APPLICATION SOFTWARE FOR

A1410 PULSAR

USER MANUAL

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Saarbrücken, Germany 2019

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1

INSTALLATION FROM GOOGLE PLAY

Open the “Google Play” application on your Android phone. Type “a1410 pulsar” into the search field and you will find the “A1410 Pulsar” application (Fig. 1.1).

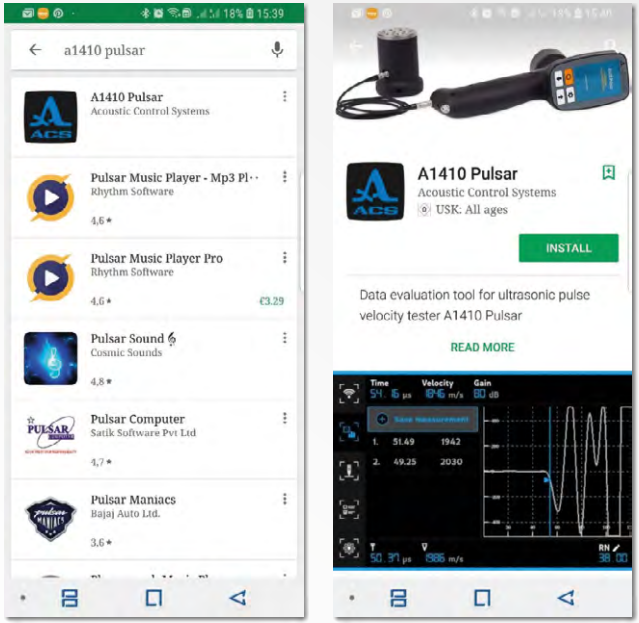


Fig. 1.1. Find application in Google Play

Click on the “Install” button. All installation procedures will be performed automatically (Fig. 1.2).

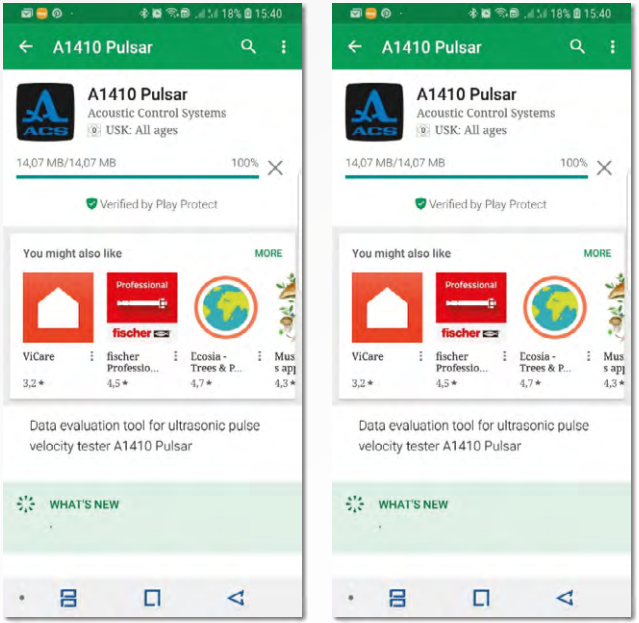


Fig. 1.2. Installation from Google Play

2

FIRST LAUNCH

The first launch of the application will require special permission, such as access to your phone's storage. Storage permission is required only for saving and retrieving data files and other settings files on your Android phone's internal storage. Click on the "Allow" button (Fig. 2.1).

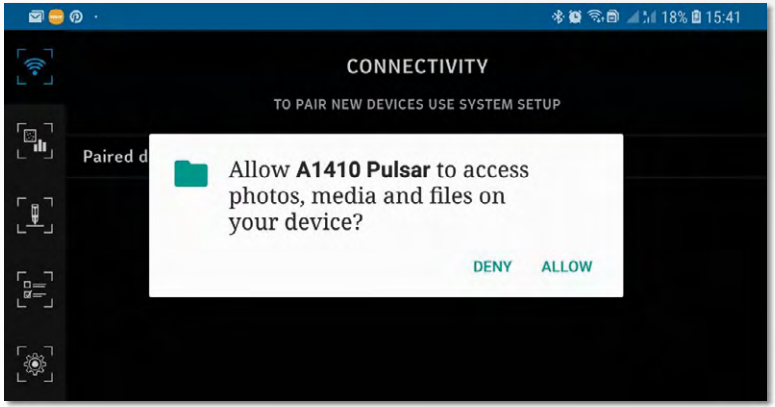


Fig. 2.1 Access permission for the application A1410 Pulsar

PAIRING FOR ANDROID DEVICES VIA BLUETOOTH SETTINGS

3

Communication with an A1410 device is possible only if the device is paired. You can pair a Bluetooth device using the Bluetooth setting.

1. Turn on the A1410 device.
2. Go to the Bluetooth setting and start discovering. The A1410 device will appear in the "Available devices" section (Fig. 3.1).
3. Click on the A1410 device. A pop-up window will be shown. Enter the pin "0000" and click "OK" (Fig. 3.2).
4. The device will be paired and shown in the "Paired devices" section (Fig. 3.3).

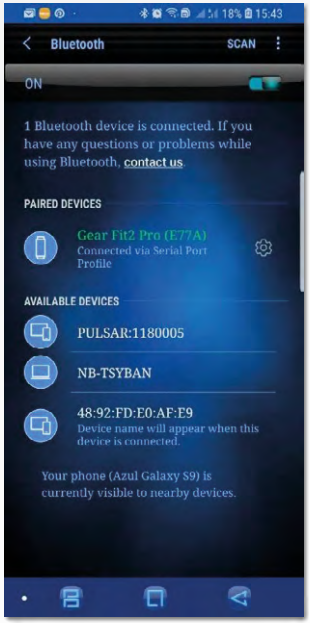


Fig. 3.1 Bluetooth pairing: step 1

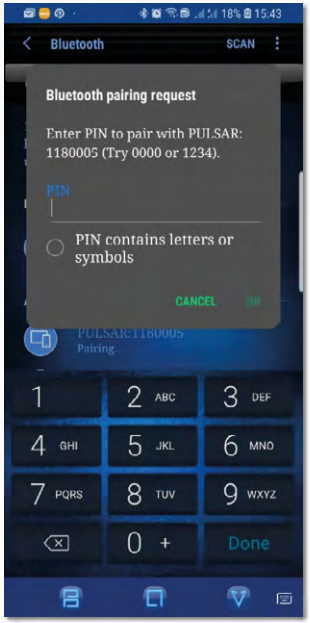


Fig. 3.2 Bluetooth pairing: step 2

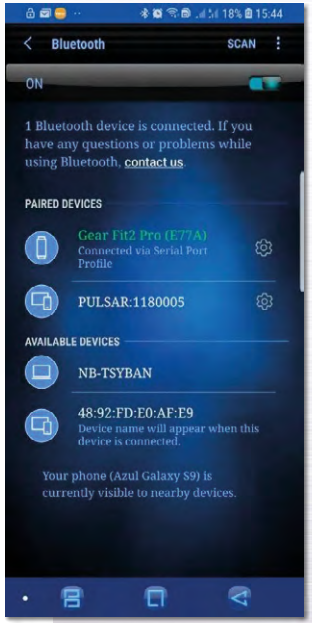


Fig. 3.3 Bluetooth pairing: step 3

4

APPLICATION OPERATION

The application has sidebar navigation placed on the left of the landscape layout (Fig. 4.1).
It consists of the following tabs:

- Connectivity
- Inspection
- Quality grading
- SonReb
- Settings

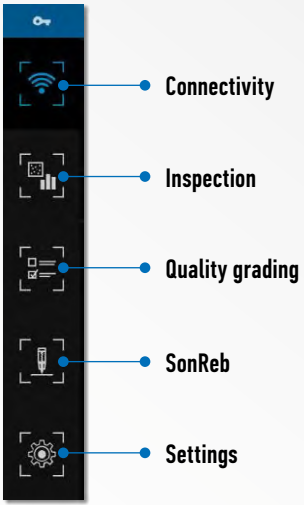


Fig. 4.1 Sidebar navigation

4.1. Connectivity tab

This page shows the list of A1410 paired devices (Fig. 4.1.1).

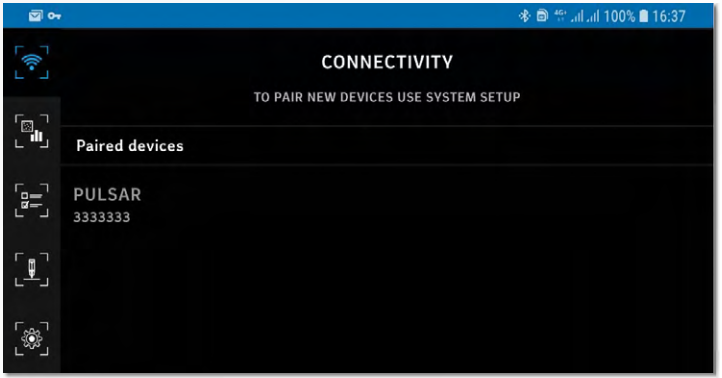


Fig. 4.1.1 Connectivity tab

4

Click on the desired device to start a connection with it (Fig. 4.1.2).

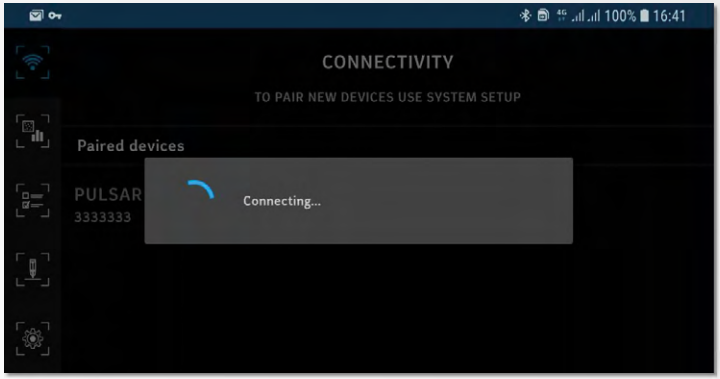


Fig. 4.1.2 Connection to the device

If the connection is successful, the device stays selected (Fig. 4.1.3).

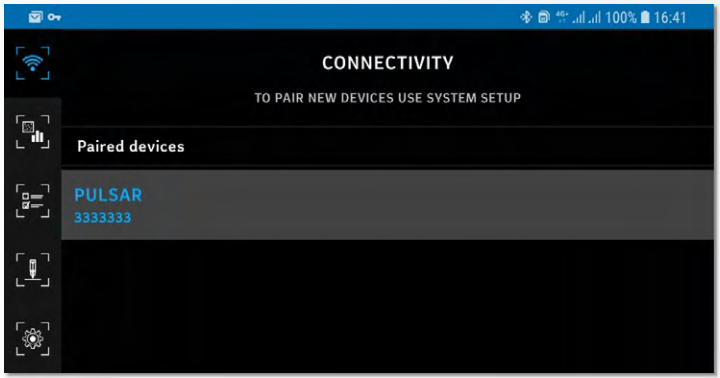


Fig. 4.1.3 Connected device

4.2. Settings tab

This page shows a list of settings with available options (Fig. 4.2.1).
Besides the information about the application version, the following options can also be selected:

- Language: English or Russian
- Unit of measure: mm or inch

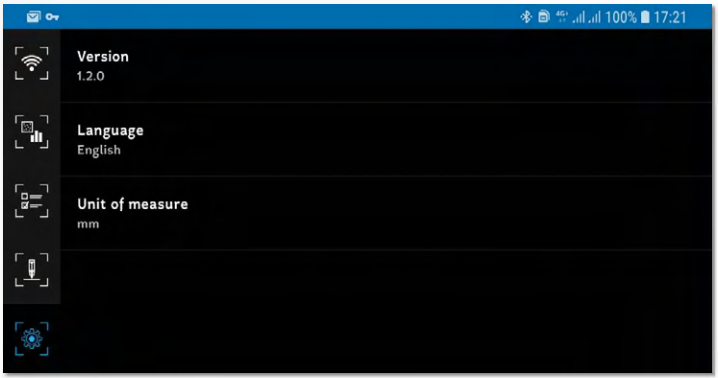
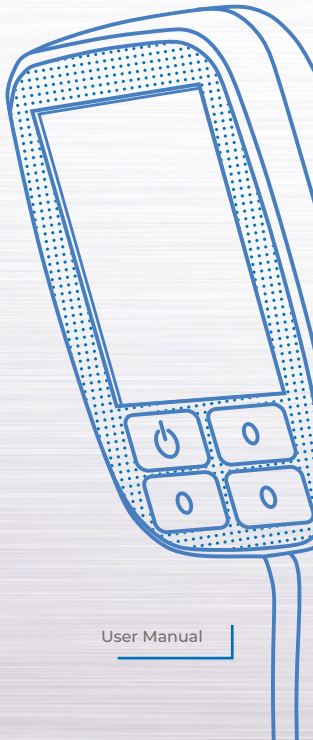


Fig. 4.2.1 Connected device



4

4.3. Quality grading tab

This page allows you to tune the parameters of a quality check on a concrete sample based on the ultrasonic pulse velocity. This method grades the concrete sample using four velocity ranges to give one of the following assessments: Excellent, Good, Doubtful or Poor. The page has the following layout (Fig. 4.3.1).

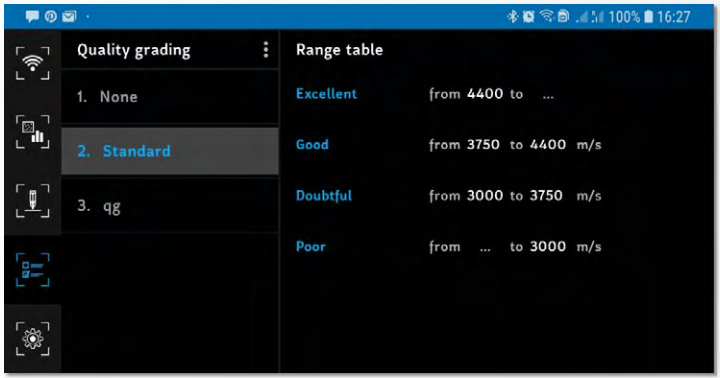


Fig. 4.3.1 Quality grading tab

The left area shows a list of available criteria to be applied during the inspection. If “None” is selected, the quality grading won’t be applied. The right area shows the details of the currently selected criterion. The three-dot menu (Fig. 4.3.2) offers the following options:

- Create a new criterion;
- Edit the selected criterion (except for the predefined one); or
- Remove the selected criterion (except for the predefined one).

For creation and editing, the viewer in the right area is replaced by the editor (Fig. 4.3.3).

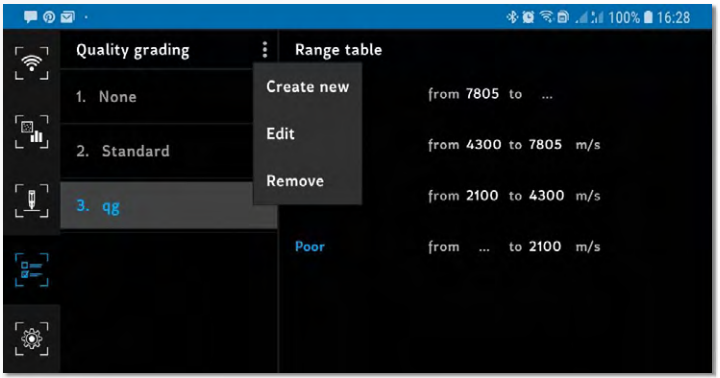
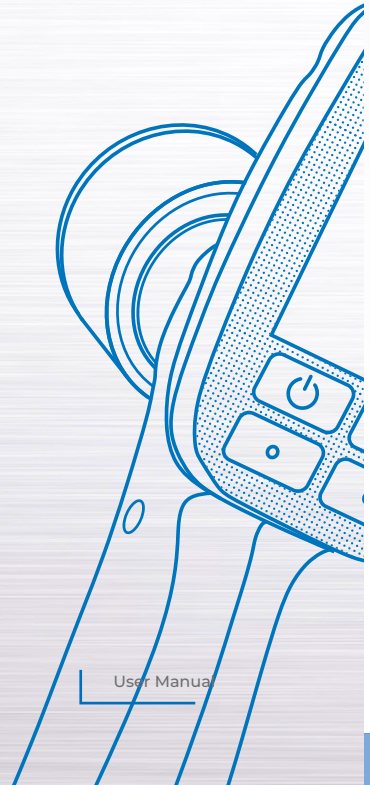


Fig. 4.3.2 Menu for quality grading management

4



For creation and editing, the viewer in the right area is replaced by the editor (Fig. 4.3.3).

Clicking on one of the velocity values will open a dialog, where the value can be changed. To apply the changes, click on “add” or “change”.

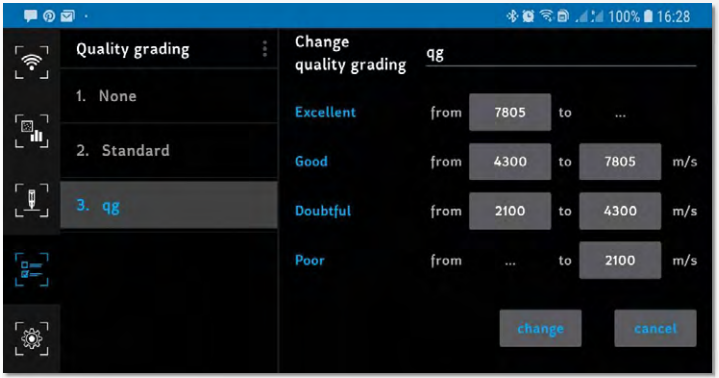


Fig. 4.3.3 Editing quality range

4.4. Settings tab

The page allows you to define the formula used to determine the compressive strength of the concrete sample. The two most commonly used types of formulas are presented in this application: bi-linear and double power. The page has the following layout (Fig. 4.4.1).

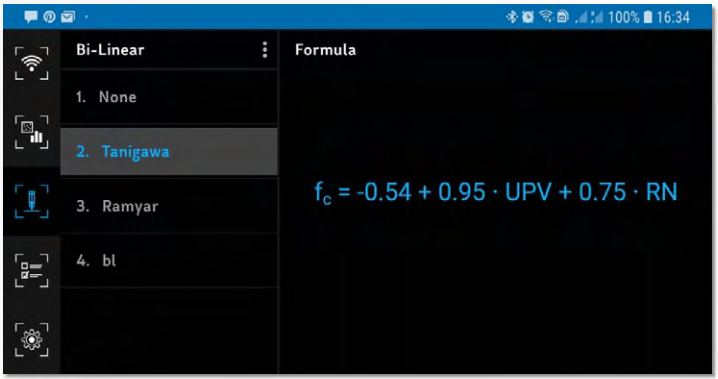
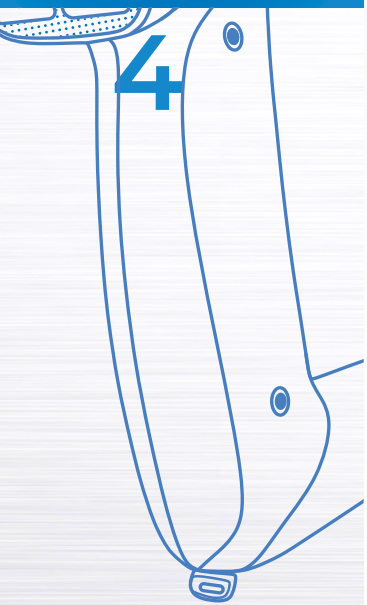


Fig. 4.4.1 SonReb tab



The left area shows a list of available formulas to be applied during the inspection (either bi-linear or double power). If "None" is selected, the SonReb method won't be applied. The right area shows a complete view of the currently selected formula. The three-dot menu (Fig. 4.4.2) offers the following options:

- Switch to bi-linear formulas (if double power formulas are currently shown);
- Switch to double power formulas (if bi-linear formulas are currently shown);
- Create a new formula (bi-linear or double power);
- Edit the selected formula (except for the predefined one); and
- Remove the selected formula (except for the predefined one).

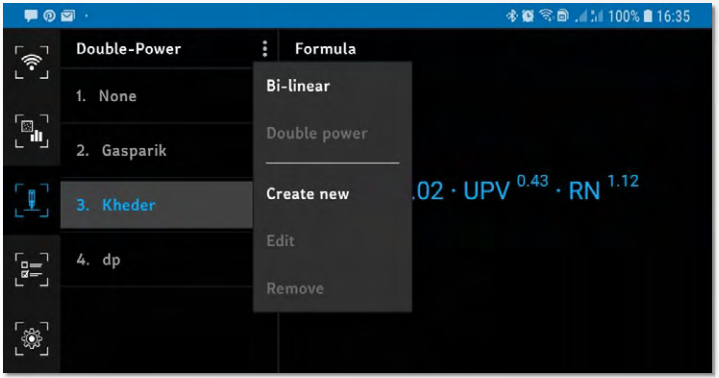


Fig. 4.4.2 Menu for SonReb management

Clicking on the coefficient values will open a dialog, where the value can be changed. To apply the changes, click on “add” or “change”.

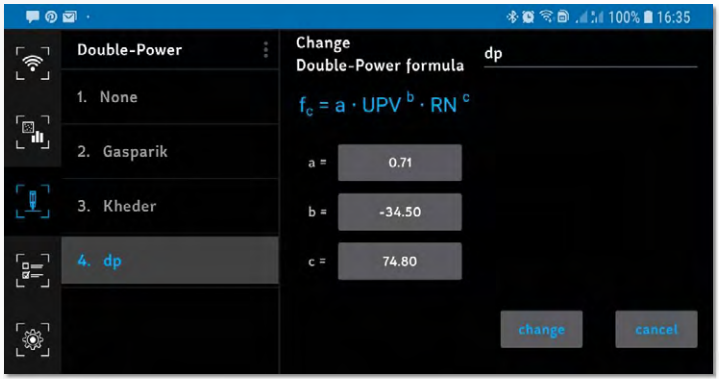


Fig. 4.4.3 Editing SonReb formula

4

4.5. Inspection tab

This page allows you to perform several measurements and collect the results. The methods selected on the previous pages are applied to the average values to evaluate the concrete quality. This page has the following layout (Fig. 4.5.1).

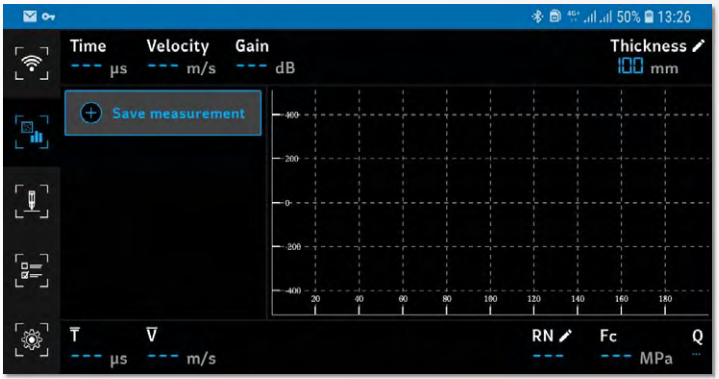


Fig.4.5.1 Inspection tab

After a measurement is completed on the device, it is automatically transferred to the application. The process of data receiving is reflected on a progress bar (Fig. 4.5.2).

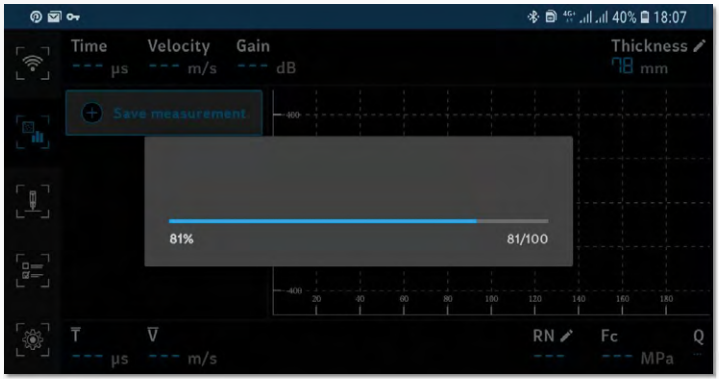
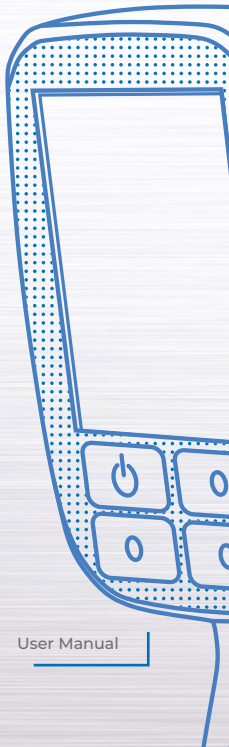


Fig. 4.5.2 Receiving data progress



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The parameter values in the top panel are filled with received data information (Fig. 4.5.3). Note that the velocity is computed based on the thickness value, shown in the top-left corner, which can be changed by clicking on it.

The signal is shown on the plot. The plot has two interaction modes:

• Cursor is active: scrolling on the plot moves the position of the cursor and thereby changes the result time and velocity.

• Zoom/pan is active: scaling and scrolling on the plot allows you to zoom in and out or pan across the signal image.

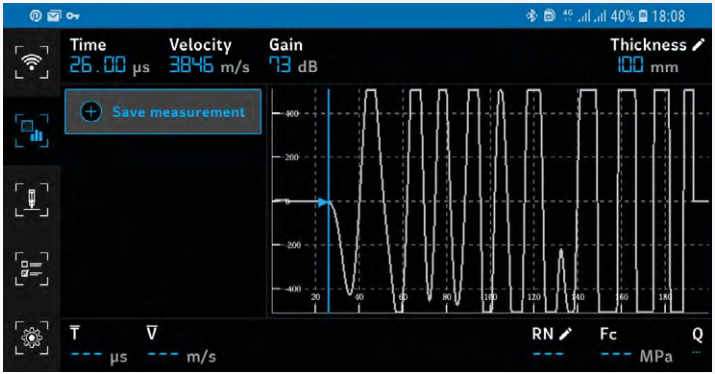
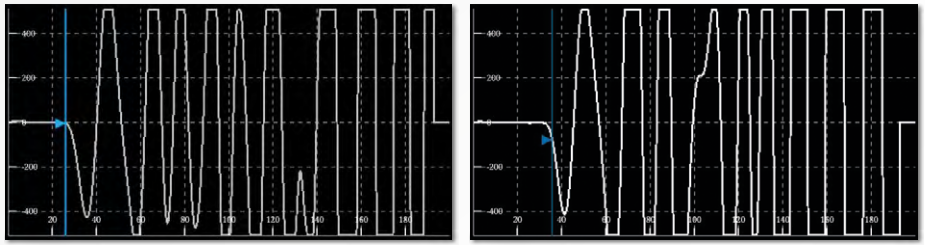


Fig. 4.5.3 Received data

If the cursor is active, a double click outside of the cursor area activates zoom and pan. If zoom and pan are active, a double click on the cursor area activates the cursor. A double click outside the cursor area will reset the zoom and pan. Highlighted colors help to distinguish between these two modes (Fig. 4.5.4).



Cursor is active

Zoom / pan is active

Fig. 4.5.4 Plot modes

4

Pressing the “Save measurement” button adds the current result to the list of results used for concrete sample assessment (Fig. 4.5.5). If one of the added values should not be used, a long click on it will remove it from the list.

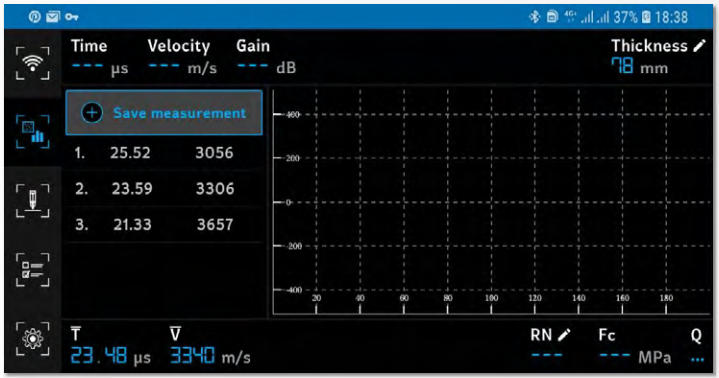


Fig. 4.5.5 Accumulated results

The bottom panel is filled with the computed values: the average time and the average velocity. If the SonReb method is selected, the compressive strength is computed. Since this method uses results provided by the rebound hummer, clicking on the rebound number parameter allows you to enter the corresponding value. If quality check is selected, the rightmost value on this panel shows the corresponding grade (Fig. 4.5.6).

After the experiment is completed, a long click on the “Save measurement” button clears all results.

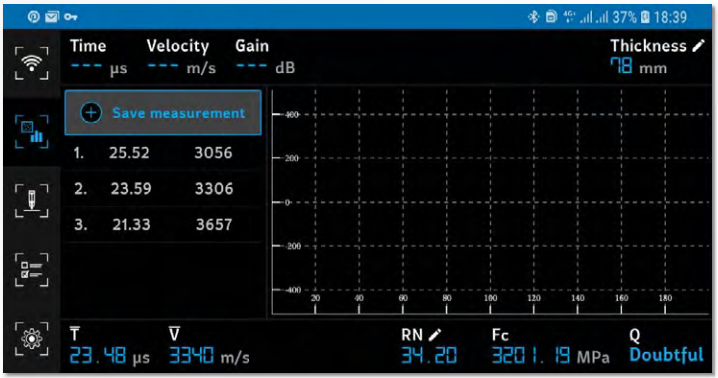


Fig. 4.5.6 Accumulated results

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