

Set:

- Codimex E1 - Electronic caliper
- Smartphone
- Application „E-caliper”

User manual



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1. Introduction

Set is used to measure diameter at breast height standing trees, and the diameter of the lying tree.

Components of the kit:

1. Electronic caliper – Codimex E1
2. Smartphone or tablet (owned by user)
3. Application „E-caliper“

The manufacturer provides:

1. Electronic caliper – Codimex E1
1. Application „E-caliper“

On client request we deliver any smartphone (Android OS.) for an additional fee.

The electronic caliper CODIMEX E1 performs the measurements, which are send to the application "E-caliper" via Bluetooth. The application can be installed on any device working with Android system.

The application has an open structure: thanks to this user has ability to configure and edit elements of the survey to make it most adapted to the expectations. User can create a number of separate projects, which at any time can be edited or deleted.

Data from the measurements are saved in the smartphone memory and can be exported as a CSV file. Export files from your smartphone can be made by sending via Bluetooth or e-mail, or copy directly through the USB cable to your computer.

2. Electronic caliper Codimex E1

2.1 Technical specifications

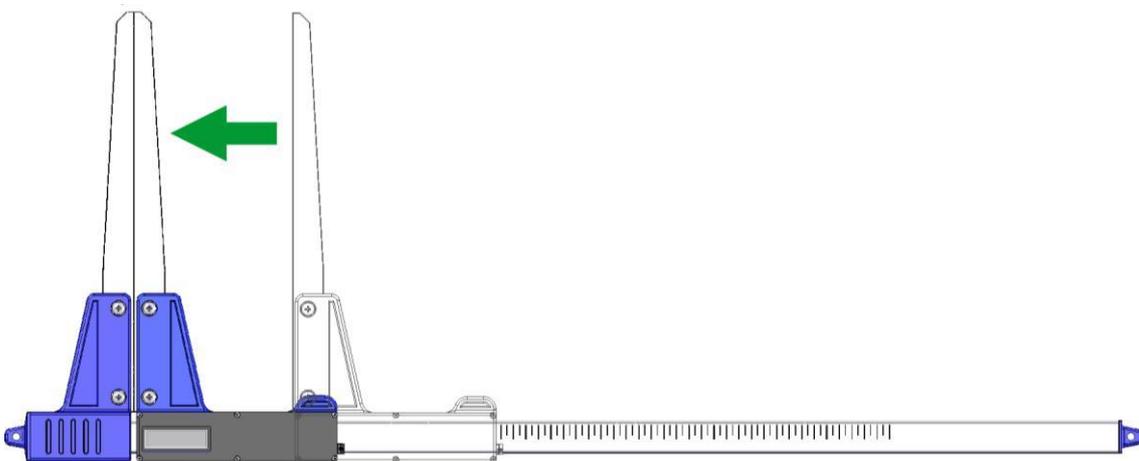
Measurement resolution	0,5 cm or 0,1 cm or 0,1 inches
Resolution of internal device	0,01 cm
The total measurement error	< 1 mm
The speed of movement of movable jaw relative to a caliper beam	< 1 m/s
Display	LCD 3,5 digit segment „LOBAT” digit height 10 mm
The time of display update	from 0.2 to 1 sec (implicitly 0.5 s)
Battery indication	glowing symbol "lobata" - voltage battery below 3,1V flashing "lobata" - voltage battery below 3.0V automatically turn off the instrument - voltage battery below 2,9V
Keyboard	Membrane keypad with metal domes the "ON / OFF" and the "▶"
Acoustic signaling	buzzer
Wireless communication	Bluetooth 3.0 (class 1) in SPP mode
Transmission parameters	115200 bps, 8 bits, no parity, 1 stop bit
Power supply	built-in rechargeable lithium-ion battery 3.6V / 0,96Ah
Power consumption of the battery	<40 mA on device <0.01 mA for off device
Time between recharges	> 15h (at a temperature above 0 ° C)
Recharge time	< 5h
Charging socket	microUSB type B
The power supply for charging	external stabilized 5V / 2A
Operating temperature	from 253K to 323K (from -20°C to +50°C)
Relative humidity	20÷80%

2.2 Meaning of the buttons

ON/OFF	<ul style="list-style-type: none">- If the device is off, pressing this button for approximately one second causes the power supply and turning on caliper,- Pressing the key for 2 seconds will generate a double beep and power off the device,
▶	<ul style="list-style-type: none">- sending, by the Bluetooth actual result of the measurements,

2.3 Method of measurement

The measurement is done by moving the lower jaw along the beam. The value of measurement is displayed on caliper screen and by pressing the key ▶ is sent to the application "E-Caliper" using Bluetooth connection.



2.4 Caliper exploitation

Pressing the ON / OFF button for about 1 second causes the power supply and turning on the calliper. If the calliper was turned on with open jaws, the display shows the inscription "**CAL**"

To prepare electronic calliper to work, the jaws must be shorted. Shorted calliper jaws (causing reset the meter) is always signalized by short beep. After the above steps calliper is ready to work.

If the display automatically shows "**Er.b**" means failure of the Bluetooth module and service assistance is required.

During normal work calliper shows on the display the current measurement result (in centimetres or inches).

WARNING! The speed of movement of the movable jaw on the beam should be not over 1 m/sec.

Buttons meaning

Pressing button is always signalled by a short, single beep.

ON/OFF – Pressing this button for about 2 seconds will generate a double beep and a turn on/off calliper.

► – Sending measurement result to your smartphone or tablet. If the result was sent (smartphone confirmed receiving information, or work is without confirming) then display inscription flashes for 3 seconds. If your smartphone has not confirmed receiving information, calliper generates a double beep and display for 3 seconds inscription "**Err**". If there is no communication with the smartphone, it generates a double beep and displays for 3 seconds inscription "**Er.b**".

2.5 Charging batteries

Charging the battery may take place at ambient temperatures from 0 ° C to + 40 ° C with the calliper power off. The charging process is signalled by a single LED (green) located next to the charging connector.

Meaning LED signals during charging process:

- **ON** – battery is charging normally,
- **FLASHES** – battery is damaged,
- **OFF** – Charging completed.

WARNING! The symbol "LOBAT" on the display means the state of battery close to discharge. Flashing symbol "LOBAT" on the display indicates the status of battery discharge. The battery must be charge until the green LED (next to the charging connector) turns off. During charging the green LED light is on permanently. Flashing of this LED indicates a fault in the battery.

3. Smartphone or tablet

Application "E-caliper" is supported by smartphones and tablets running on Android operation system

Minimum requirements:

- Android: 4.0.3
- Processor: 1 core, 1 GHZ

Recommended requirements:

- Android: 4.4.X
- Processor: 4 cores 1.0 GHz or 2 cores 1.4 GHz
- RAM memory: 512MB

Smartphone or tablet can be mounted as follow:



- In the holder on the calliper



- In the belt with cover

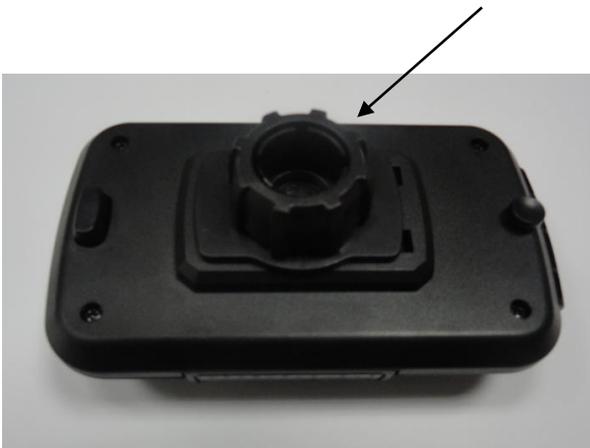


- In the case on the arm

Holder mounting instruction on calliper



Part of the holder is bolted to stable jaw of calliper by screw.



The holder should be placed as on the picture. Next move to the left plastic nut to unscrew almost to the end.



Prepared holder put on a circular element. Set the desired position and tighten the nut to the right to stabilize the handle.

4. Application „E-caliper”

4.1 Application installation, connection devices

Installation file "E-caliper" is included on pendrive and you can download the demo version from www.codimex.com.pl next page "Wood measuring devices" and then "Electronic caliper Codimex E1"

Demo version allows to take measurements for 30 days without registering a licensed key. Below is a guide to download a file from a website and copied to the smartphone memory (also from pendrive) and install.

Manual of download file from web page



The screenshot shows the CODIMEX website interface. At the top, there is a logo and the name "CODIMEX" in large green letters. Below the logo are navigation buttons for "About us", "News", and "Contact". A row of flags represents different languages. On the left, a "Products" menu lists various items, with "Electronic caliper CODIMEX-E1" highlighted and an arrow pointing to it. The main content area features the title "Electronic caliper Codimex-E1" and a description: "Codimex-E1 is design to record the measurements of lying wood and standing tree." Below this is a photograph of the blue and black electronic caliper. A detailed description follows: "The electronic caliper CODIMEX E1 performs the measurements , which are send to the application E-caliper or SLT-caliper via Bluetooth. The application can be installed on any device working with Android system. The application has an open structure: the user can configure and edit elements of the survey (database of species and sortyments, location, unit of the measurements, etc.). The data can be exported in CSV format."

1. Go to the web page http://codimex.com.pl/about_us_eng, next section „Wood measuring devices” and then "Electronic caliper Codimex E1".



Now download a 30-day free trial version E-caliper and see the advantages of the action !!



To download - leaflet of application E-caliper

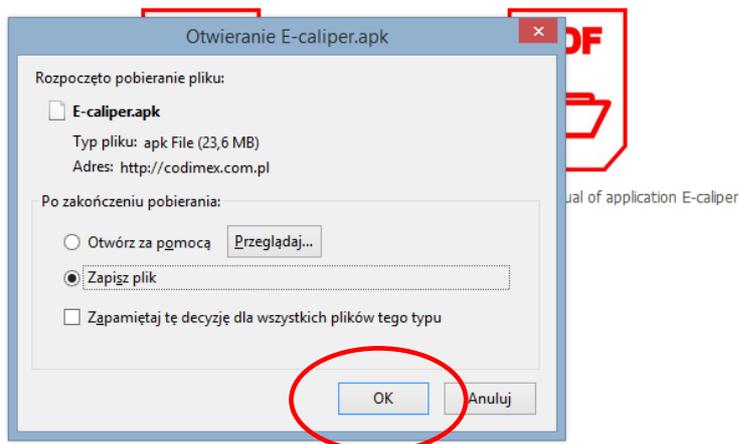
To download - User manual of application E-caliper



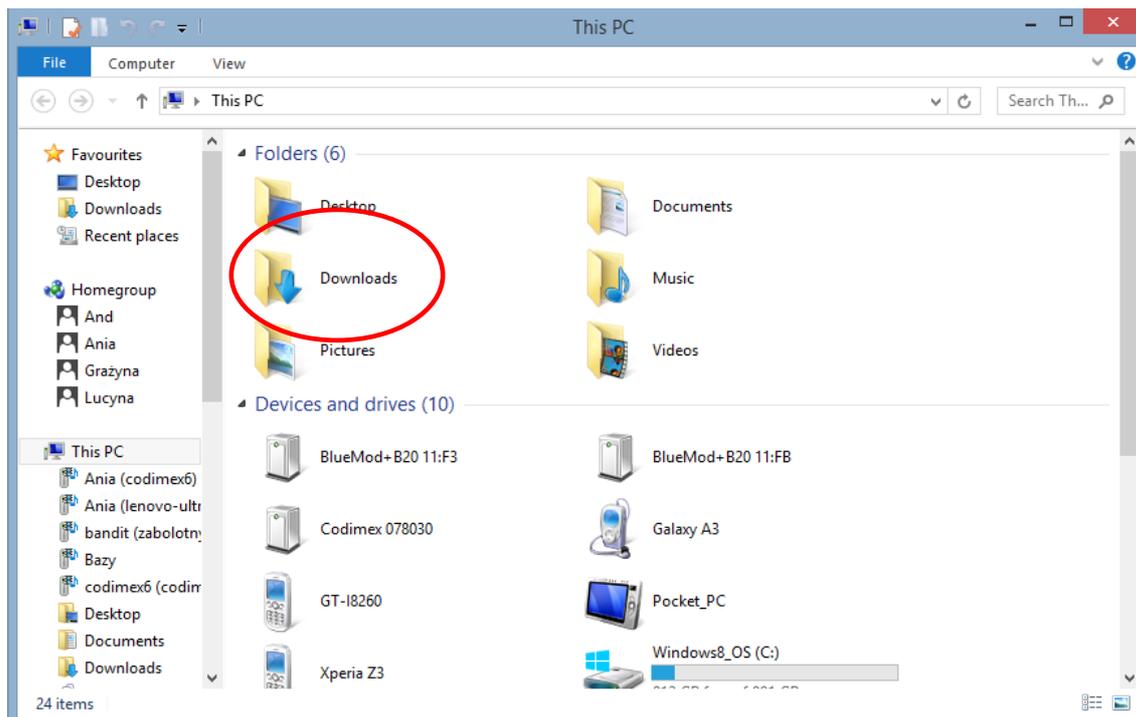
To download application E-caliper.apk

2. Scroll down page until you find the icon with the signature „To download application E-caliper.apk” (marked with a red circle on the picture). Click on the icon.

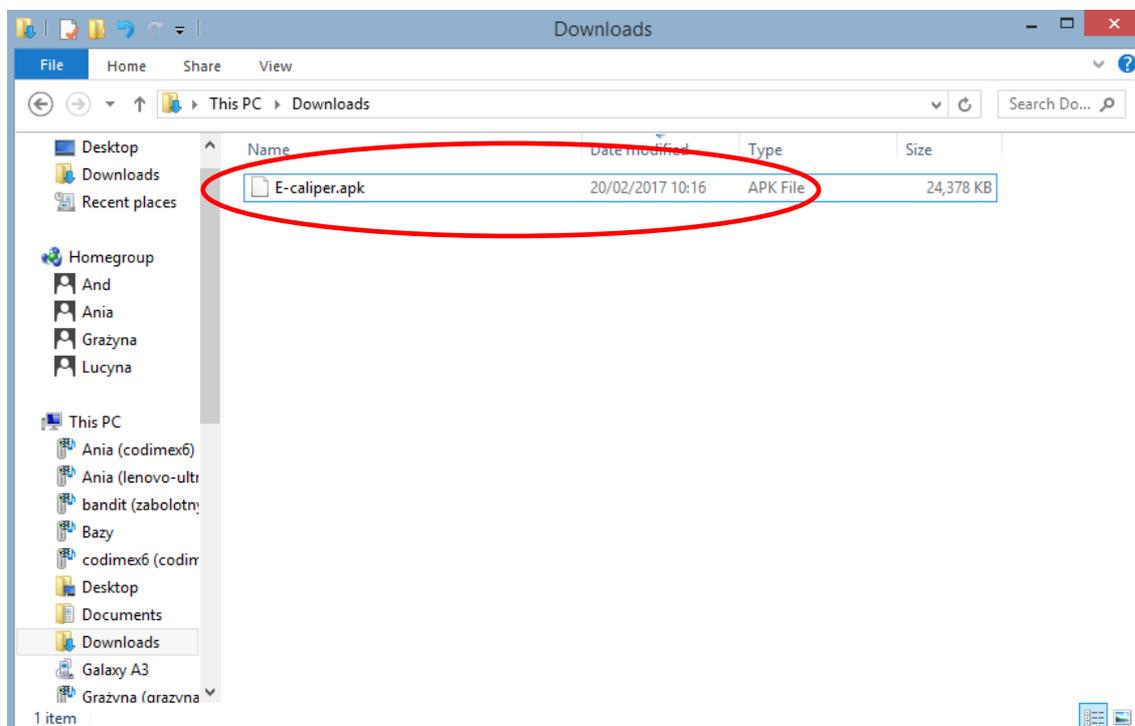
Now download a 30-day free trial version E-caliper and see the advantages of the action !!



3. In the next window, click "OK". If browser does not allow to choose location, the file is automatically saved in the folder "Downloads". If possible to choose location, save file in place easy to find, e.g. desktop.

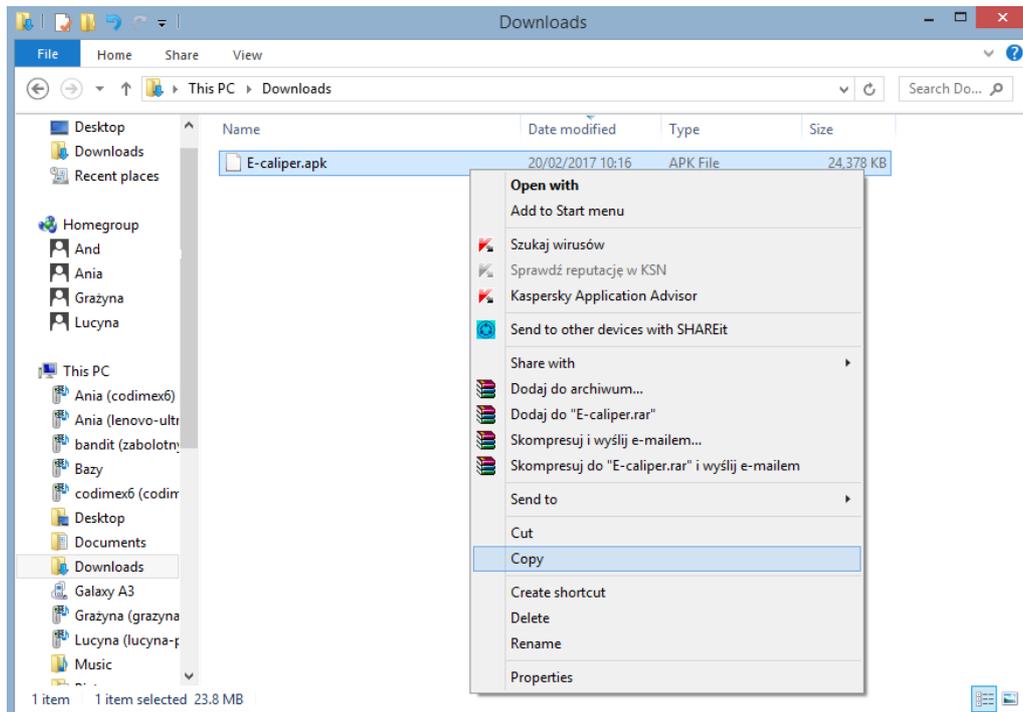


4. To enter the „Downloads” folder, open the icon "My Computer" on the desktop and then folder "Downloads".



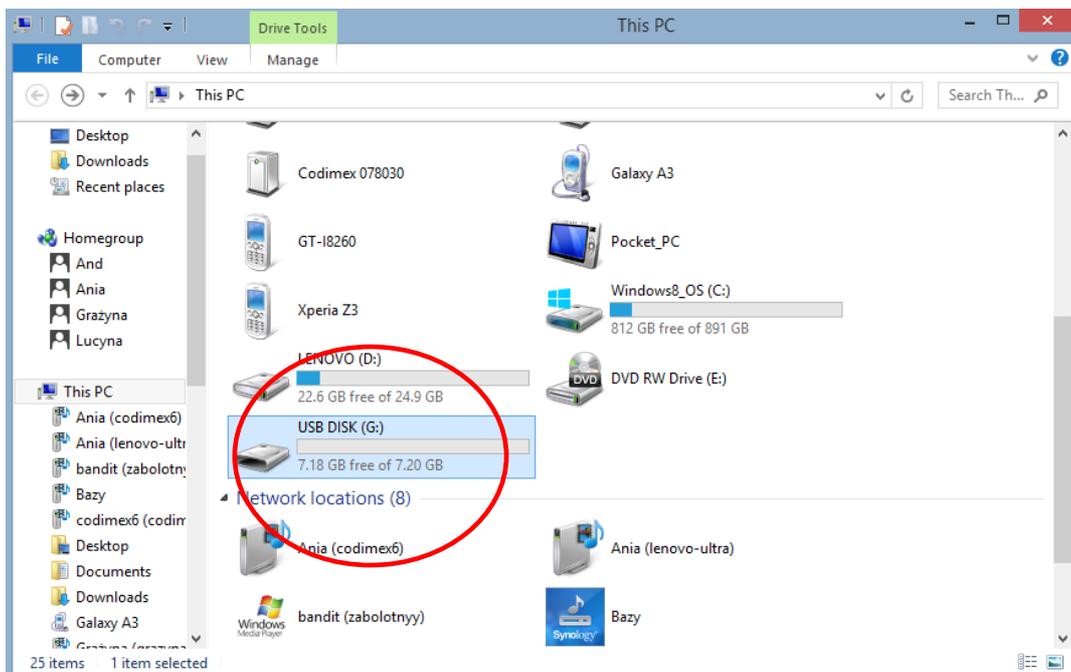
5. In folder „Downloads” find file „E-caliper.apk”.

Manual of copy files and install applications in the smartphone memory



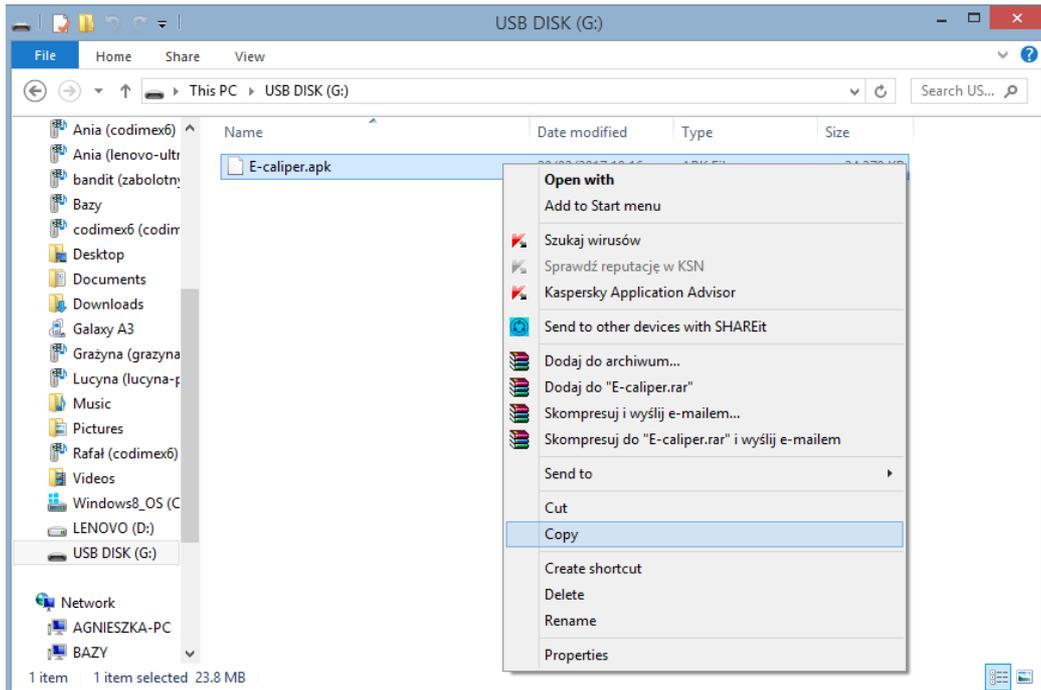
The file downloaded from the website.

1. Open the folder with downloaded file (according to the instructions given earlier).
Copy the file and close the window. Next steps from step 3



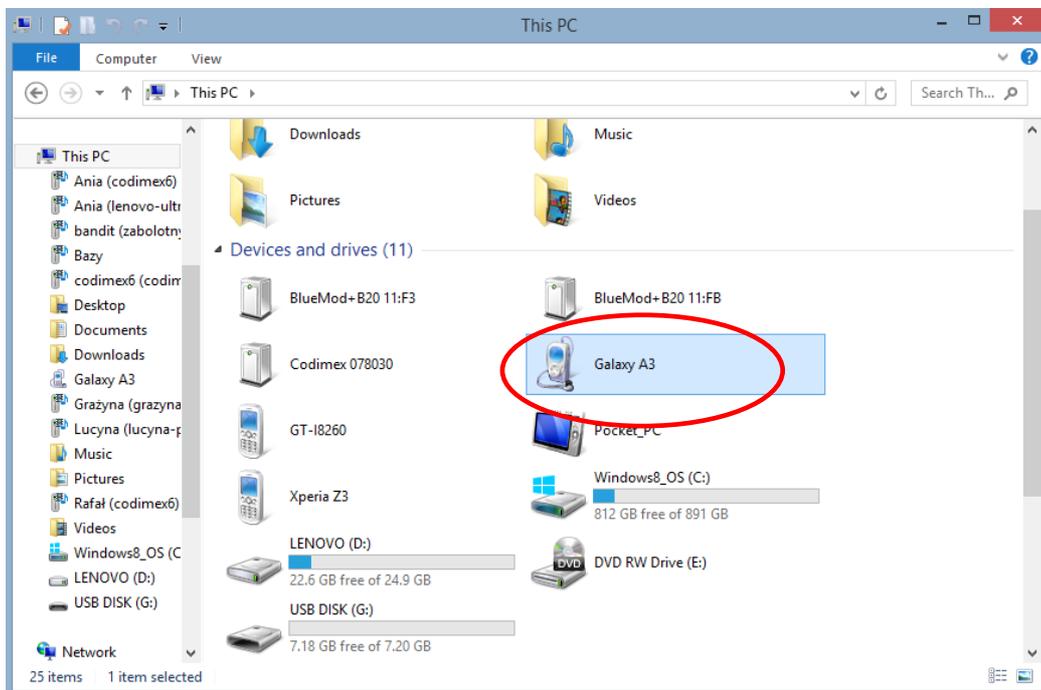
File on USB

1. On the desktop enter icon "My PC". Once opened, locate the USB icon, open it.



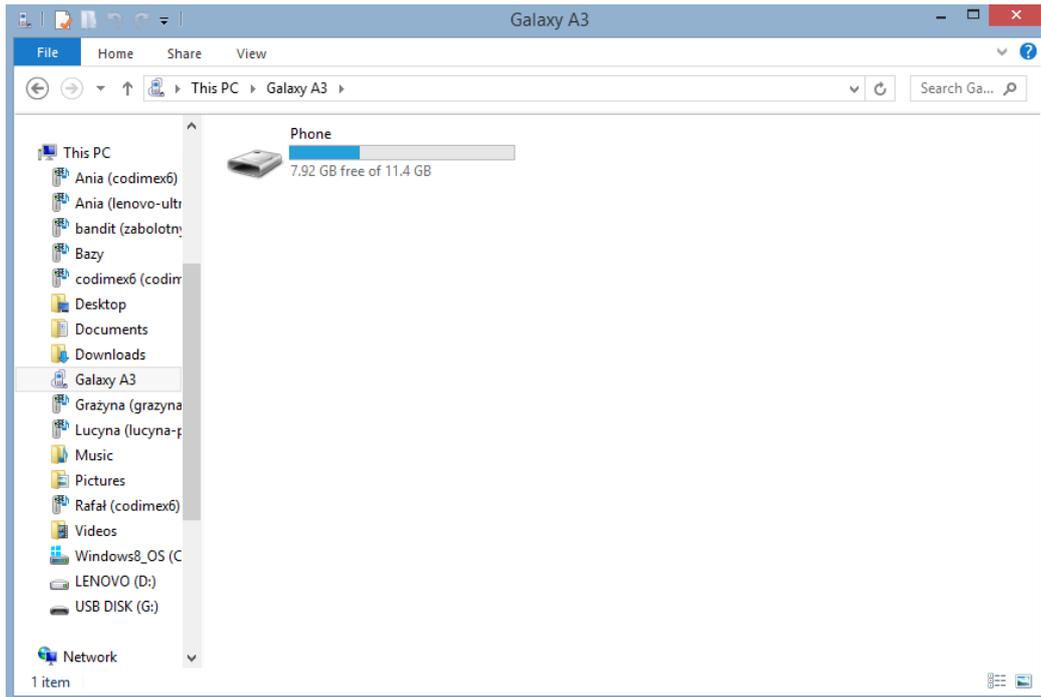
File on USB

2. In USB folder, find file "E-caliper.apk". Copy it, close the window.

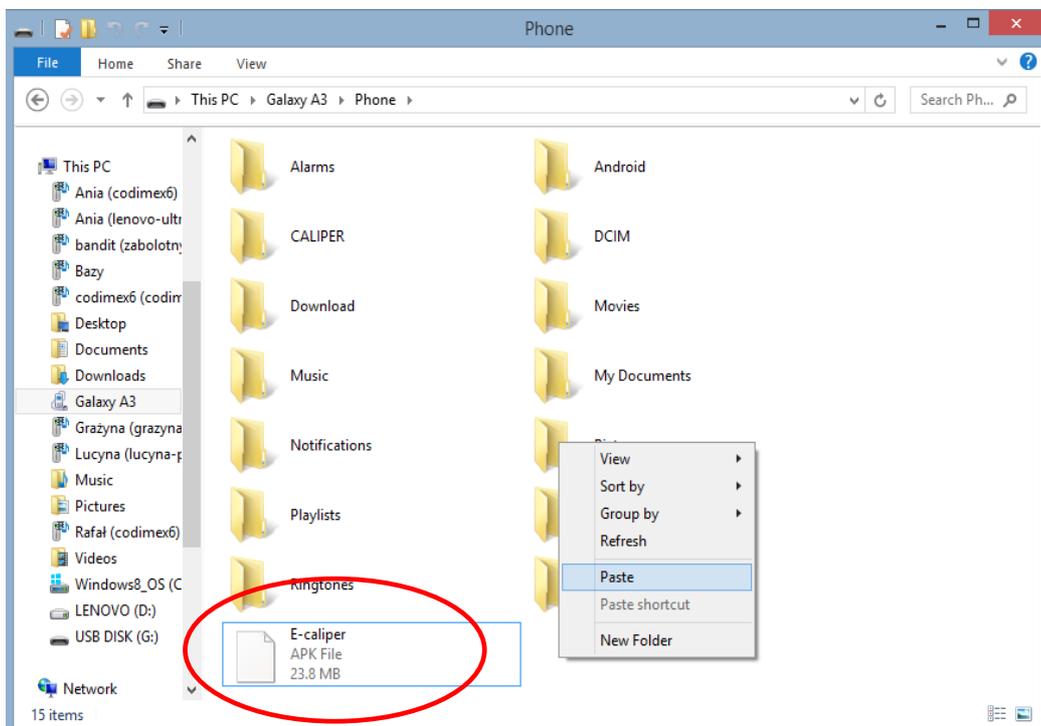


3. Connect smartphone to computer.

- Open on the desktop "My Computer."
- In "My Computer" folder find name of smartphone.
- Open the icon of smartphone.



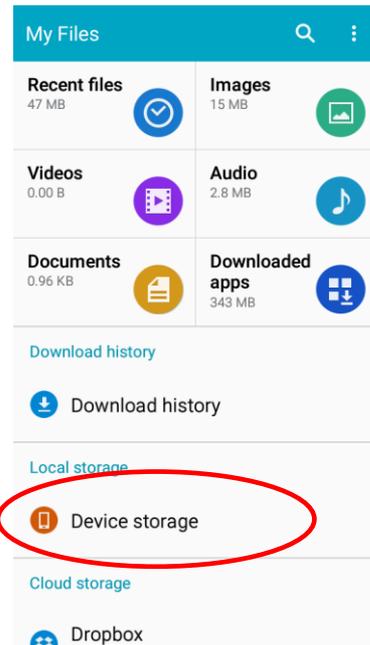
4. Enter the smartphone, open the icon "Phone"



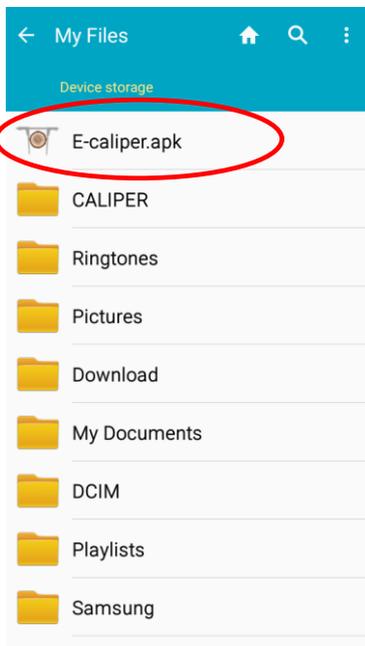
5. In the folder "Phone" paste installation file. Close the folder and disconnect the smartphone from the computer. Next steps on smartphone.



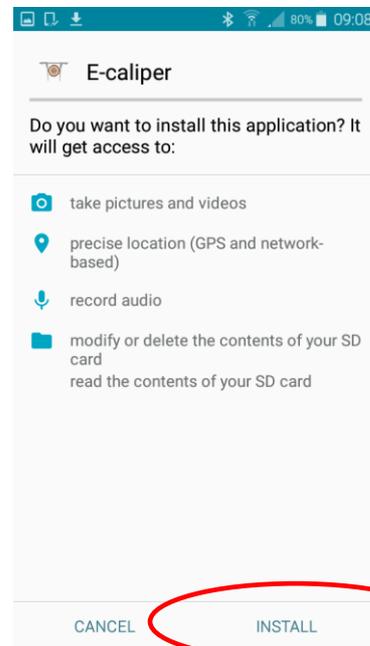
6. In main menu find the icon "My Files" and click on it



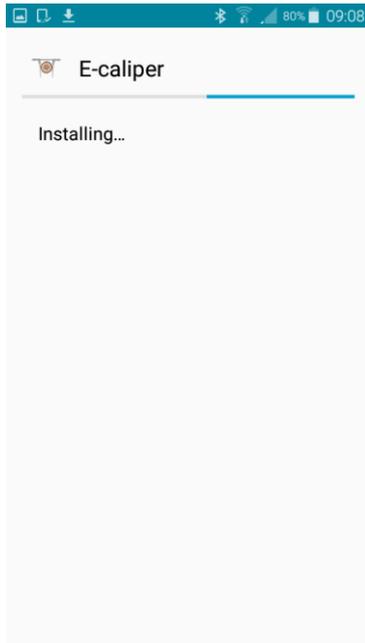
7. Click on „Device storage“



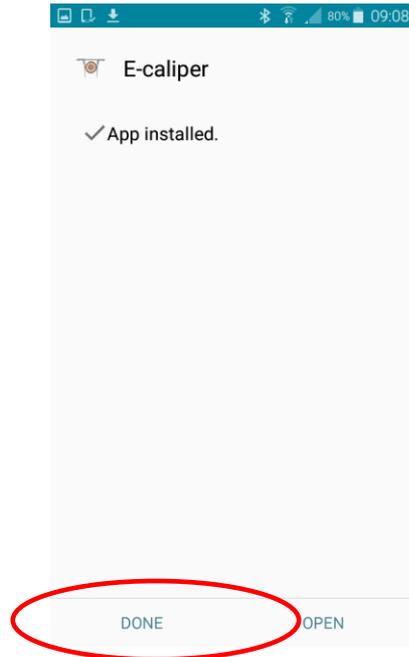
8. Find and click on icon „E-caliper.apk“



9. Click „INSTALL“



10. Automatic installation

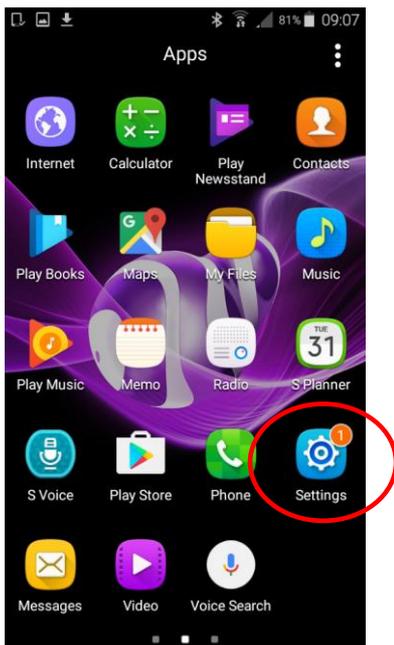


11. Installed application. Click "DONE"

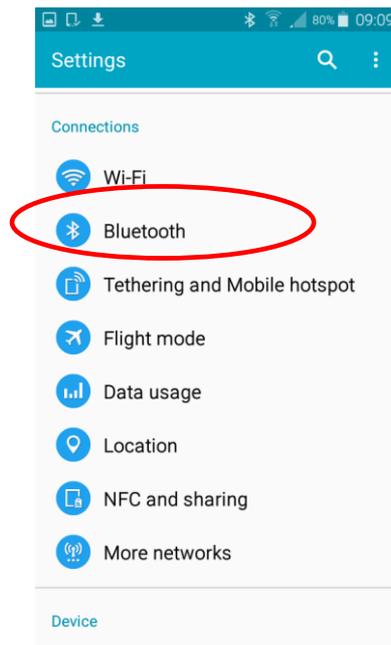
After installing the application, go to the main menu of your smartphone

Instruction to connect smartphone with caliper

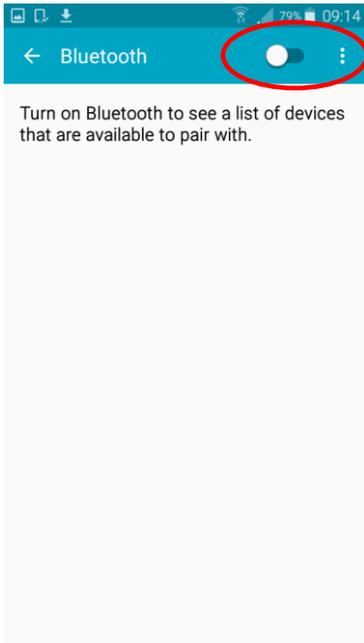
In order to connect the electronic caliper with smartphone using Bluetooth as the first turn on caliper and then perform the following steps:



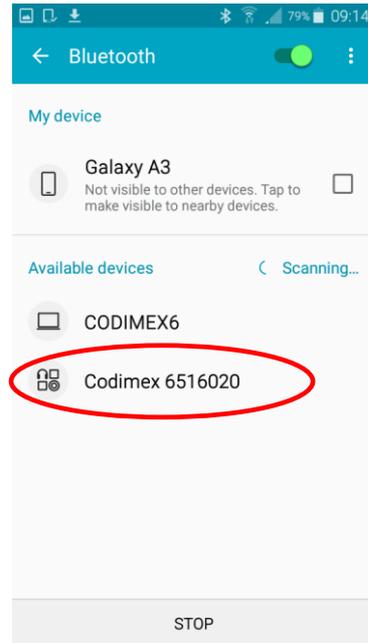
1. Click „Settings“



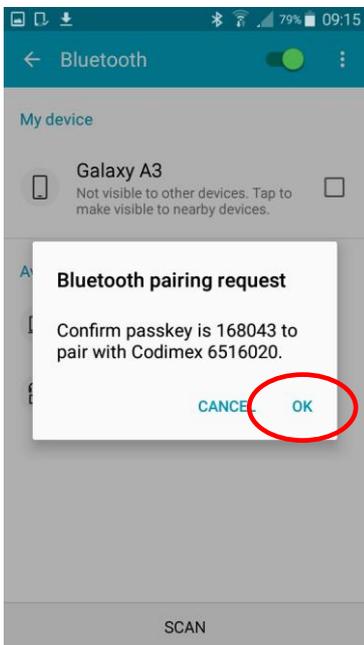
2. Click „Bluetooth“



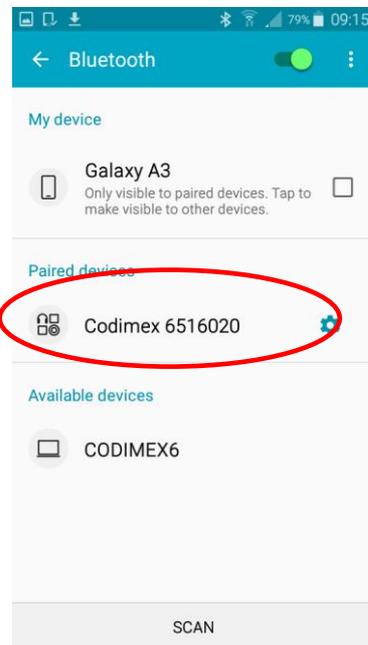
3. Turn on Bluetooth



4. Caliper should be found under the name "CODIMEX" and the individual serial number. Click on the name.



5. Accept a Bluetooth connection



6. Caliper added to the list of connected devices

Warning! Android is not the same for all devices. Some devices may require additional selection options "switch to be visible to other devices in the vicinity," and there may be graphic differences.

4.2 Started in application



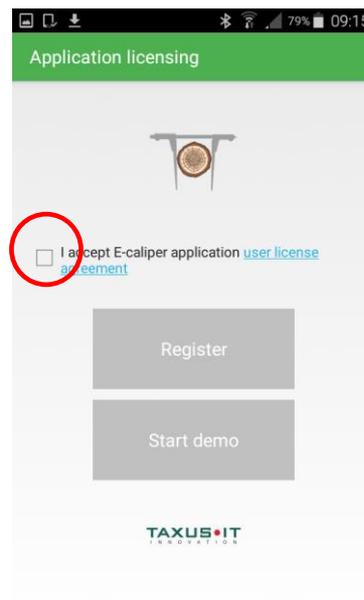
Application icon "E-caliper" find in the device menu, and then click to open the program.

4.2.1 User registration

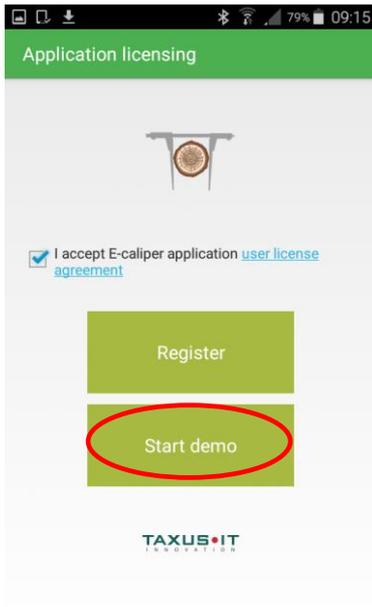
When you turn on application first time should to register a user. For proper registration is required to connect smartphone to the Internet.



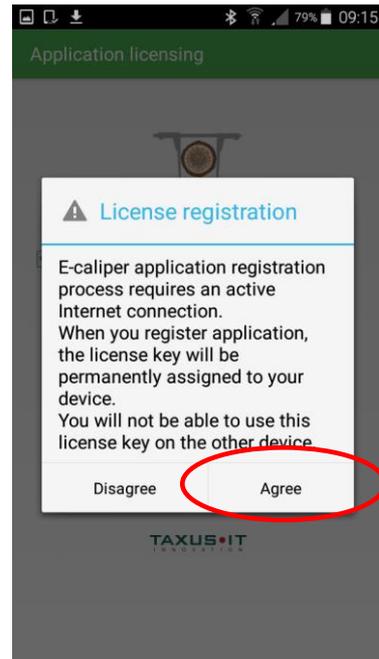
1. Application window



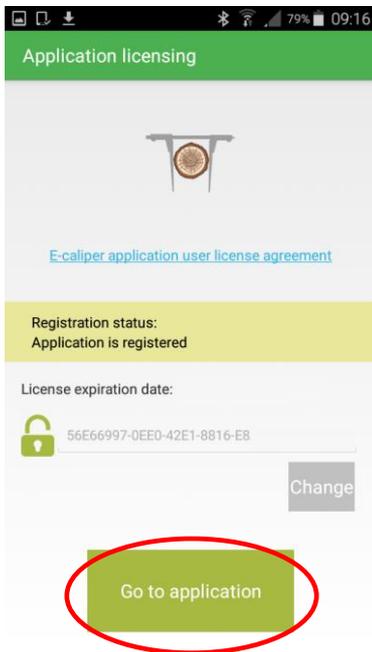
2. Acceptance of license



3. Click „Start demo”



4. Click „Agree”



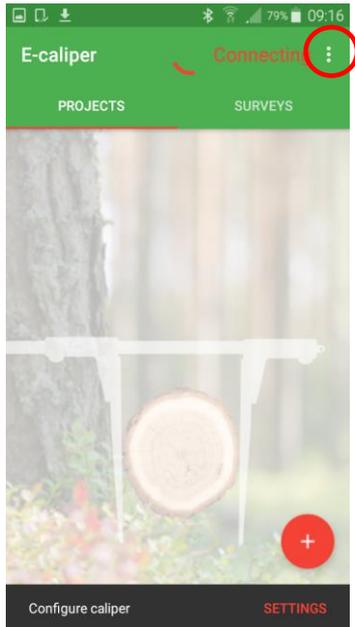
5. The application has been registered. The screen informs about the date expiry of the demo version. After this date you must register license key. The process description in section 4.5.

Click „Go to application”.

4.2.2 Preparing for measurement

Before making the measurements, go to settings and connect the smartphone with caliper, specify units of measure, and user name. To do this, follow these steps:

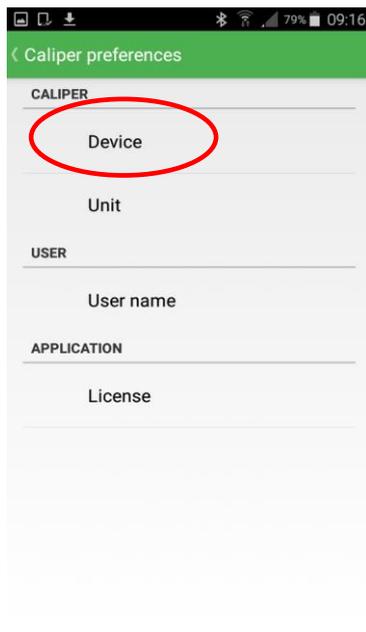
- 1) Turn on electronic calliper (button ON/OFF)



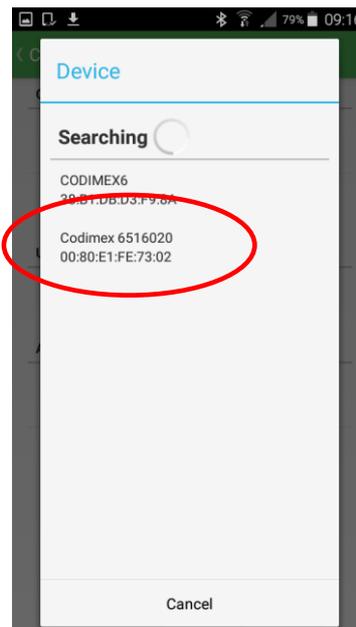
2. Open tab „Settings“



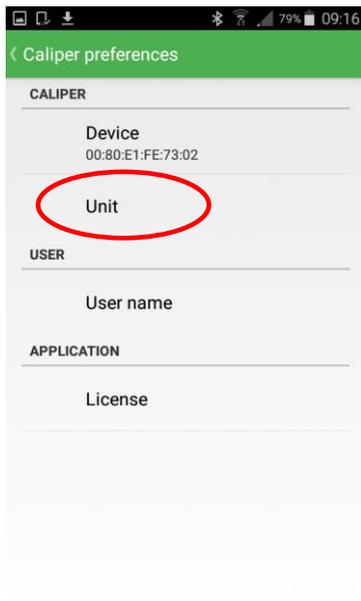
3. Click „Settings“



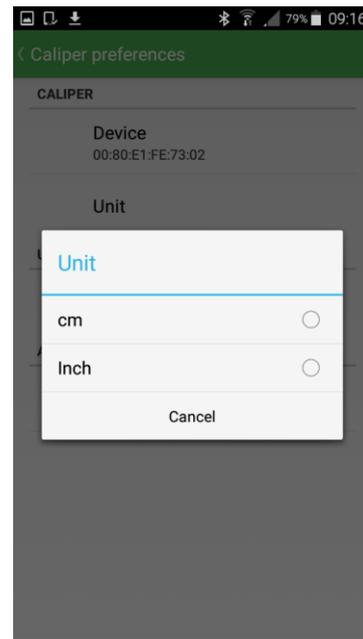
4. Click „Device“



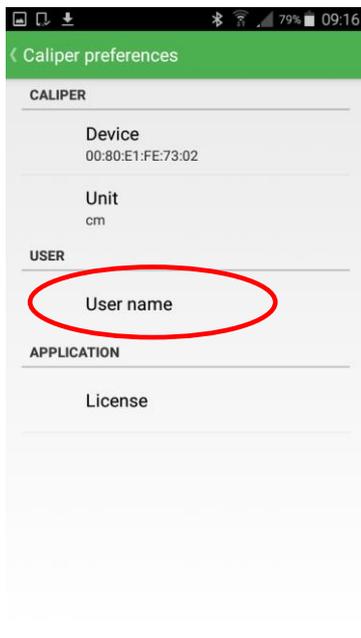
5. Choose caliper name
(the same as in chapter 4.1)



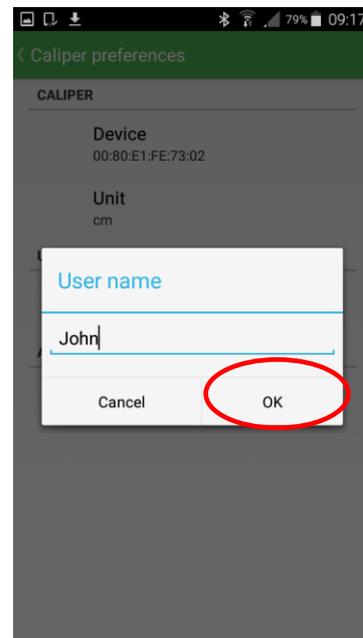
6. Click „Unit“



7. Select the unit of measure



8. Click „User name“



9. From the smartphone keyboard write any user name, click "OK"

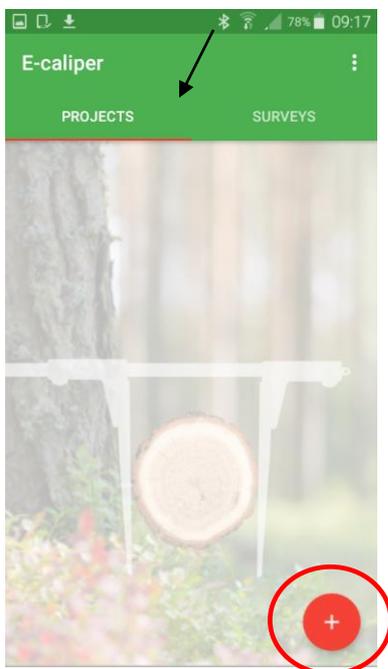
10. Go back to the main menu (press "back button" on smartphone)

4.2.3 Adding new project, group

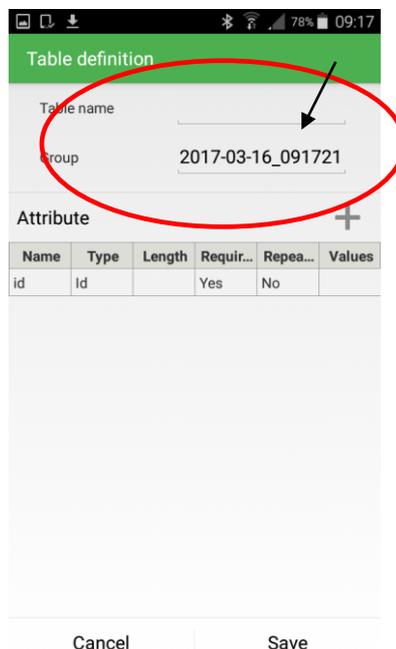
To add a new project go do the main application screen. The main screen has two sections. Active section is highlighted red line.

- PROJECT – to define the type of measurements and select the attributes of measurement
- SURVEYS – to save data in accordance with previously created project.

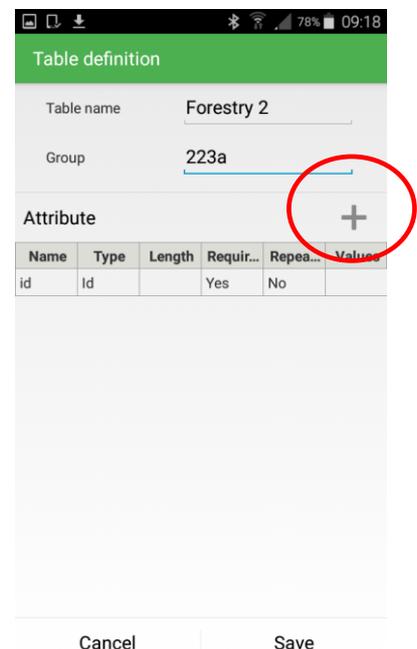
To add a new project, do the following:



1. Open section "PROJECTS" on the main screen, click circled symbol



2. Name table and the group. Click on the name of table and group to edit.



3. Add new attributes. Click on the circled symbol (table names and groups are examples).

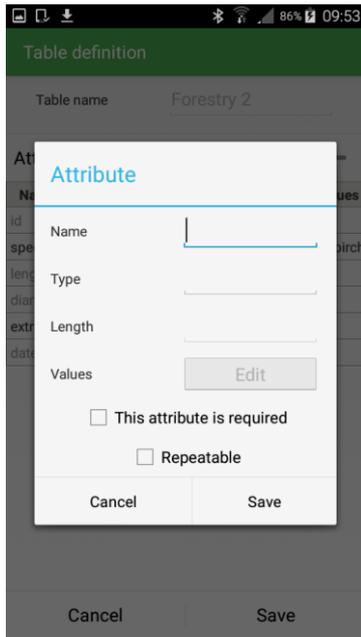
Group name on the picture no. 2 is determined automatically based on the date and time. You can delete it and make your own. Data entered from the keyboard of your smartphone.

Meaning of attributes types:

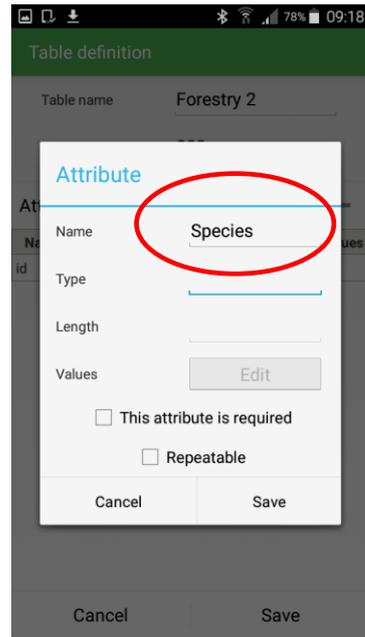
- Text – The data input in the form of a text (letters and digits).
- Dictionary – The data in the form of text, created individually by the user. During the measurements selected from a set of previously created value, for example. species, assortments.
- Grid dictionary - The data in the form of text, created individually by the user. During the measurements selected from a set of previously created value in graphic form, for example. species, assortments.
- Integer – integers (no comma).
- Float – The numbers in decimal form (e.g. 12.45)
- Date – Attribute in the form of date. Automatically assumed real, possibility to edit.
- Time – Attribute specifies measurement hour. Automatically assumed real, possibility to edit.
- Caliper– Attribute whose values are transferred from caliper Codimex E1.

Additional markings appearing fields:

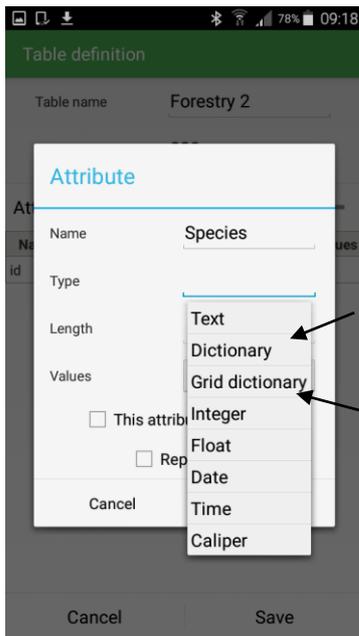
- Name – The title of the record.
- Type – Form of recorded information
- Length – The amounts of available characters to be entered.
- Values – set of elements available for the "Dictionary" and "Grid dictionary".
- Attribute required– select this option causes the inability to move to the next measurement without entering the value in the field.
- Repeatable – The attribute value automatically repeated in the next measurement.



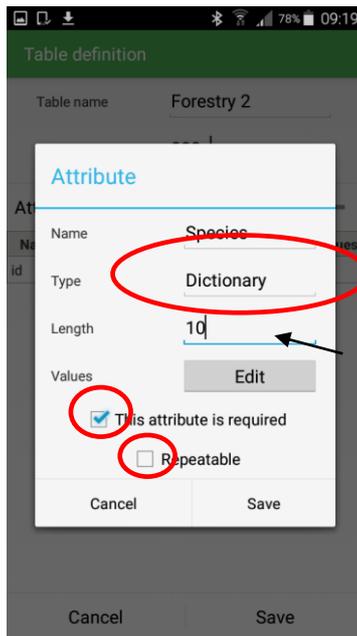
4. Window determining attribute



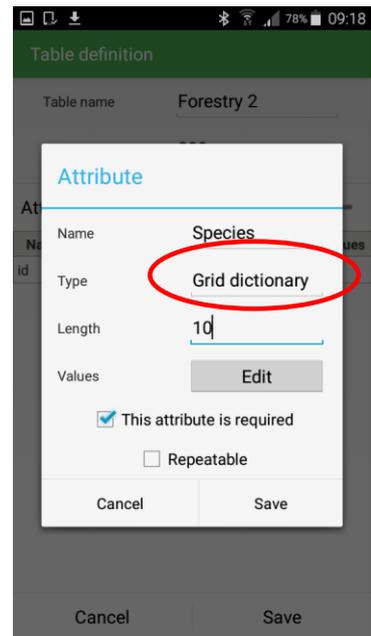
5. Named attribute (example)



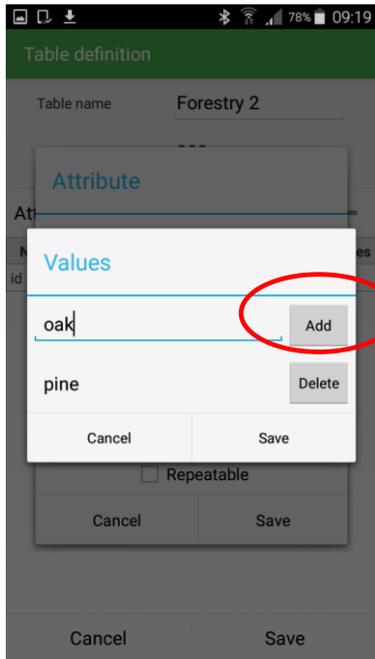
6. Select the type of attribute



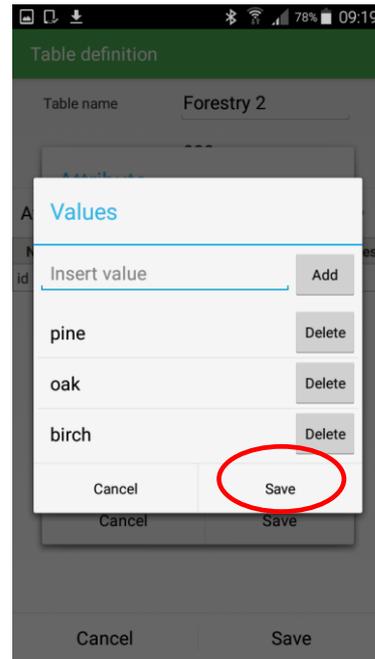
7. Determine the number of characters in the name, select if the attribute required repeatable. Click "Edit"



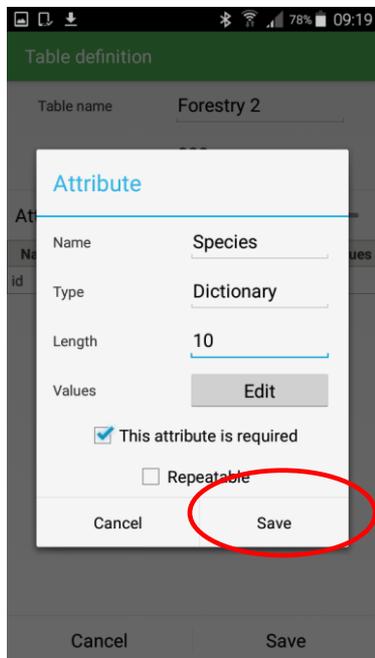
In the pictures no. 7 shows the possibility of a "dictionary" and "Grid dictionary". Between the specified types is only the difference in the choice of graphic elements during the measurements described in section 4.3, Fig. 6. Select one of the following, determine the value.



8. Add values to dictionary library
Click "add"

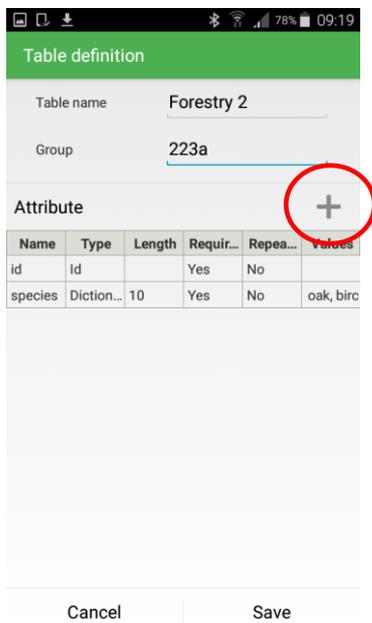


9. After entering the required values, click
"Save"

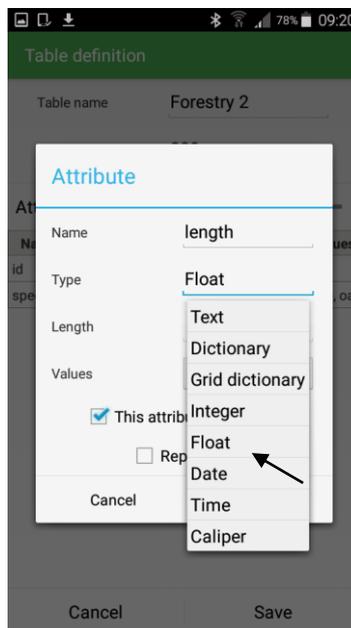


10. After determining all attribute properties
click "Save"

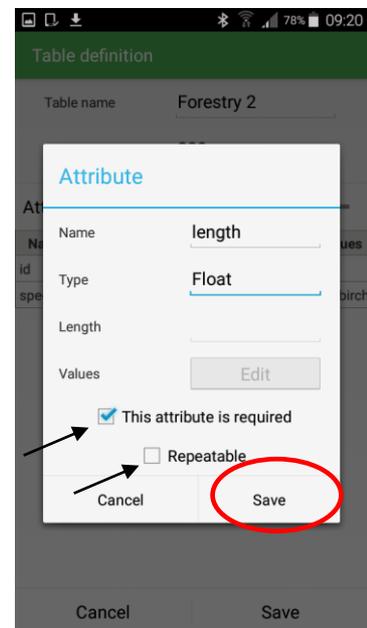
Below is an example of adding another attribute. In the application, you can add any number of required attributes.



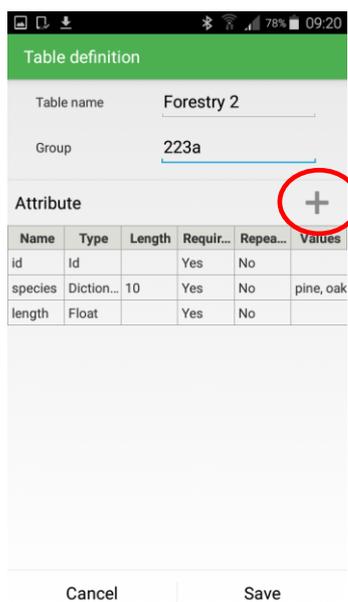
11. Add new attribute



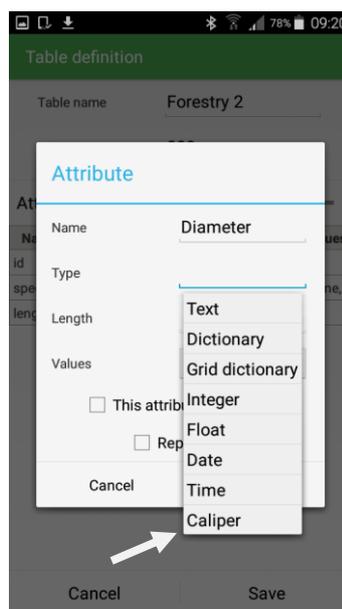
12. Specify the name, type, and additional properties. Clicking "Save"



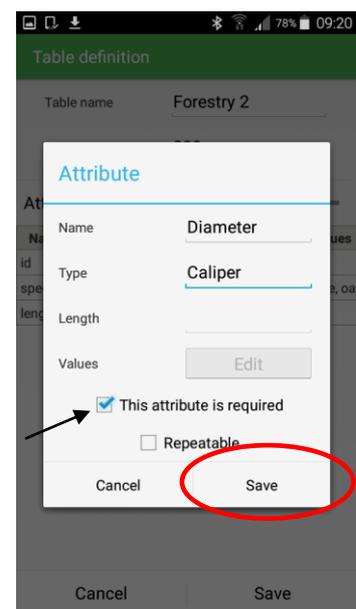
To add a field to which the measurements will be sent from caliper select the type of "Caliper". In use of the measurements e.g. breast height diameter, diameter laying tree. Instructions below.



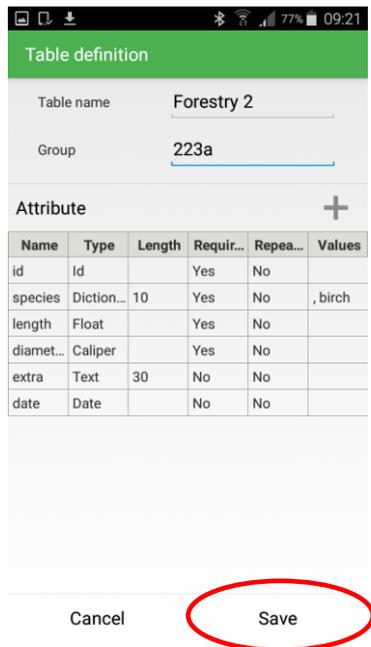
13. Add new attribute



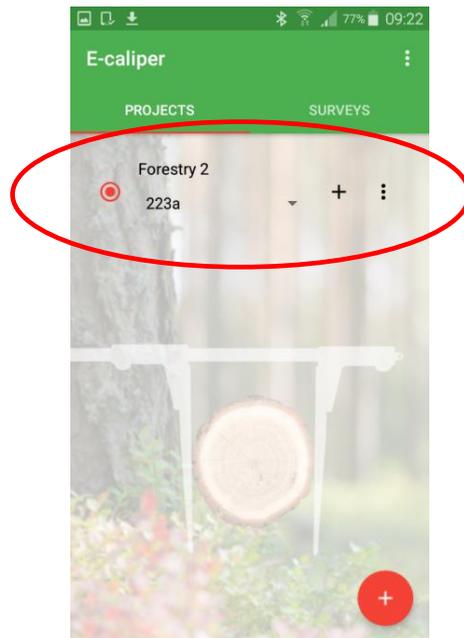
14. Specify the name, choose type "Caliper"



15. Click „Save“



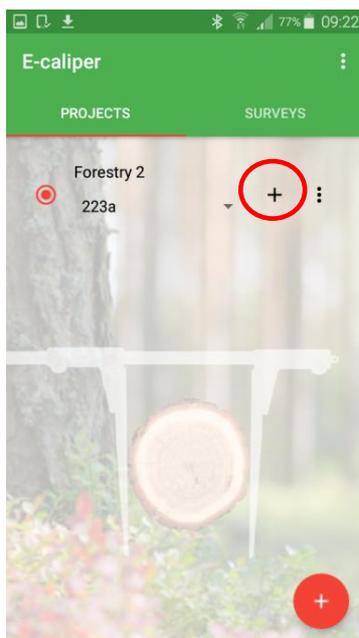
16. After adding all the necessary attributes click "Save".



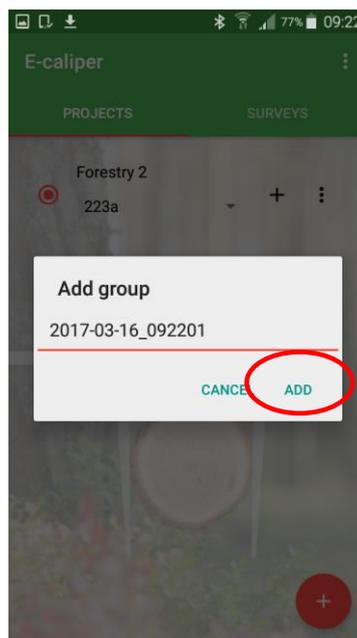
17. New project

Adding a new group

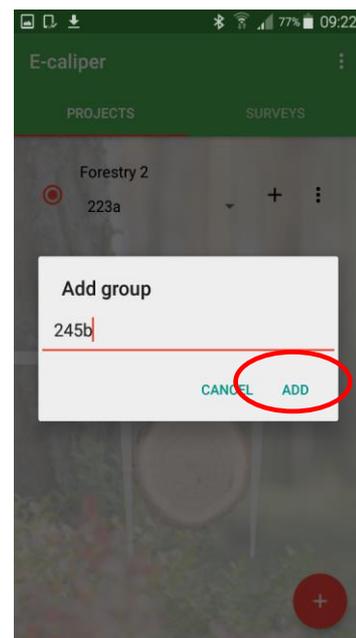
Adding a new group allows to use of previously prepared template attributes for a new measuring object. To add a new group in an existing project, follow these steps.



1. Click symbol to add a new group

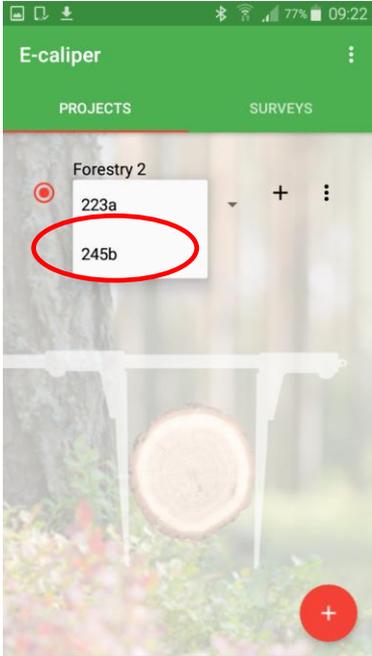


2. Click "ADD" if accept the name, if do not enter your own



3. Typing of own name of a group, click „ADD”

To begin work in the new measuring group do the following:



1. Open section "PROJECTS" on the main screen, click marked symbol

2. Choose from the list added group



3. New measurements will be recorded in the added group

4.2.4 Edit, delete projects and groups

To edit an existing project (also group) e.g. add new attributes, change or delete existing data, follow the steps indicated in the following instructions.

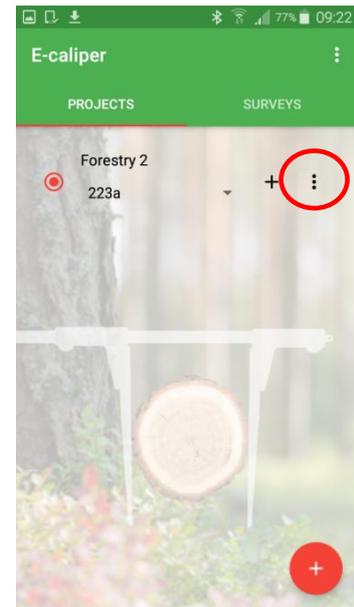
Manual of editing existing projects



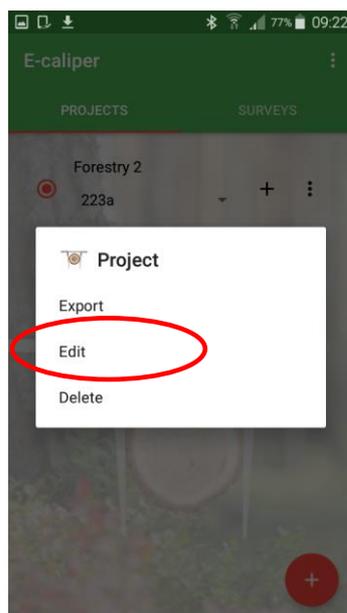
1. Open section "PROJECTS" on the main screen, click circled symbol



2. Select a group to edit, click on the desired



3. Click the circled symbol on the picture

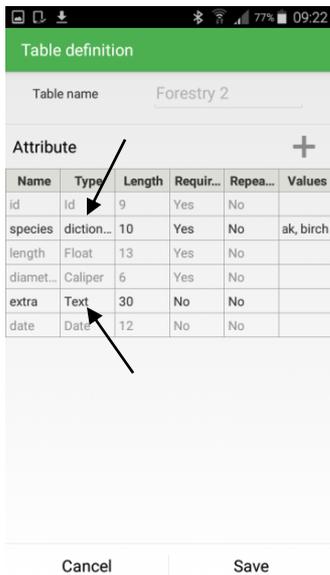


4. Click "Edit"

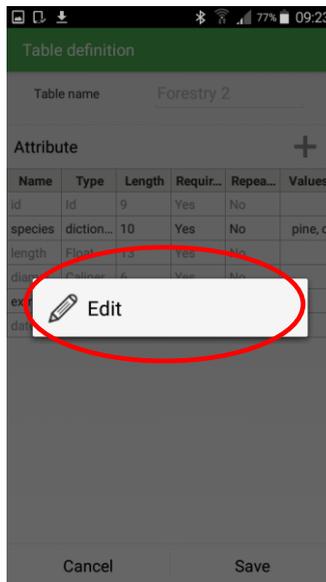
Name	Type	Length	Requir...	Repea...	Values
id	Id	9	Yes	No	
species	diction...	10	Yes	No	ak, birch
length	Float	13	Yes	No	
diamet...	Caliper	6	Yes	No	
extra	Text	30	No	No	
date	Date	12	No	No	

5. Table of current attributes. To add a new click circled symbol (manual described in Sect. 4.2.3, Fig. 3) to edit click on the attribute highlighted in black

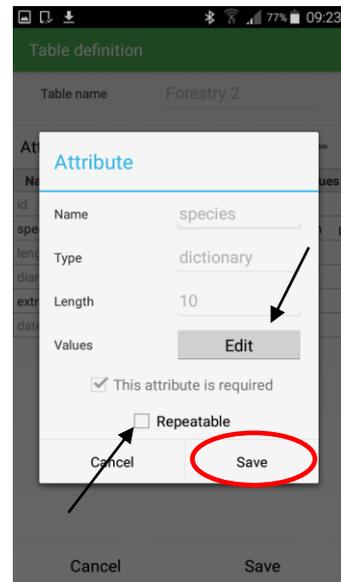
In the application, you can edit the attributes whose type is a "Dictionary", "Grid dictionary" and "Text".



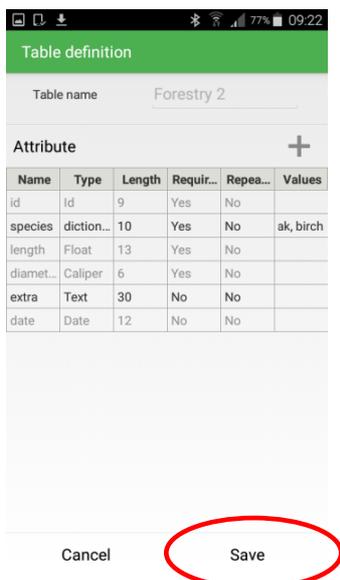
6. Attributes which can be edited are marked by arrows. Click on the selected to edit.



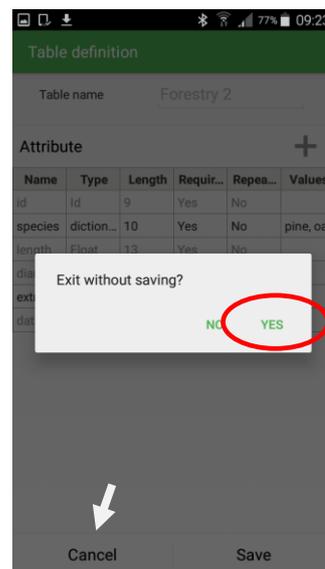
7. Click "Edit".



8. Editable fields marked with a black font (Edit, Repeatable). To add new values to the dictionary, click "Edit" (manual described in Sect. 4.2.3, Fig. 8). After you have finished editing, click "Save".



9. After all changes, adding new attributes, click "Save"



10. In case of cancellation of the changes, click „Cancel” and "YES"

Manual of delete individual groups



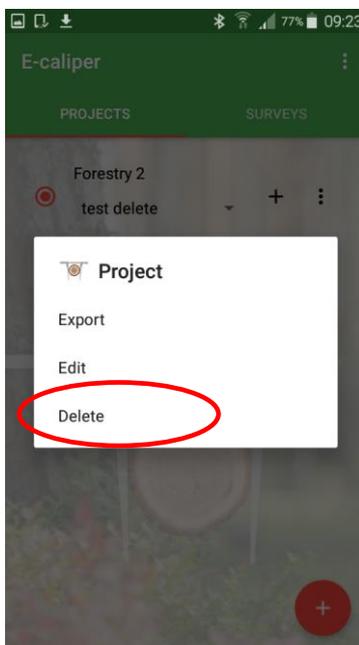
1. Open section "PROJECTS" on the main screen, click circled symbol



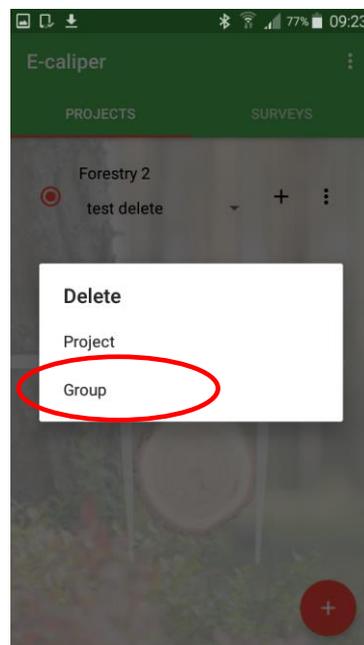
2. Select the group to delete, click on it



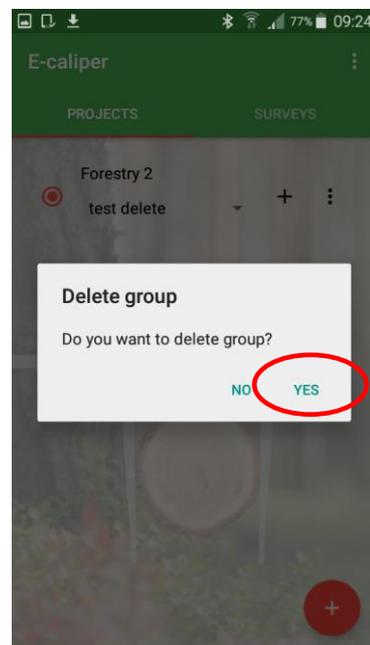
3. Click circled symbol



4. Click „Delete”



5. Click „Group”



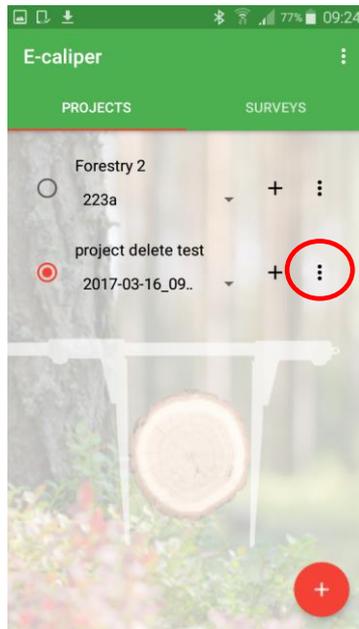
6. Click „YES”

After the above steps, group of measurements has been removed.

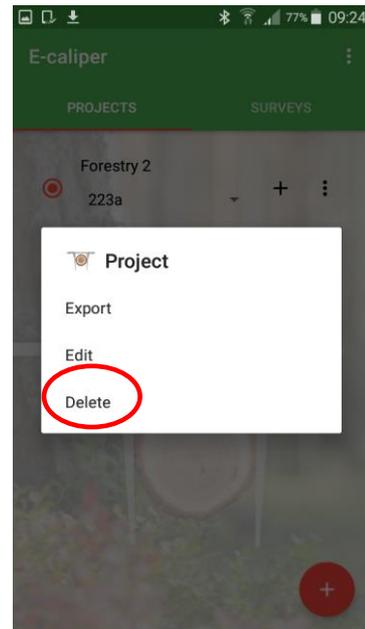
Manual of delete project



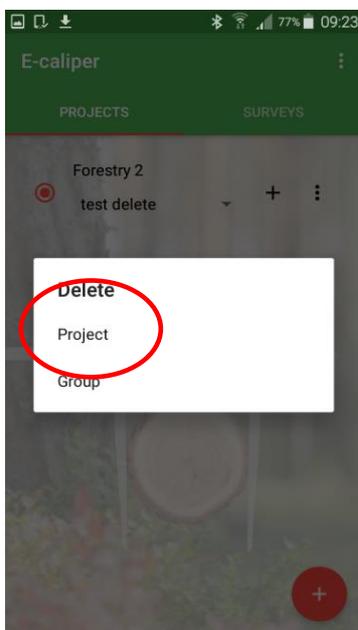
1. Open section "PROJECTS" on the main screen, select the project to be deleted



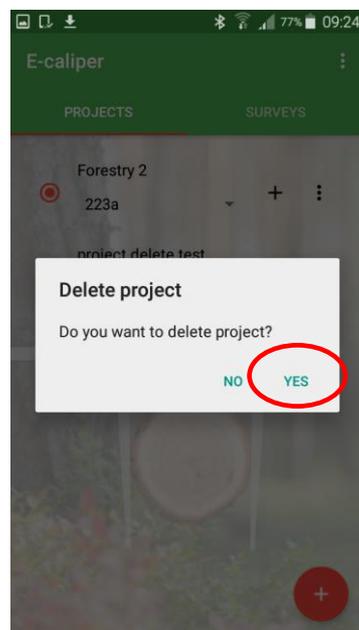
2. Click circled symbol



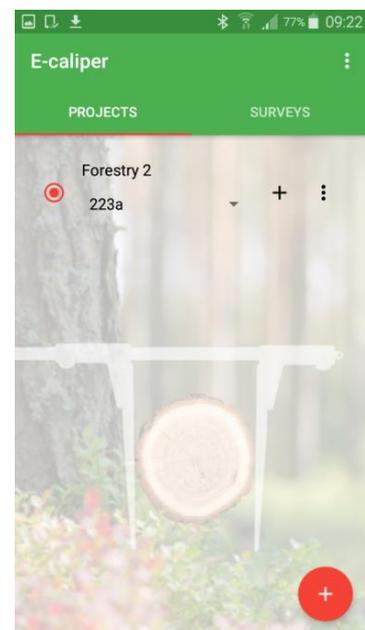
3. Click „Delete“



4. Click „Project“



5. Click „YES“

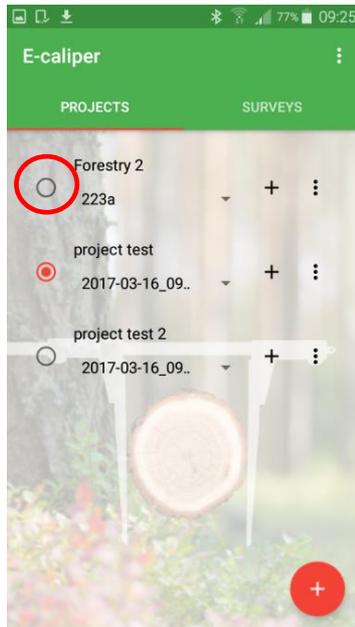


6. The project has been removed

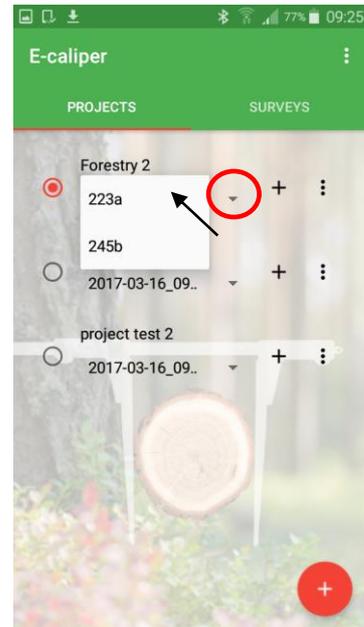
Warning! Removing the entire project, will also remove all groups (and measurements) that are in it.

4.3 Measurements

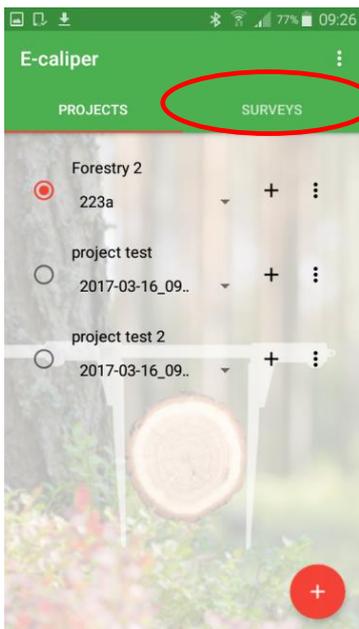
To add new measurements should go to the main application window in the section "PROJECTS" and perform the following steps:



1. Mark the project (click on the grey empty circle), where you want to add measurements



2. Click the symbol circled, then choose a group



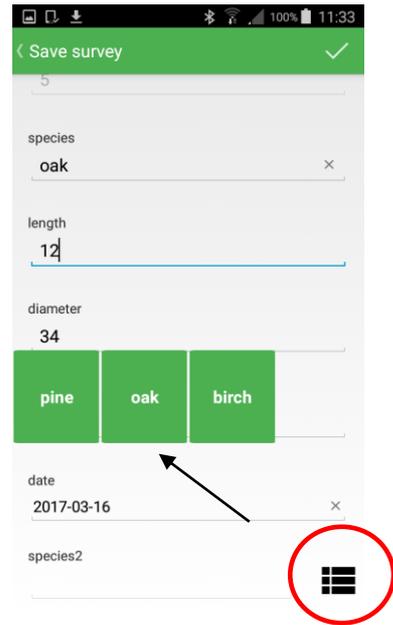
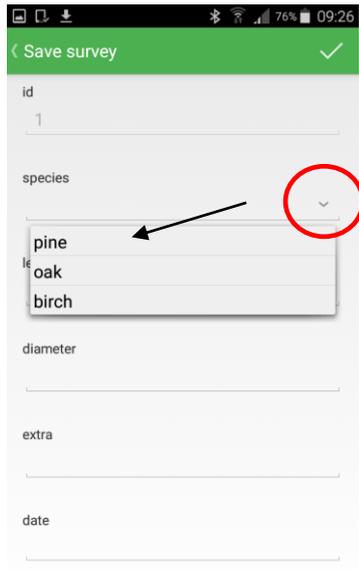
3. Click on the section „SURVEYS”



4. Click on the circled symbol to add a new measurement.

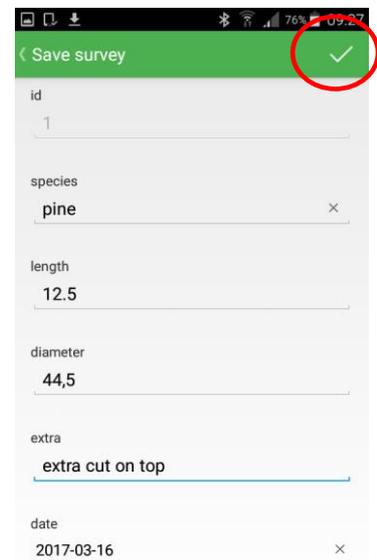
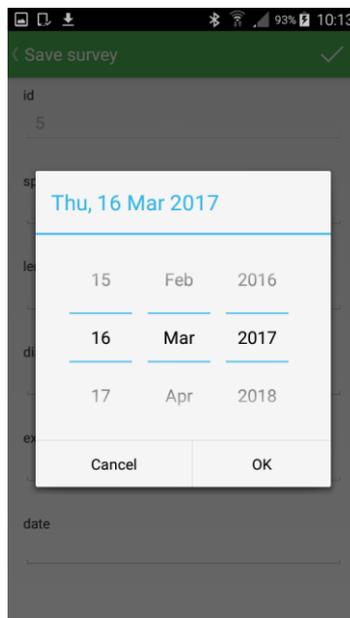
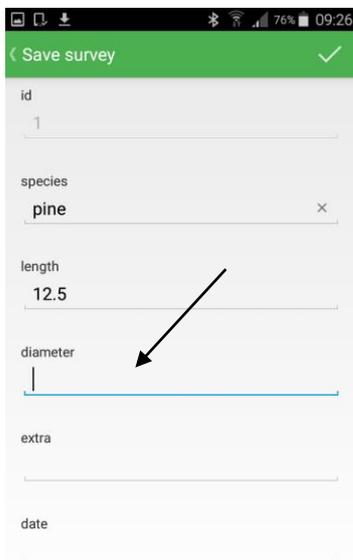
A screenshot of the 'Save survey' form. The form has a green header with a back arrow and a checkmark. The fields are: 'id' (text input with '1'), 'species' (dropdown menu), 'length' (text input), 'diameter' (text input), 'extra' (text input), and 'date' (text input).

5. Complete the fields



6. The choice of species

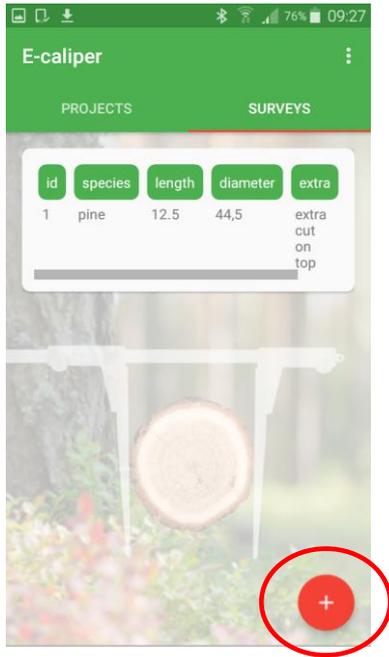
Photo on the left shows the type of "Dictionary", photo on the right " Grid dictionary". The first click on a symbol in a circle, then select from a list or tiles. Between the dictionaries there is only graphics difference. There is freedom to choose the type of dictionary by the user at the stage of adding a new attribute (Section 4.2.3, Fig. 7)



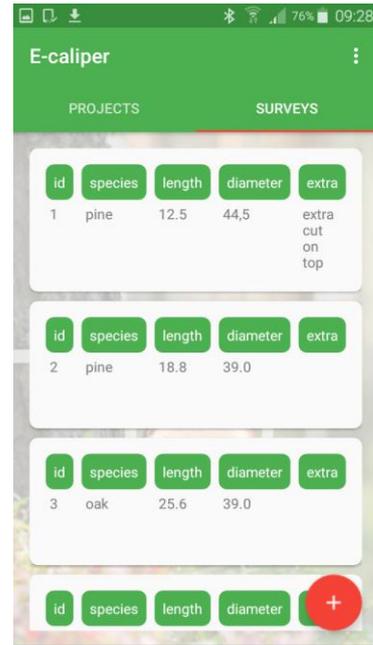
7. The data field diameter (type "caliper") are transferred from caliper CODIMEX E1, by pressing the button (chapter 2.2)

8. Completion next fields (date)

9. Completed data confirm by click the circled symbol

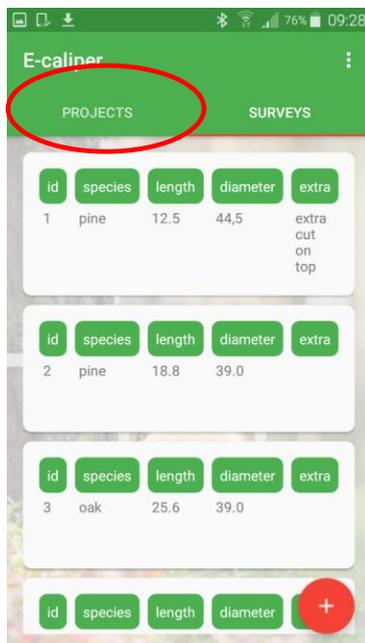


10. The first recorded measurement. To add next measurements, click again marked symbol

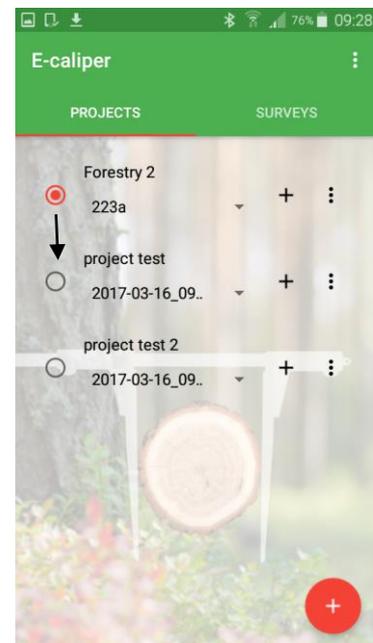


11. Example of stored measurements

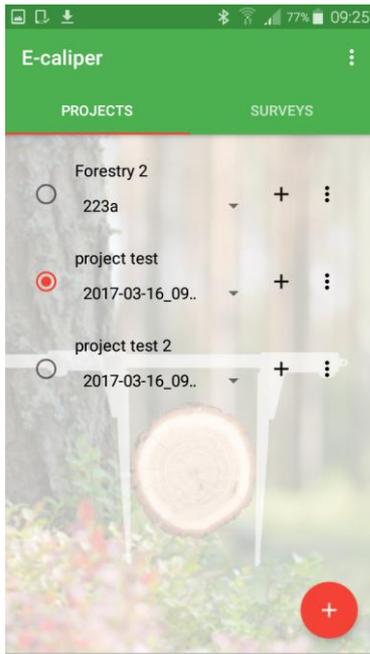
To complete the measurements in the current project and start another, follow these steps:



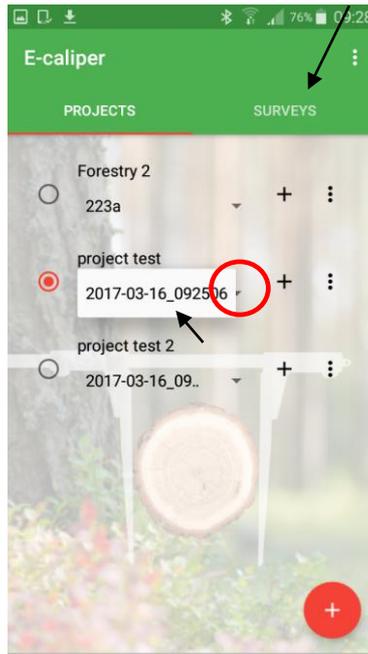
1. Click on the section „PROJECTS“



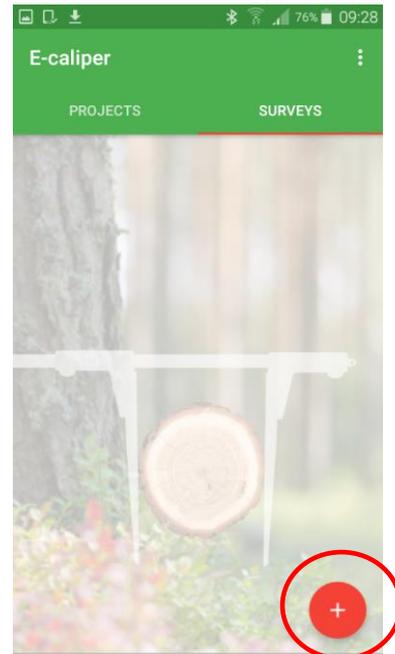
2. Select another project in which will do next measurements



3. Mark project



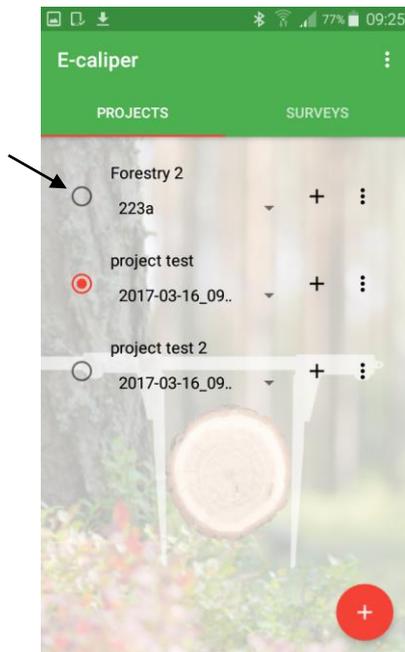
4. Click circled symbol, choose group. Click on the section "SURVEYS"



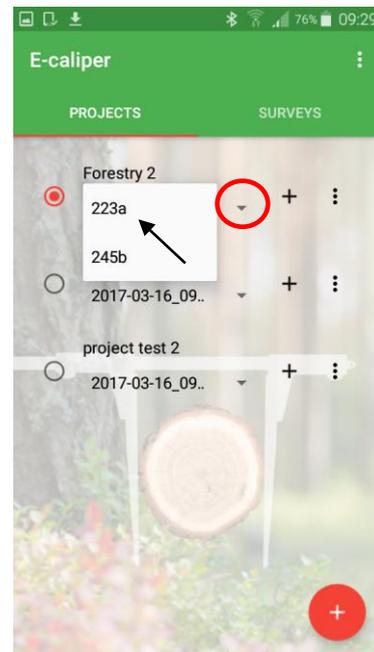
5. Start adding new measurements

4.3.1 Summary, edition, deleting measurements

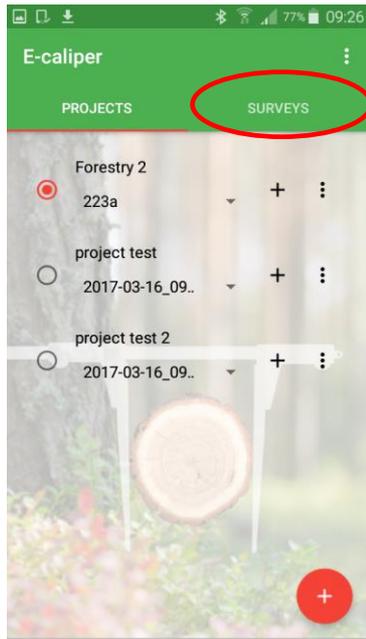
To see a summary (e.g. verified data) of measurements, follow these steps:



1. Mark the project in which want to make changes



2. Click the circled symbol, then choose a group

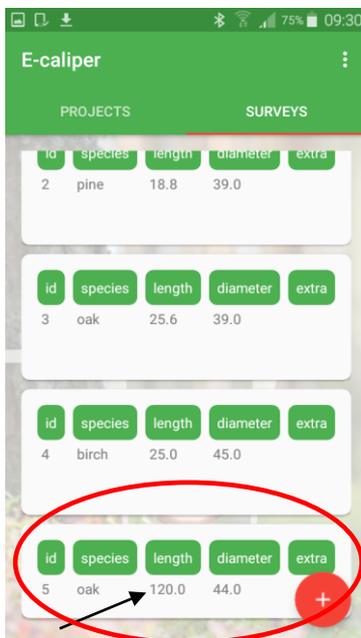


3. Click on the section „SURVEYS“

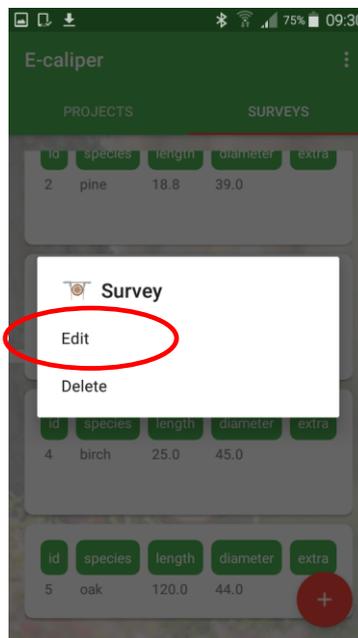


4. The list of measurements can be moved vertically, and to check individual move horizontally

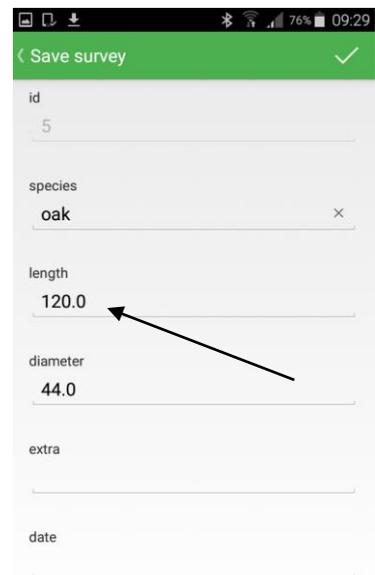
To edit incorrect measurements do the following:



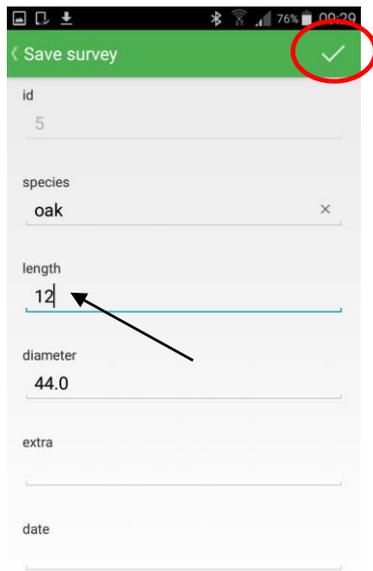
1. On the list of measurements find the wrong measurement and click on the measurement field



2. Click "Edit"



3. Find the incorrect data. Click in the field with incorrect data

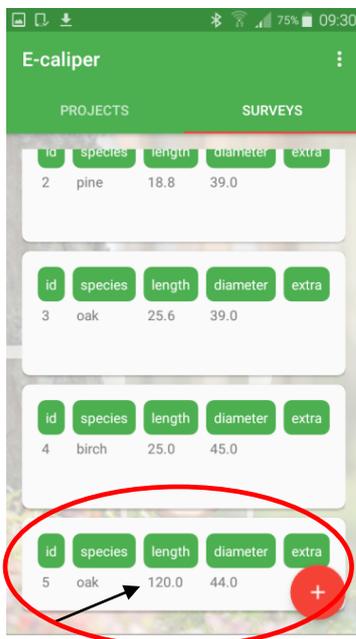


4. Change data correctly, click circled symbol

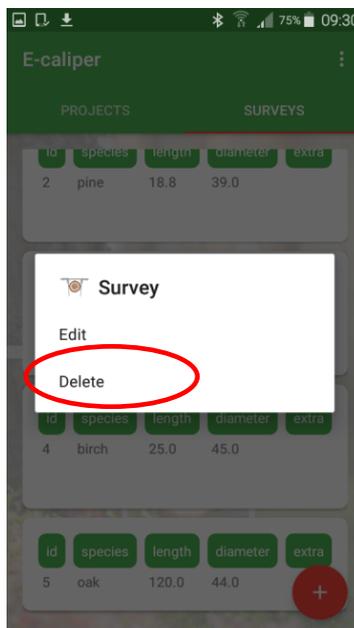


5. The data have been changed and saved

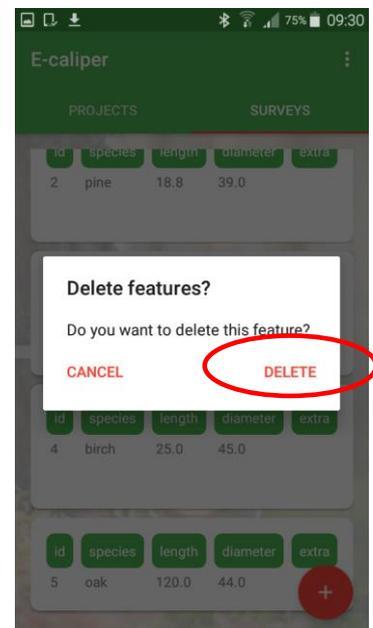
To delete an incorrect measurements do the following:



1. On the list with measurements find the wrong measurement and click on the measurement field



2. Click "Delete"

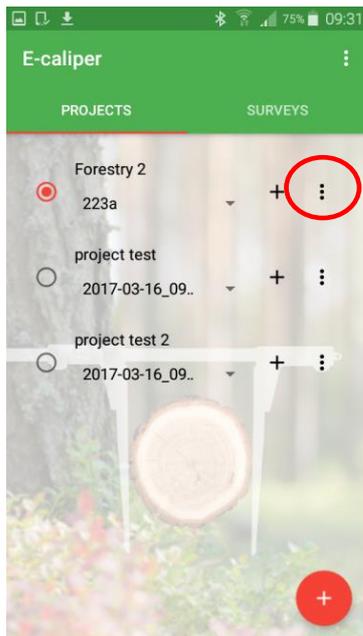


3. Click "DELETE".
Measurement removed

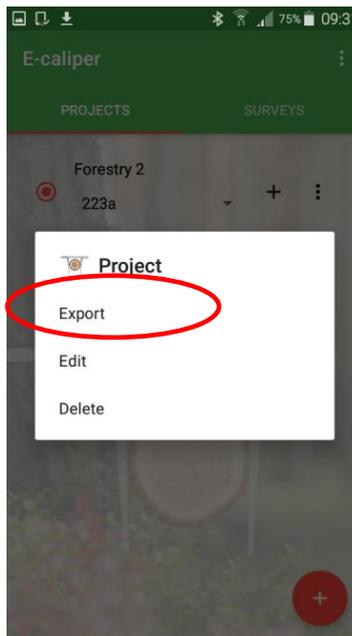
4.4 Export data

Application "E-caliper" allows to export data from all the groups in one project or only specified groups. To perform the export data, follow the steps listed in the manual below.

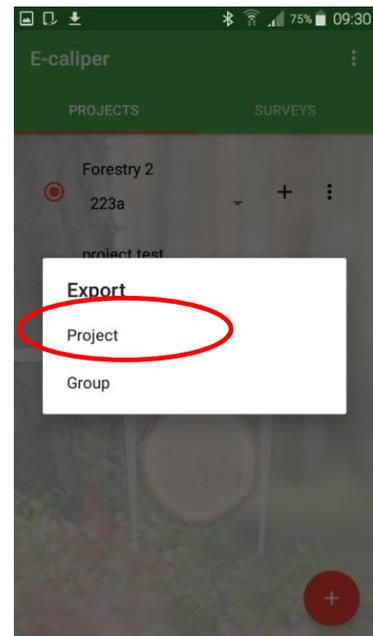
Manual of data export from the whole project



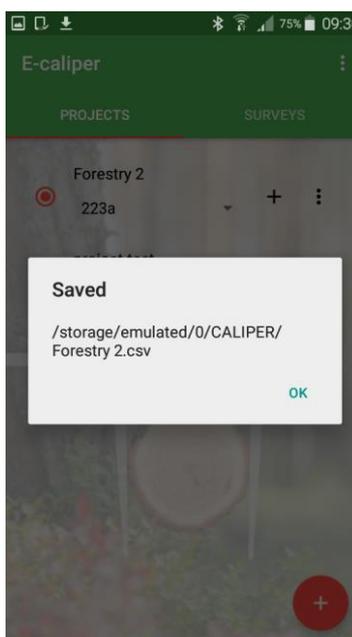
1. Mark the project, from which data will be exported.
Click circled symbol



2. Click "Export"

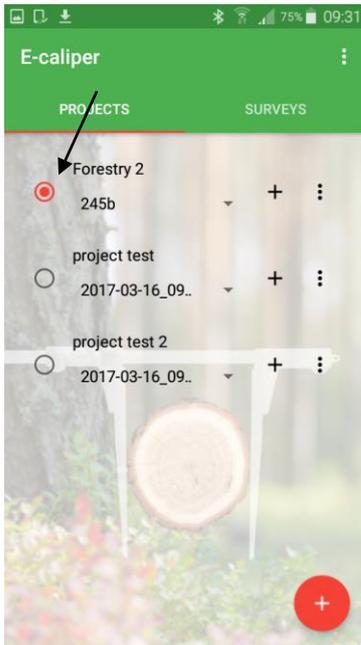


3. Click "Project"

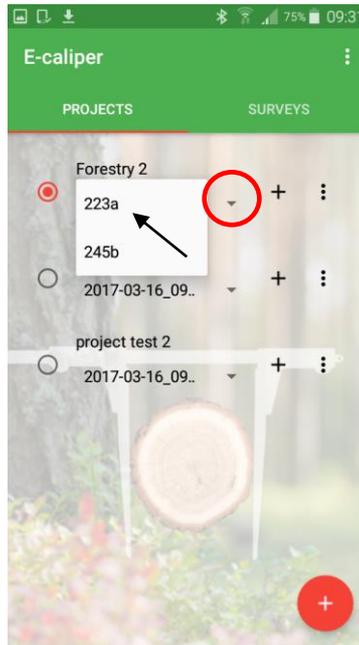


4. Data exported. File location described in section 4.4.1

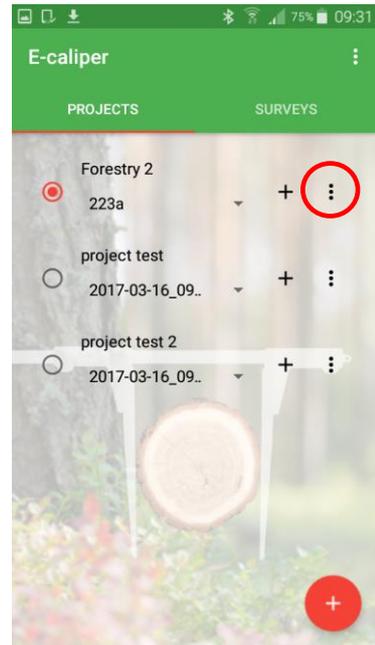
Manual of export data from a range of groups



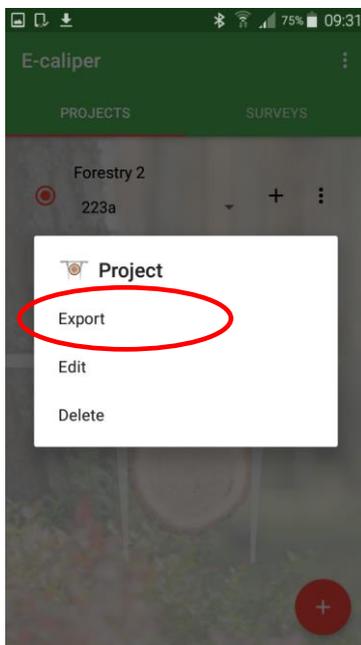
1. Mark the project, from which data will be exported.



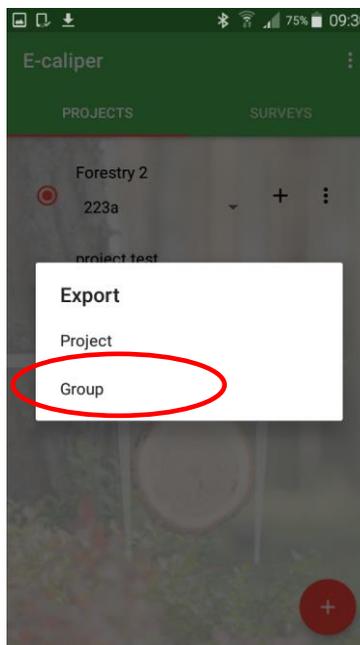
2. Click the circled symbol, then choose a group



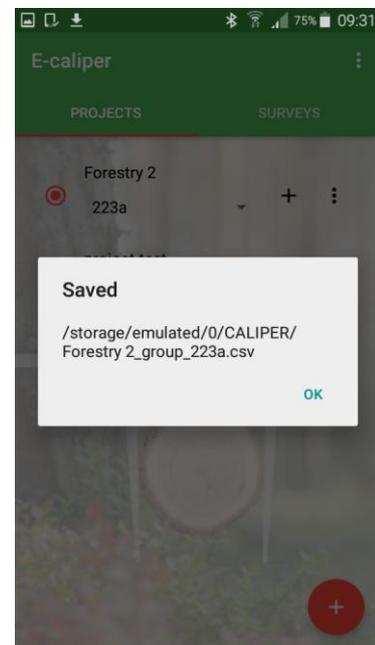
3. Click the circled symbol



4. Click "Export"



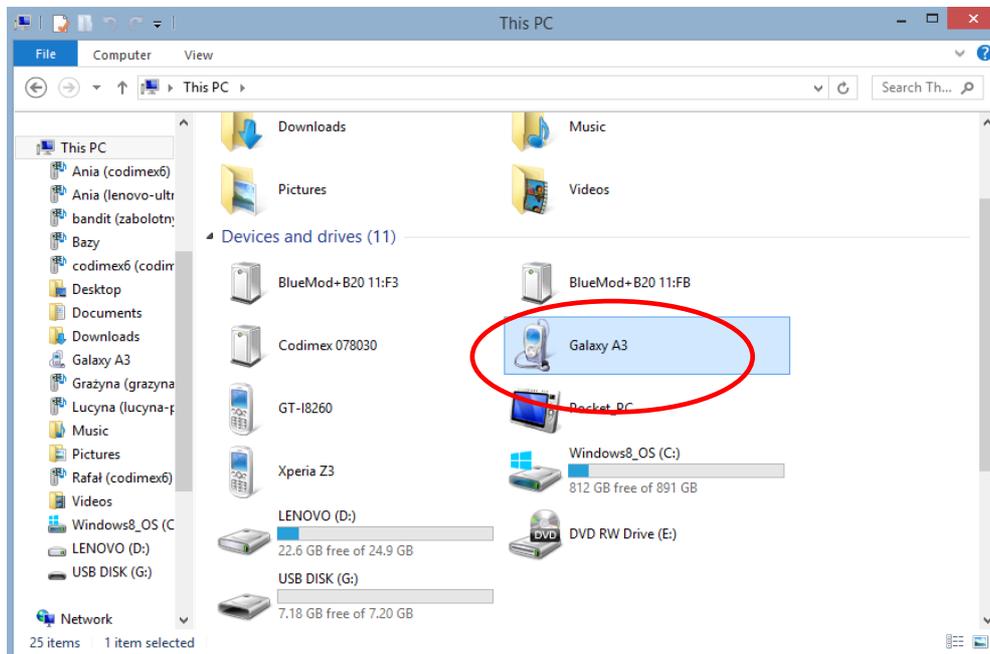
5. Click „Group“



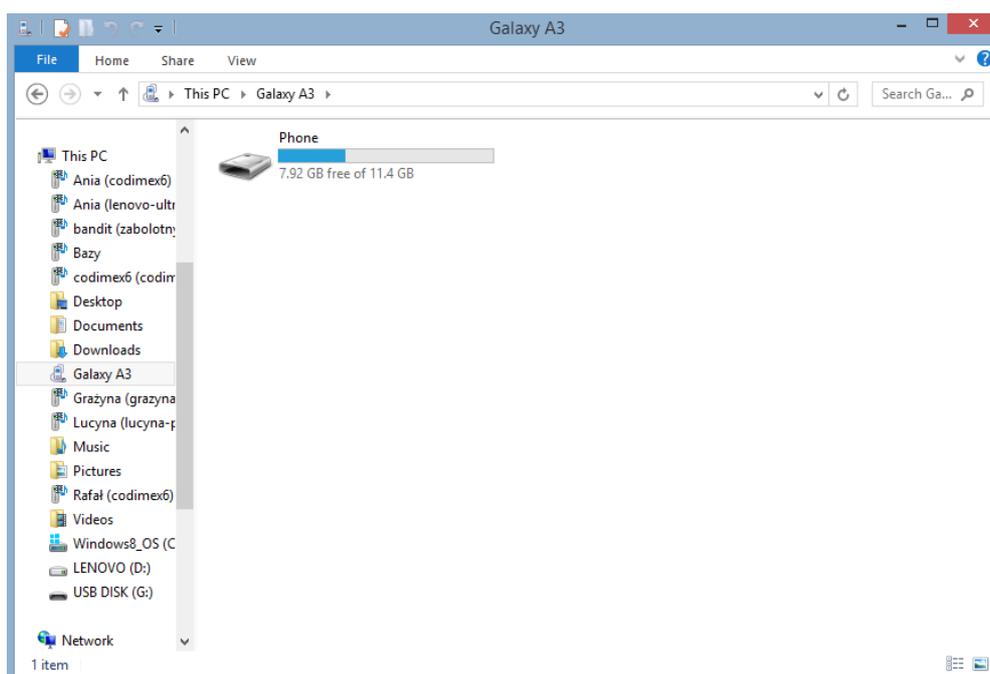
6. Data exported. File location described in section 4.4.1

4.4.1 Location exported files

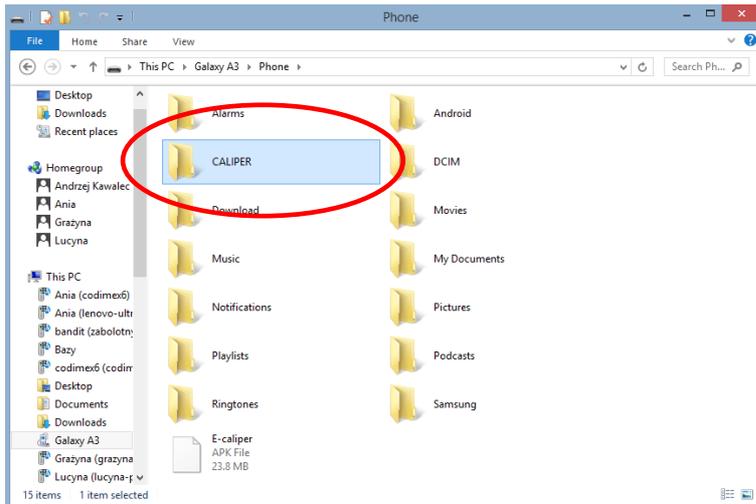
To locate and copy the exported files follow the steps:



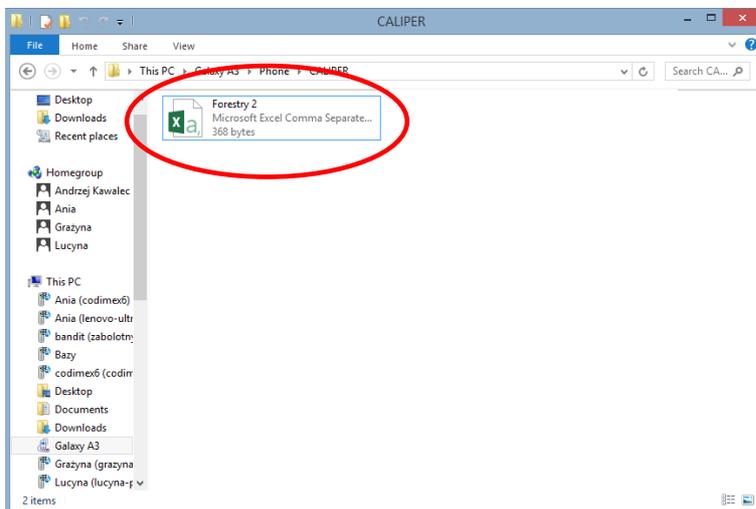
1. Connect smartphone to computer.
 - Open on the desktop "My Computer."
 - In "My Computer" folder find name of smartphone.
 - Open the icon of smartphone.



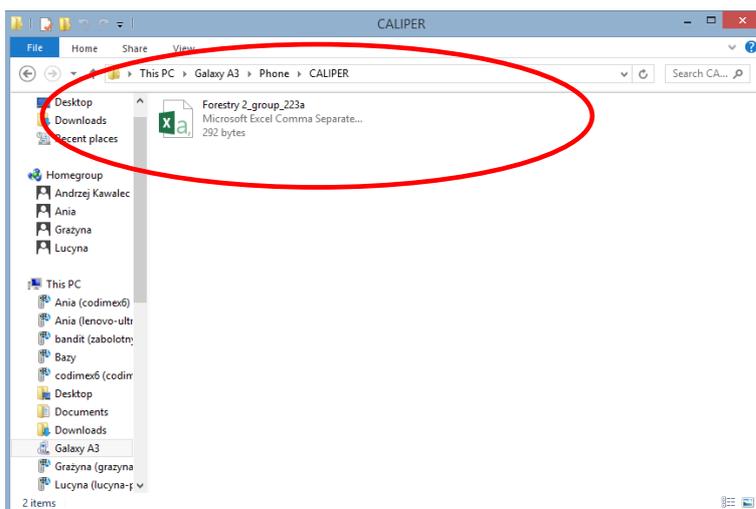
2. Enter the smartphone, open the icon "Phone"



3. After enter "Phone", open folder named "CALIPER".

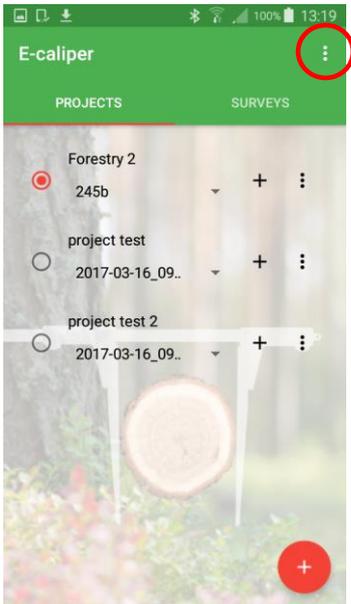


4. **The exported project file**
 In the folder "CALIPER" locate a file with the same name as the project name in application "E-caliper." Example here: "Forestry 2"

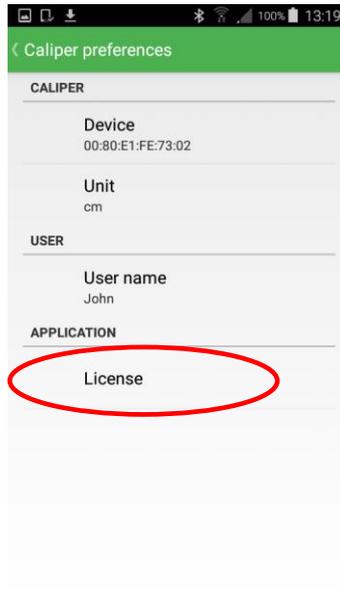


5. **The exported group file**
 In the folder "CALIPER" locate the file with the same name as the project name with an extra note "_group_" and the name of the group, which was exported. Here example: Forestry 2_group_223a

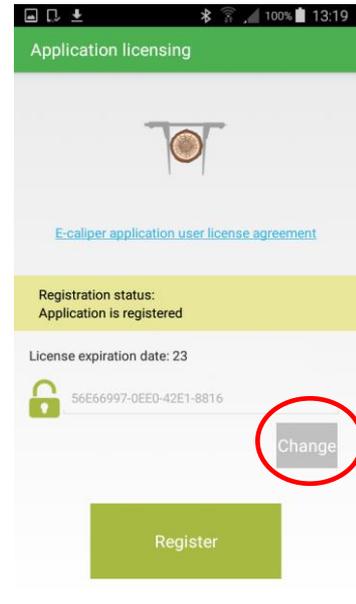
4.5 Activating full version



1. Open the settings tab



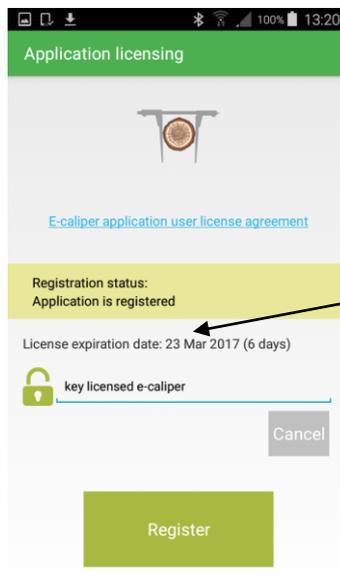
2. Click on the "License"



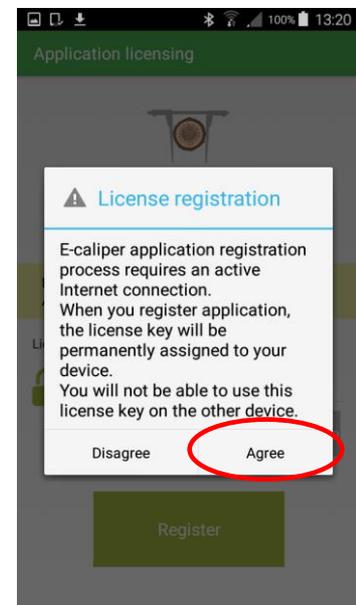
3. Click "Change"



4. Click on the current license key, then remove



5. Enter the new license key (example), click "Register"



6. Click "Agree". Go back to the main menu (press "back button" on smartphone)

After verification of the license key you have the full version of the application.

The license key is located on the supplied pendrive in a file named "licensed_key.txt."
It can also be obtained by calling the company CODIMEX on number +48228619445
or e-mail codimex@codimex.com.pl.

A license key is assigned to only one device – there is no possibility to register
application on multiple devices using the same key

Warning! During the activation process of license key, smartphone must be
connected to Internet.

For further questions please contact:

e-mail: codimex@codimex.com.pl

tel. +48228619445