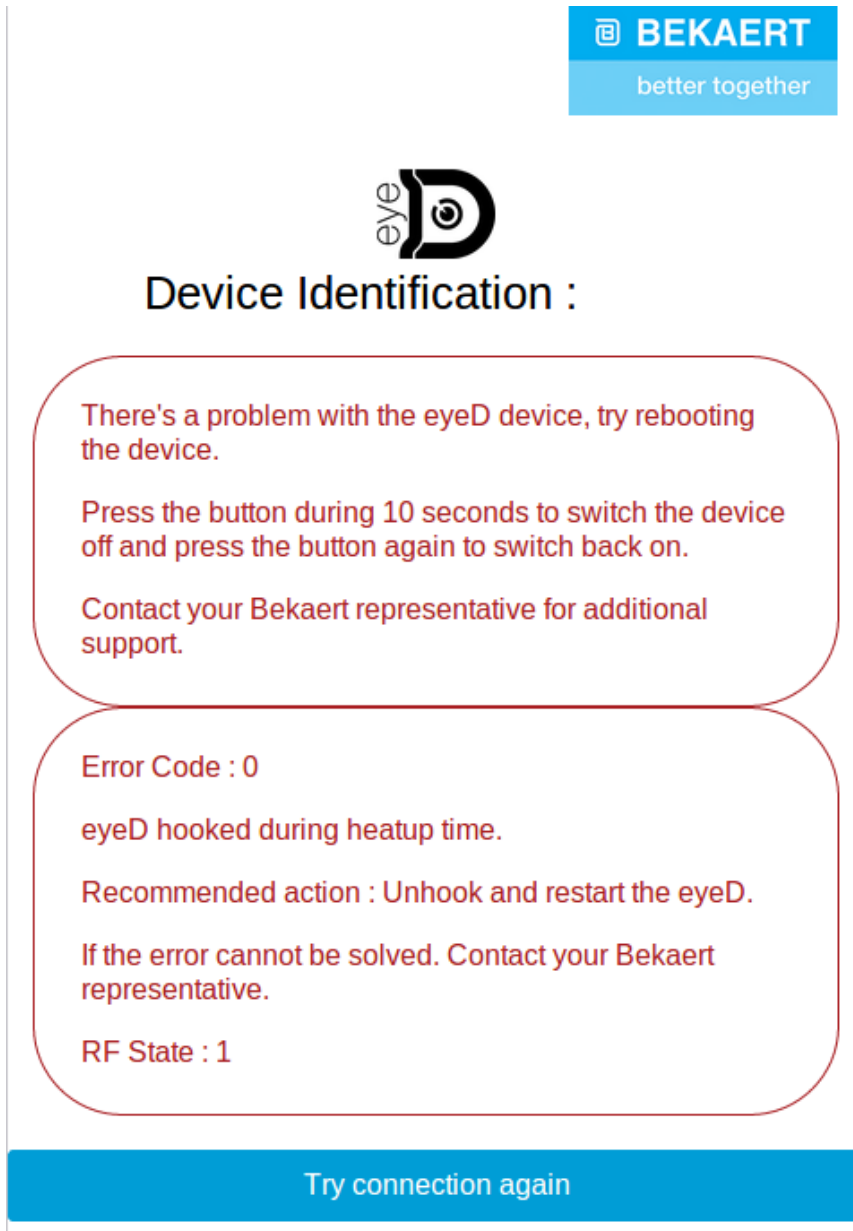


Figure 22 : Error on the eyeD

10.2. HARDWARE ERROR ON THE DEVICE

In case of a hardware error, e.g. height sensor blocked, the indicator will blink fast red

Red	Off	Red	Off	Red	Off	Red	Off	Red	Off
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

In some cases the problem can be solved by following these simple steps :

- Power off the eyeD
- Clean the eyeD
- Check if
 - Height sensor is clean an concrete or other dirt is blocking the sensor. The height sensor can be found in top of the triangle above the chute.



Figure 23 : Keep sensors clean

- Detection pins are not depressed when the chute is not hooked. Press the pins a few times to make sure they extend to their original position.

- Power on the eyeD

If the problem is not solved (eyeD returns to error state) the device must be returned for revision.

10.3. SEQUENCE OF HOOKING

Whenever the correct procedure is not followed the eyeD will go into error and power down automatically. Main reason for this is that the eyeD is hooked before it was in a stand-by state. Never hook the eyeD when the indicator light is red (any state). Only hook the eyeD when the indicator light is continuously green.

10.4. OTHER CASES YET TO BE DEFINED

...

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