

ELECTRONIC RULE
FOR MEASURING RAIL STRAIGHTNESS

rectirail-dl^e



User Manual

MU-A-RectiRail DL2-rev01a-Gb



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We reserve the right to make any alteration or improvement to the specification, operating and maintenance instructions as well as to spare parts list.

Die von uns durch technischen Fortschritt bedingten Änderungen und Verbesserungen an der Ausführung, Wartungsart und Ersatzteilliste, werden vorbehalten.

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MODIFICATIONS

Modification no.	Page(s) modified	Date	Validated by
A	Document creation.	04/05/2015	AT

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1 **GENERAL CHARACTERISTICS**

The **RectiRail DL2** rule is designed to measure the longitudinal profile of a rail over a length of 1 metre, to an accuracy of +/-50 microns.

RectiRail DL2 consists of 100 position sensors secured to a reference rail. The rule bears on the part to be inspected, by means of two pads placed at each end of the rule.

During the measurement, the electronic circuit reads the output voltage of each sensor and converts it into a position measurement. The calculated curve is then transferred via Bluetooth connection to a PDA, and displayed on its screen.

The measurement is of the capacitive type (contactless). This highly effective technology, accurate, linear and quick, requires the materials for which distance is to be measured from the sensor, to be sufficiently conductive: metals, carbon fibre composites, rubber composites, etc.

RectiRail DL2 operates on oxidised metals and some paints, when at least one of the two steel pads ensures good electric contact with the part to be measured.

It also comprises the following parts:

- Side stops with indexing
- Holding magnets on the part to be measured
- Browsing in the software using 1 joystick, 2 buttons and a touch screen
- Power supply by a battery consisting of 6 rechargeable accumulators (supplied with a charger)



Very important:

- By principle, the capacitive sensor gives a mean measurement on a surface.
- Measurement accuracy is guaranteed only for a disk with a 12 mm diameter opposite the sensor.
- For measurements on parts narrower than a rail, e.g. 10 mm wide, perfect side centring of the rule must be ensured on the part to be inspected, and calibration carried out on a reference.

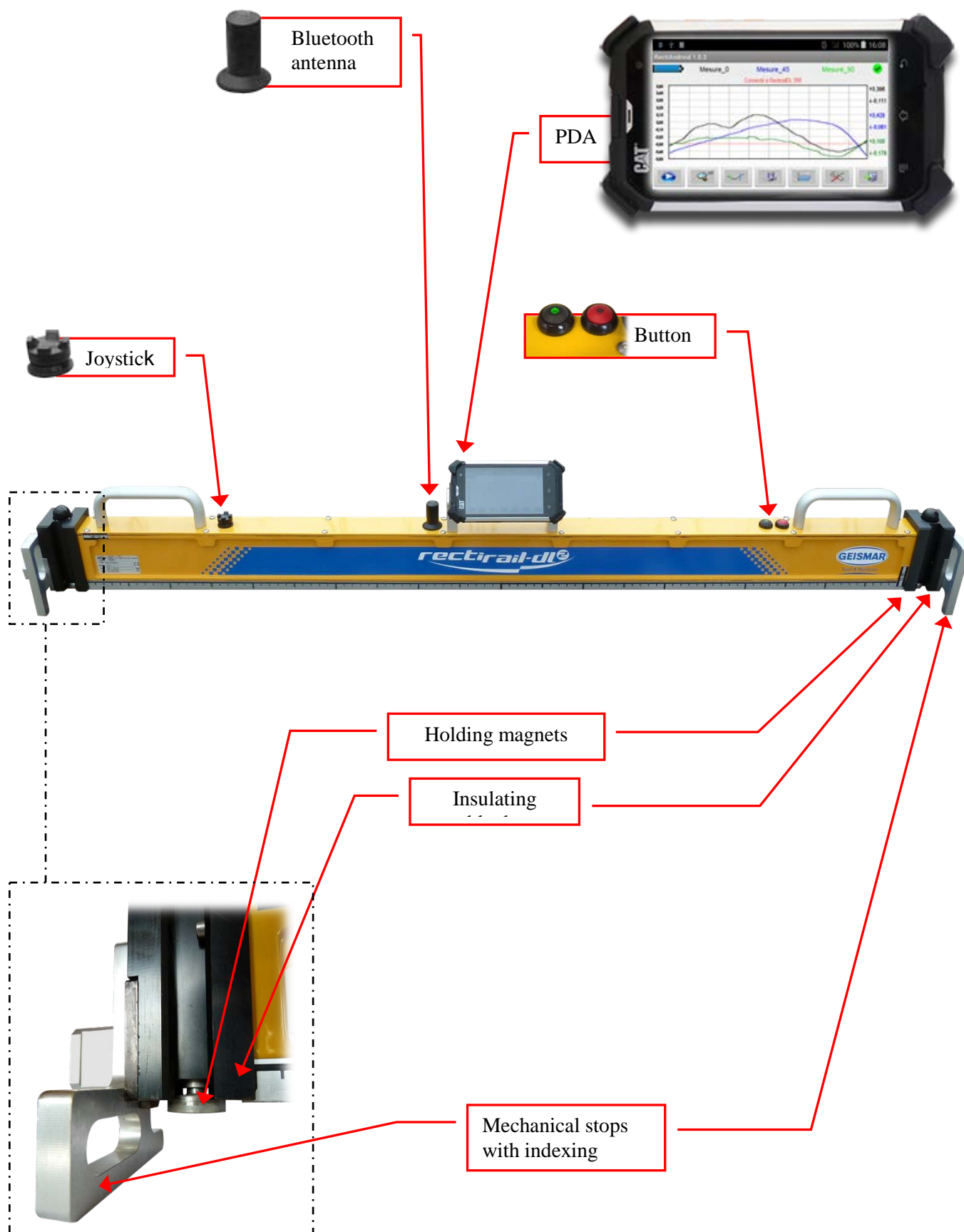
2 TECHNICAL DATASHEET

Characteristic	Value	Unit
Dimensions L x H x W	1160 x 160 x 100	mm
Weight (including battery)	5	kg
Measurement range	4	mm
Accuracy	± 50	μm
Resolution	12.5	μm
Storage capacity	Limited only by PDA capacity.	
Rule autonomy	> 800	Readings
PDA autonomy	3-4	Hours
Operating temperature	0~40	$^{\circ}\text{C}$
EMC conformity	Standard EN-50121-4 (2000) *	-

* Certificate 2005 SMEE 3370-ATT and reports 3368-EMI, 3369-IMM
 Emission: Repository EN-50121-4 (2000), Level EN 55011 Class A
 Immunity: Repository EN-50121-4 (2000), Levels ENV 50204 and EN 61000-4-3, 6, 4, 2, 5, 8, and 9

3 USING THE HARDWARE

3.1 Overview



3.2 Mechanical side stops

These stops have 4 indexed positions. To choose their position, pull them outside and rotate them until the required configuration is reached.

Rail profile measurement
(head)
(0° position)



Rail route measurement
(side)
(90° position)



Fillet measurement at 45°
(45° position)



Ground installation.
Rest position.



Note: According to the measurement mode and the chosen settings, you will be asked to identify rule position before taking a measurement (grouped mode or simple mode with choice of position, see §0. 5.5.4).

3.3 Magnets and electric stops

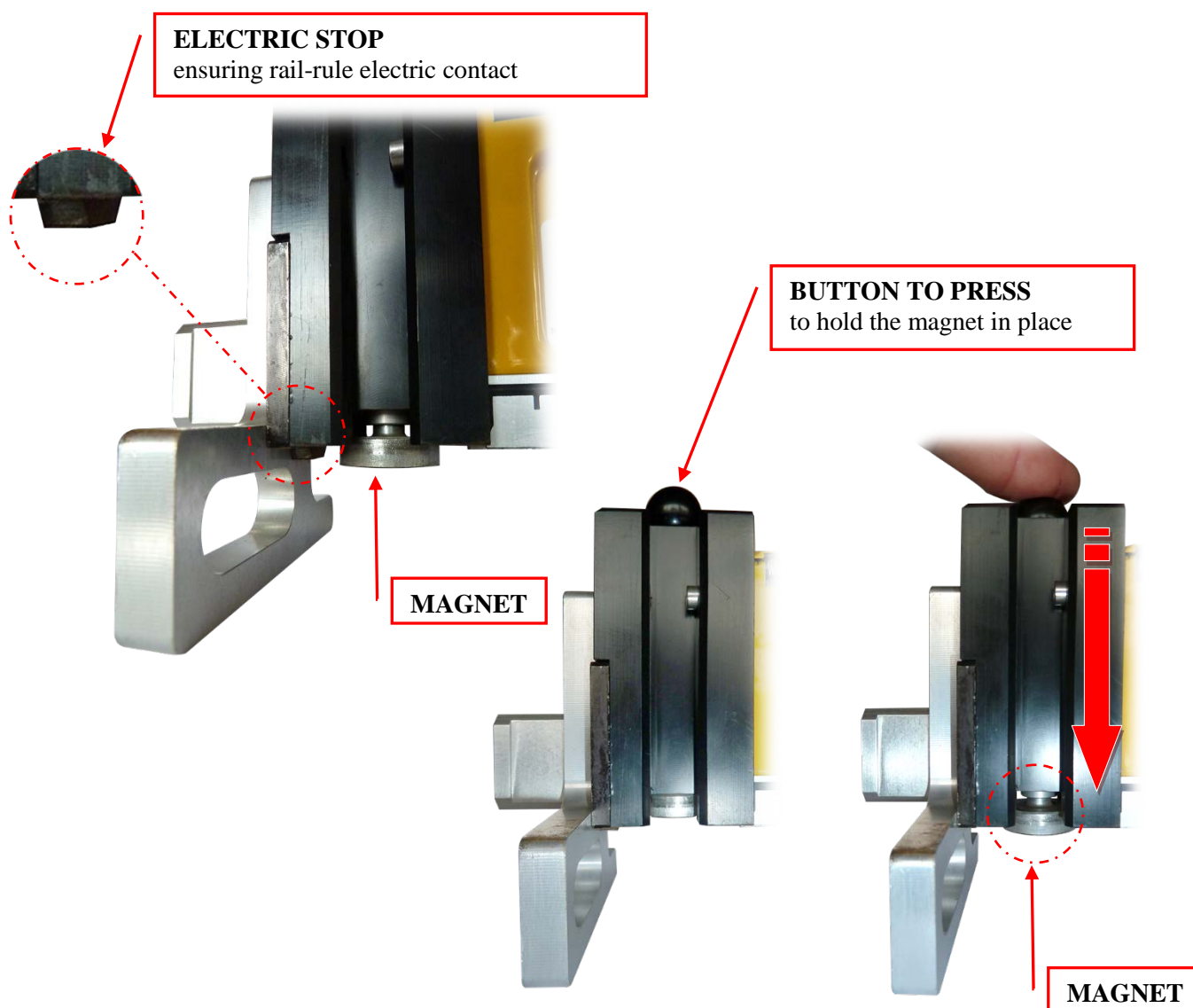
Magnets are used to hold the **RectiRail DL2** in place. Once the rule has been positioned on the area to be measured, press the two buttons securing the magnets placed on the top of each insulating block.

These magnets ensure that the rule is held properly on the rail, thus contributing to good contact between the rail and the electric stops. Measurement quality also depends on the quality of this contact.

Moreover, these electric stops are made of hardened steel and have an aggressive shape. They can be used to rub the rail should it exhibit an excessively thick rust layer.

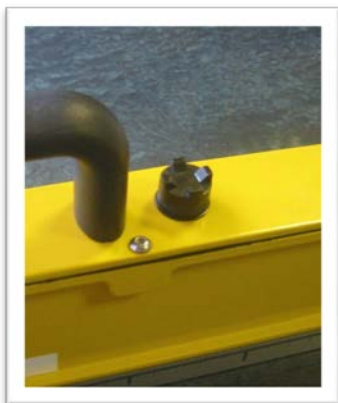
Caution: as the two electric stops are interconnected, do not take measurements on rail joints which have different voltages.

To make it easier to separate the magnets from the rail, slant the rule backwards, away from yourself.



3.4 Buttons

The RectiRail DL2 is fitted with 3 control buttons:



The **VALIDATION BUTTON** is used to:

- start the rule
- validate choices when browsing in the PDA menus: press this button to validate the choice made (highlighted or encircled) on the PDA screen.

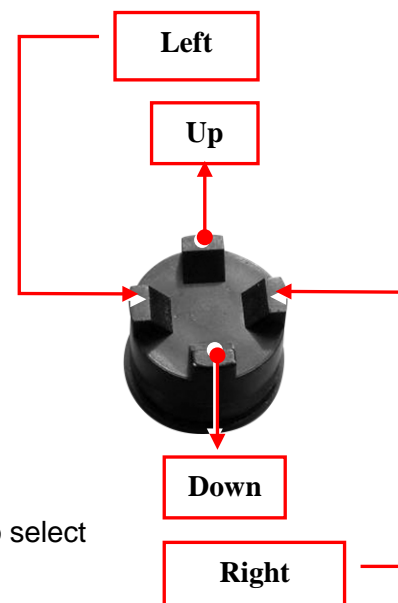


The **ESCAPE BUTTON** is used to:

- switch off the rule, when it is held down (>2 seconds)
- cancel in the PDA menus (back to the previous screen)

The **JOYSTICK** is used to:

- browse in the PDA menus:
- move through the menus ("Left" and "Right" keys).
- The joystick ("Up" and "Down" keys) can also be used to select in a list



The indicator LED on the button is lit when the rule is in operation.



The rule is switched off either on exiting the PDA software or by holding down the escape button.

Users browse in the PDA menus either via the rule buttons or directly on the PDA screen (using the pen or their finger).

To protect the batteries, the rule is automatically switched off after a certain time without operator action. This time is set in the "timeout" function of the Option (protected) menu of the PDA program.

3.5 Battery

The **RectiRail DL2** has an internal block of 7.2v Ni-MH rechargeable batteries that must not be removed by the user. The following procedure must be complied with when charging the **RectiRail DL2**

- 1) Place the **RectiRail DL2** on a flat surface having first ensured that this surface is clean and dry.
- 2) Insert the charger plug in the socket located on the side of the **RectiRail DL2** and plug the charger into the mains supply. The charger has a range of input operating voltages from 100VAC to 240VAC, 50-60 Hz. If a generator set is used, this set must be started before plugging in the charger (to avoid the risk of voltage peaks on starting).
- 3) The device takes roughly 5 hours to charge, when the batteries are completely discharged. During charging, the red LED on the “cancel” button will blink. When it stops blinking, charging is complete. During charging, you can use the **RectiRail DL2**.
- 4) Once the battery is charged, unplug the charger from the mains supply and remove the socket from the device. The **RectiRail DL2** is now ready to be used.

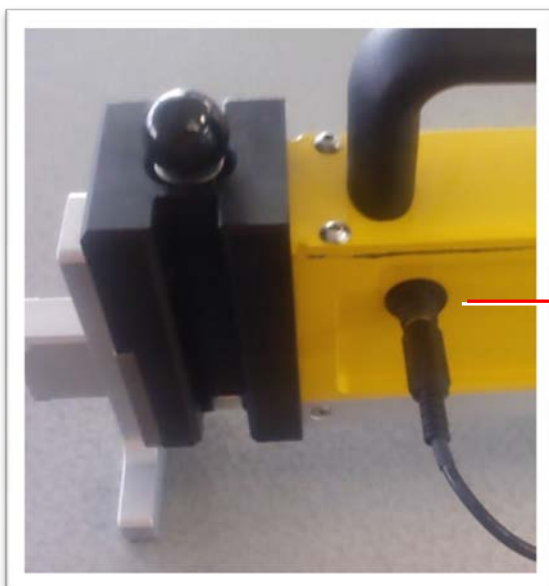
Cold affects battery performance. We thus recommend that the **RectiRail DL2** be stored in a temperate place.

If the device is not to be used for several days, it must not be left charging as this will damage the batteries in the long-term.

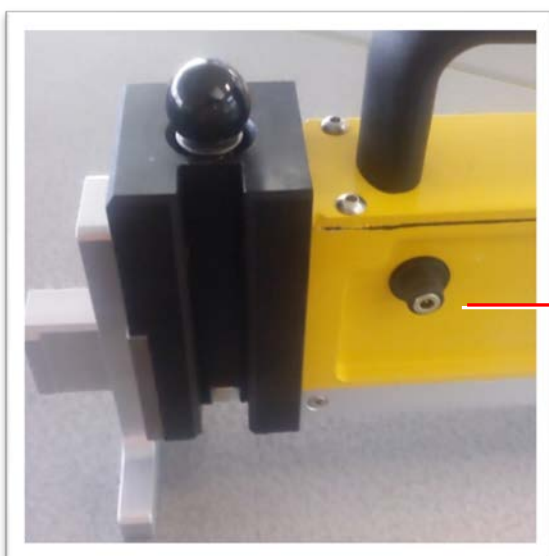
If they are not used, the batteries will discharge in roughly 2 months. We thus recommend that you recharge the **RectiRail DL2** approximately once a month even if you do not use it. In normal conditions of use, there is no need to run a ‘cycle’ (discharging and charging) on the **RectiRail DL2** batteries. However, if instrument autonomy is reduced, a complete discharging cycle may help restore battery capacity.

To do this, set the timeout at 0 (no switch off) and leave it in operation (green LED on) for 12 hours (or until the green LED goes out).

The **RectiRail** must then be recharged for 5 hours.



Rule charging



Charge connector



Charge indicator

4 USING THE SOFTWARE

4.1 Menu overall organisation

MAIN

	Connect		
		Validate	
		Cancel	
	Measure		
	Zoom		
	Scan		
	Back up		
		Validate	
		DA5	
		Cancel	
	Open		
		Validate	
		DA5	
		Cancel	
	Settings		
		Option menu (password)	
		Calibrate (password)	
		Exit	
	Exit Switch off		

4.2 Changing the language

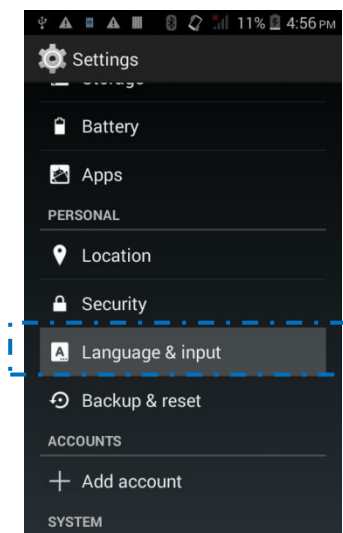
The language of the **RectiRail-DL** is linked to the language selected on the PDA

Click on the icon:

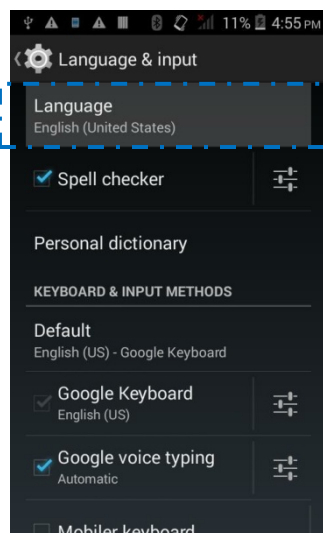
1 – Settings of your PDA



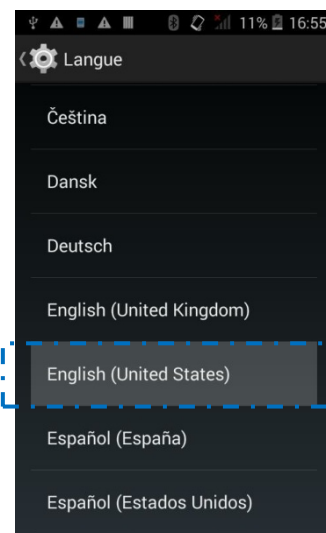
2 – Language and input



3 – Language

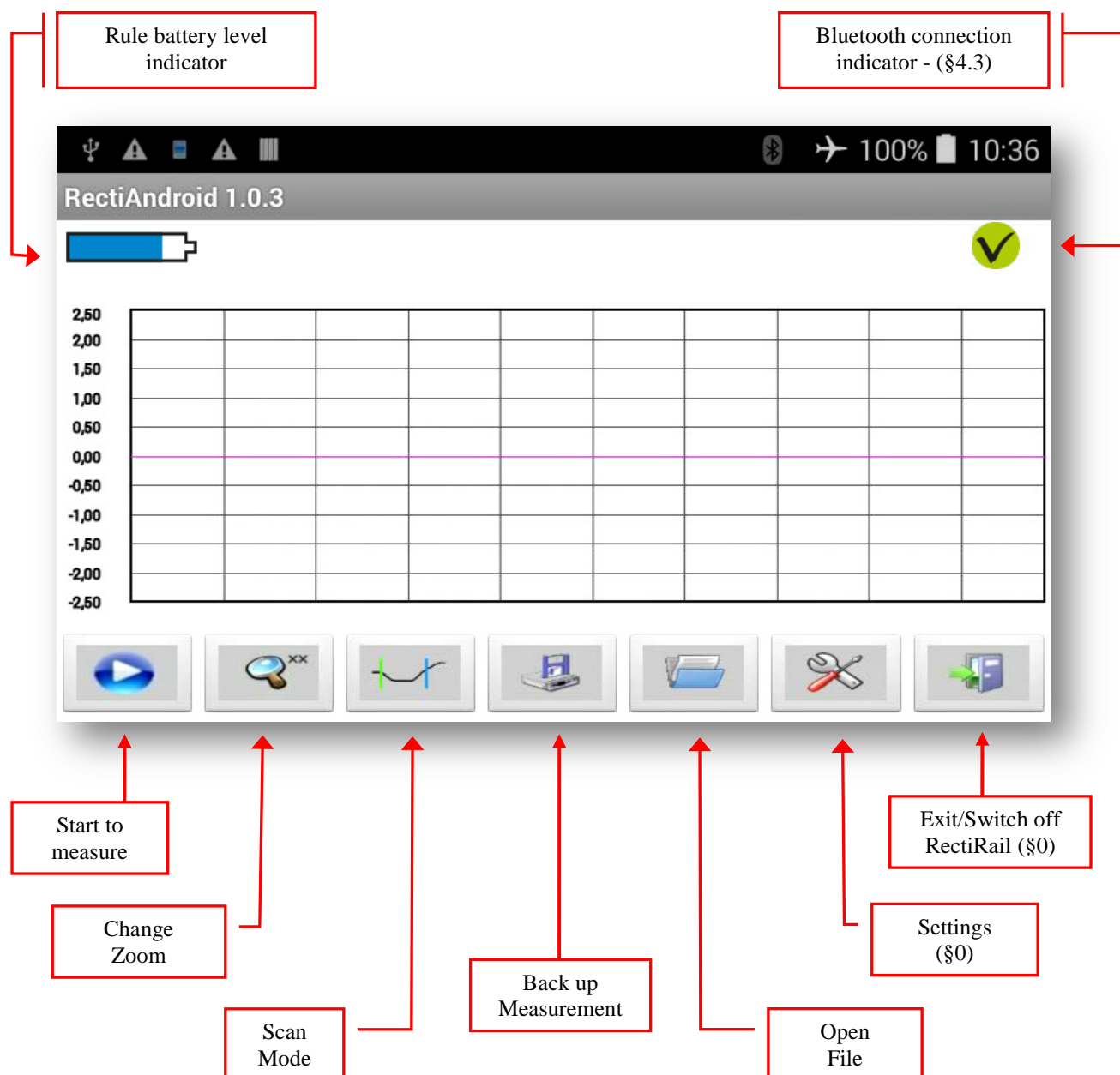


4 - Your language



*If the translation was not in your language, the software will be in English.
Contact your representative to obtain an update in your language.*

4.3 Main screen

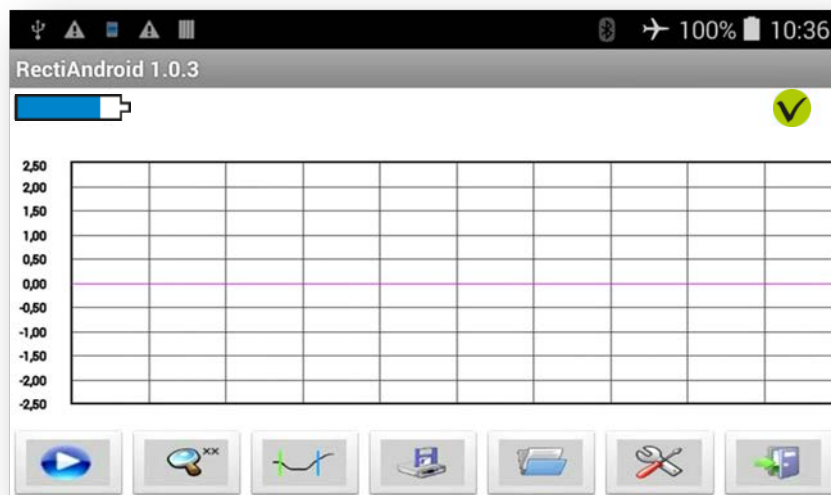


4.4 Connection

4.4.1 Connection status

On starting, the software automatically connects to the **RectiRail DL2** with which it is paired.

Proper connection status is given by the connection icon: .



If, during use or on starting the **RectiAndroid** software, the connection icon turns red such as shown below, this means that the connection either failed or could not be initialised:



NOT CONNECTED




CONNECTED

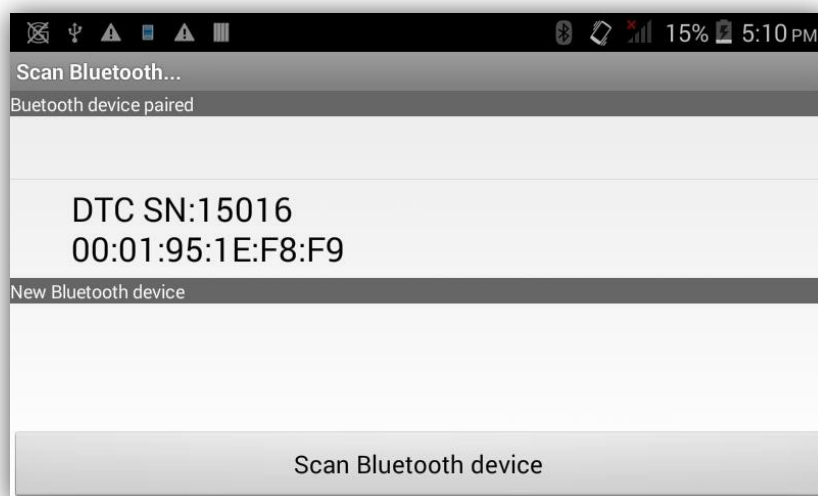


On starting the software, a message stating that the version of the software installed in the rule is an "old" version may be displayed: this will not prevent the rule from being used.

However, some functions may not be available. Please contact your Geismar representative should you have any queries.

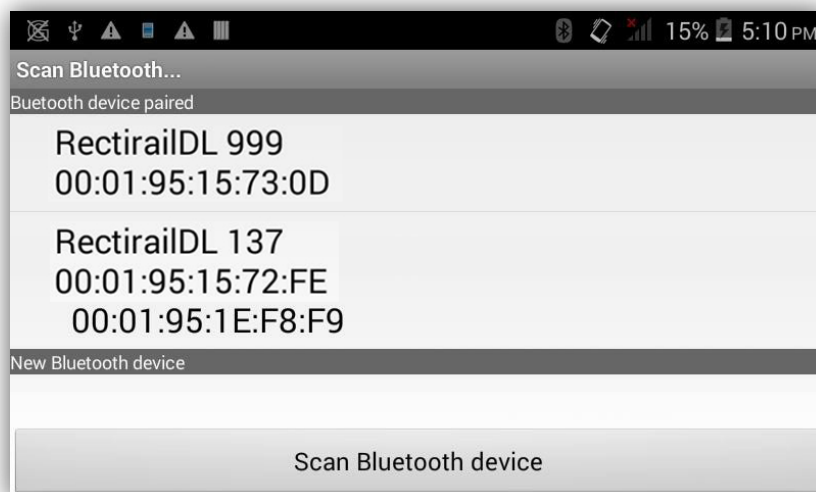
4.4.2 Reconnecting the RectiRail

Click on the icon  to bring up the screen below:



Two possibilities:

- The rule, identifiable from its serial number, is available in the list: in this case, check that the rule is energised and click on the rule name. The software will automatically connect to this rule.
- The rule is not in the list. You then need to pair the rule with the PDA.
- Click on "Bluetooth devices scan" and the rule will appear in **"New Bluetooth device"**



Validate choice of rule by clicking on its name. Connection is now effective.



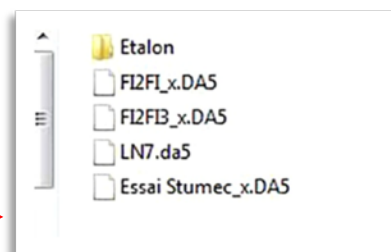
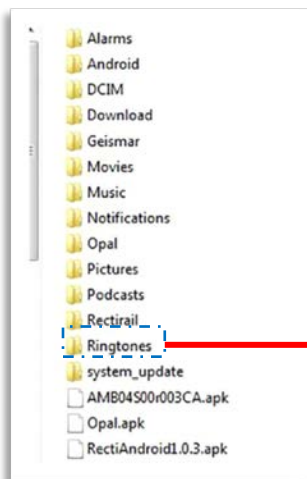
REMINDER: To prevent disruption by untimely interruptions of the Bluetooth connection, the PDA automatic standby mode must be de-activated. This option is normally accessible in the menu "Start -> Settings -> System -> Supply -> Advanced" of the PDA. Refer to the PDA user manual for more details.

4.5 Data management

4.5.1 General principles


The measurements taken by the RectiRail are backed up in a file with the “DA5” extension.

These “DA5” files are visible when browsing in the PDA tree from a PC to which the PDA has first been connected (*refer to the PDA user manual*).



The measurements are not directly “visible” in the Windows tree.

The measurements contained in a DA5 file are visible:

- In the software, via the “open” function , providing access to a choice of DA5 files and to the files in this DA5.
- In **RectiPC**: refer to the **RectiPC** manual (*Software for Windows*)

The backup location or the location of a file you want to open is selected when the following screen is displayed:



- By default, the DA5 files are backed up in the directory “Ordinateur\B15Q\Stockage téléphone\Rectirail” (“Computer\B15Q\Telephone storage/Rectirail”) of the PDA.
- An existing DA5 in which you wish to consult or save the new measurements



If a DA5 file has the suffix “-x”, this means it was created for a measurement taken in grouped mode with 1 file per measurement group (see §0.7). A “standard” DA5 file does not have this suffix. The name “MyDocuments” may vary according to operating system and language.

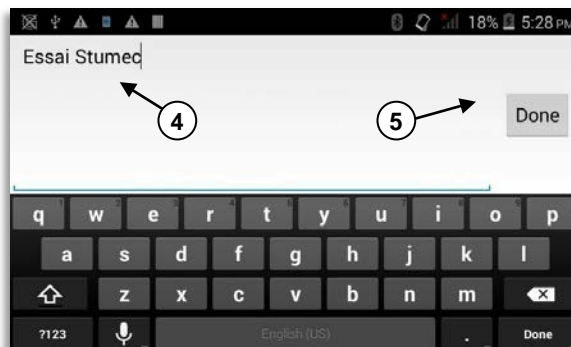
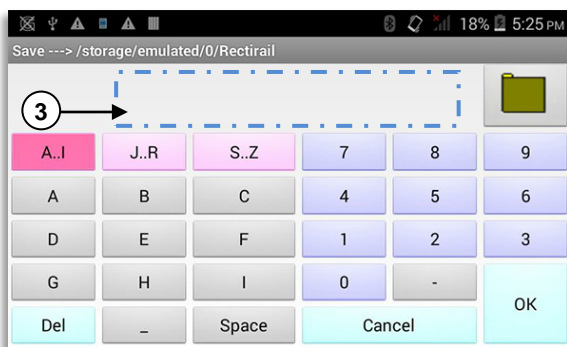
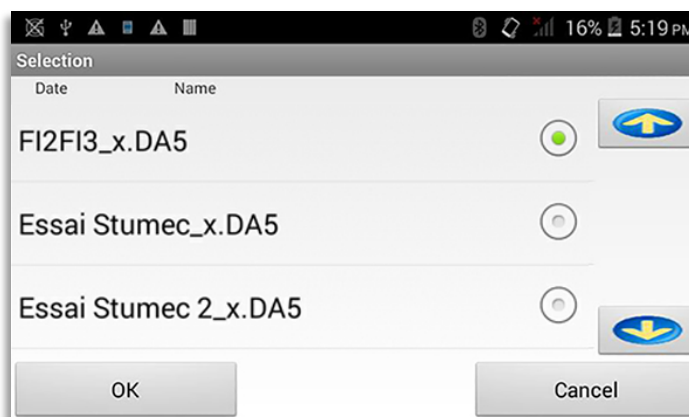
A new backup directory cannot be created directly in **RectiPDA**. New directories must be created in the Windows file explorer (refer to the PDA user manual).

4.5.2 File naming

When saving a measurement or creating a DA5, a screen similar to the one below is displayed:

- Select the relevant file

Name of the DA5 file in which the backup will be made.



- Click in the input area Ref. ③
- Enter the name of the measurement taken Ref. ④ and click on OK Ref. ⑤

This screen allows input of a 20-character identifier for reading. Available characters are the 26 letters (upper case), the 10 digits, and 3 separating characters (space, hyphen, underscore “_”).

Users browse with the joystick or directly on the screen. To add a character, highlight it and press the “Validate” key via the joystick, or just click on it using a pen or finger.

Non-Western characters can also be used in names.

- Validate by OK Ref. ⑥



Refer to §0. 4.4 for more details on management of DA5 files and file naming (§0).



To simplify data input, the identifier of the previous reading is proposed by default. Users can abort at any time via the “Cancel” button.

4.5.3 Information saved


The following settings are saved in each measurement:

- Rule number
- Rule software version
- Calibration date
- Temperature
- Rule supply voltage
- Angle of the measurement you have chosen
- GPS position

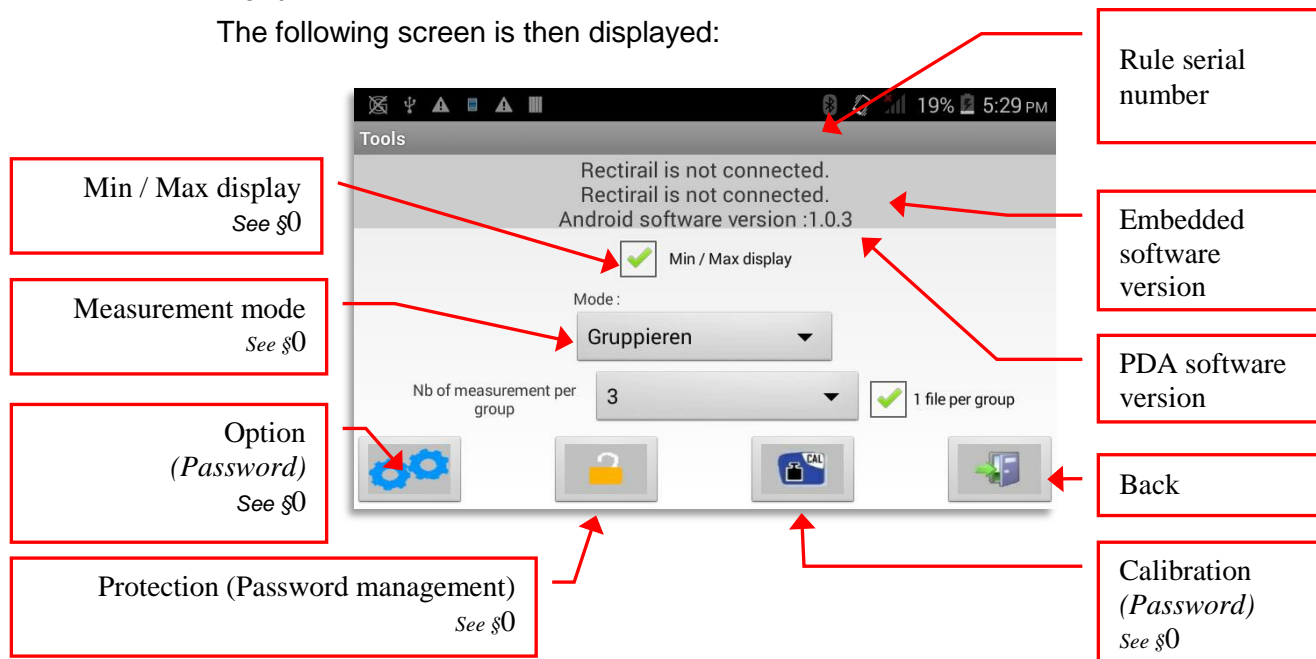
This information is visible in **RectiPC** via the Edit button.
Refer to the **RectiPC** user manual for use of these data.

5 Settings

5.1 General settings

Users access this function by validating the “Settings” choice  in the main menu.

The following screen is then displayed:



There are 4 different buttons:

- An option access button.
- A password change button.
- A calibration button.
- A menu exit button.

5.1.1 Min / Max display

This option activates / de-activates the display of minimum and maximum values of each measurement. If the box is ticked, the values are then displayed to the right of the main screen.

If several curves are displayed simultaneously (see §0), the values are displayed with the same colour as the corresponding curve.



Notes:

When the min/max display is activated, an area dedicated to value display is freed to the right of the display area, thus leading to a slight reduction in the curve display area.

5.1.2 Protection: password management (password)

By validating the “Protection” button



you can access application password management (advanced parameter setting, calibration, standard reading/loading, protection). Access is protected by password.

Contact your GEISMAR representative for the password.

5.1.3 Calibration (password)

By validating the “Calibration” button



you can access the **RectiRail** calibration mode.

Access is protected by password. (Only if a RectiRail is connected).

To calibrate, refer to the specific manual supplied with the calibration tools.

Contact your GEISMAR representative for more details.

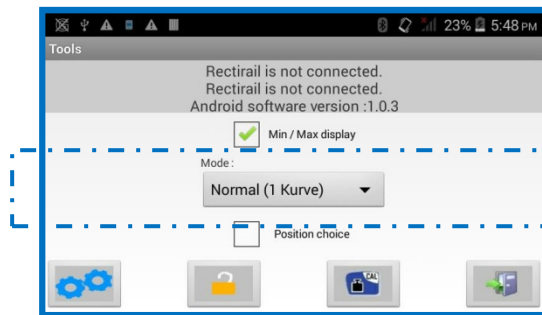
5.1.4 Measurement mode

Two measurement modes are available.

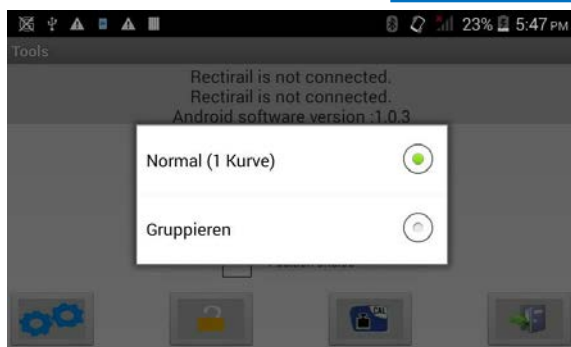
“NORMAL” mode

This mode can contain an unlimited number of measurements

This mode is accessible by selecting the “Normal (1 curve)” mode,



Such as shown below:

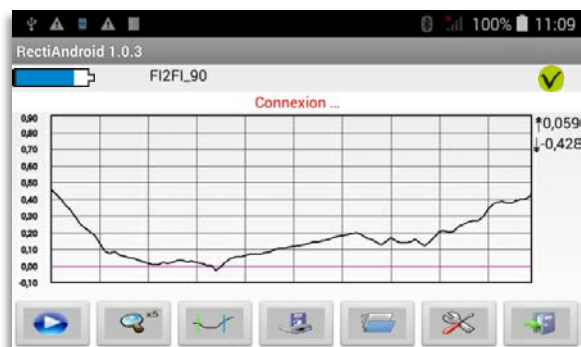


This is the classic operating mode:

- Taking a measurement
- Displaying a measurement on the screen
- Reading measurements one by one

The “choose position” option allows the user to select rule position (see §0).

Below is a copy of the main screen:



Refer to §0 6 Taking a measurement in normal for a complete description of use.

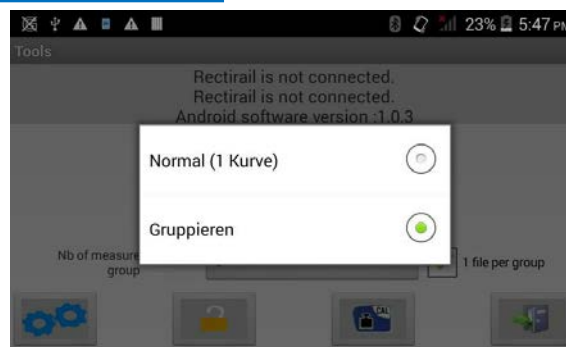
“GROUPED” mode

This mode can contain up to 3 measurements

*Eg. Rail profile measurement (head)
Rail route management (side)
Fillet measurement at 45° (45° position)*

This mode is accessible by selecting the “Grouped” mode.

Such as shown below:



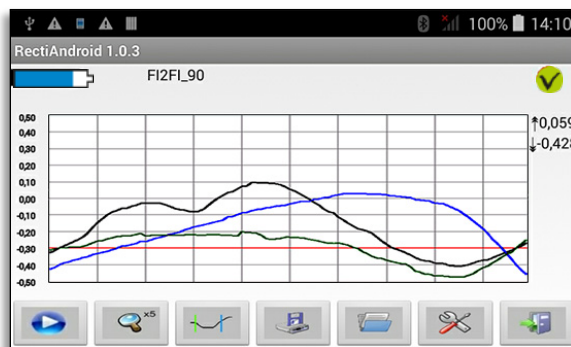
This mode is used to:

- take 2 or 3 measurements and display them simultaneously on the screen
- save these measurements together or separately

The “number of measurements / group” option is used to select the maximum number of measurements displayed simultaneously.

The “1 file per group” option is used to group measurements in the same DA5 when saving.

Below is a copy of the main screen (after taking 3 measurements):



Refer to §0 7 for a complete description of use.

5.2 Advanced settings



This menu is used to configure various settings.

Access is restricted by password.

If necessary, contact your Geismar representative for the password.

The screenshot shows the 'Option' menu with the following settings and annotations:

- Radius of curvature compensation:** Set to 0 m. Annotation: "Display of maximum and minimum thresholds (See §0) - Setting with the cursor ①".
- Min / Max threshold:** Set to 0.00. Annotation: "Correcting the measurement according to rail radius of curvature (See §0) - Setting with the cursor ②".
- Change timeout:** Set to 60 s. Annotation: "Duration in seconds of the switch off timeout (See §0) - Setting with arrows ↑↓".
- Sensor 3/98 or 1/100:** Set to Support on 3 to 98.
- Units mm / inch:** Set to mm. Annotation: "Configuration of the reading rectification option (See §0)".
- Selecting the measurement unit:** international or imperial system (See §0).

5.2.1 Radius of curvature compensation

The measurement taken as a curve on the rail side can be compensated by entering a known radius of curvature.

The radius can be positive or negative, according to the curvature to be measured, and must be greater than 60 m (the arrow at 60 marks the limit of the rule measurement range). Radius can be at most +/- 32 000 m.

Case 1	Case 2
<p>In this case, the radius is negative as measurement of straightness in the centre of the rule is increased by the rail curvature effect. The measurement must thus be corrected by deducting from it the radius of curvature effect.</p>	<p>In this case, the radius is positive. The correction due to the radius of curvature must be added to the straightness measurement.</p>

5.2.2 Threshold display

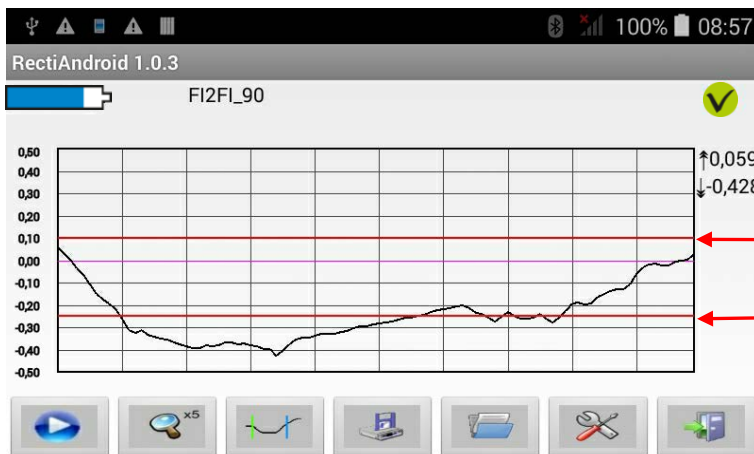
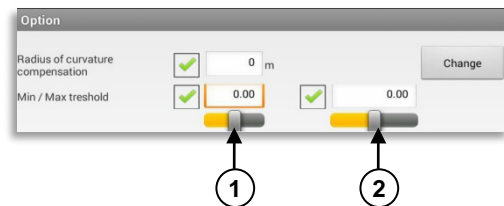


This option is used to display thresholds (= horizontal lines) on the measurement graphs.

- If the option is not ticked: the thresholds are not displayed.
- If the option is ticked: the thresholds corresponding to the values entered are displayed.
- Modify the values with the cursor

Minimum threshold Ref.① - Maximum threshold Ref.②

Threshold values must be between +5 and -5 mm.



MAX. threshold

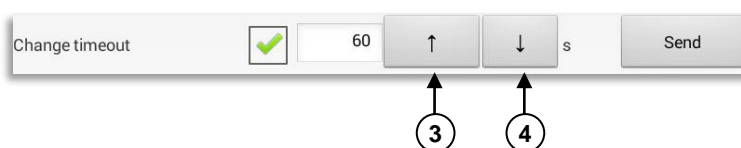
MIN. threshold

The threshold display is saved in scan mode.

5.2.3 Switch off timeout

This option defines the time after which the rule will be automatically switched off, if there is no action on it, so as to save the batteries.

- If Timeout is not ticked: timeout is disabled and the rule continues to be energised as long as the connection with the PDA is maintained.
- If Timeout is ticked: the value entered defines the time in seconds before the rule will be switched off.
- Modify the values with the arrows
Increase Ref.③ - Decrease Ref.④



The timeout value can be set between 60 s and 250 s (i.e. 1 to roughly 4 minutes).

5.2.4 Rectification



This option presents measurements in the form of their difference with the reference line based on the rail points measured under the 3rd and 98th sensors or the 1st and 100th sensors, according to the chosen parameter setting. (In the 1st case, the 3rd and 98th values will thus always be at 0, else the 1st and last points will be at 0).

5.2.5 Measurement unit

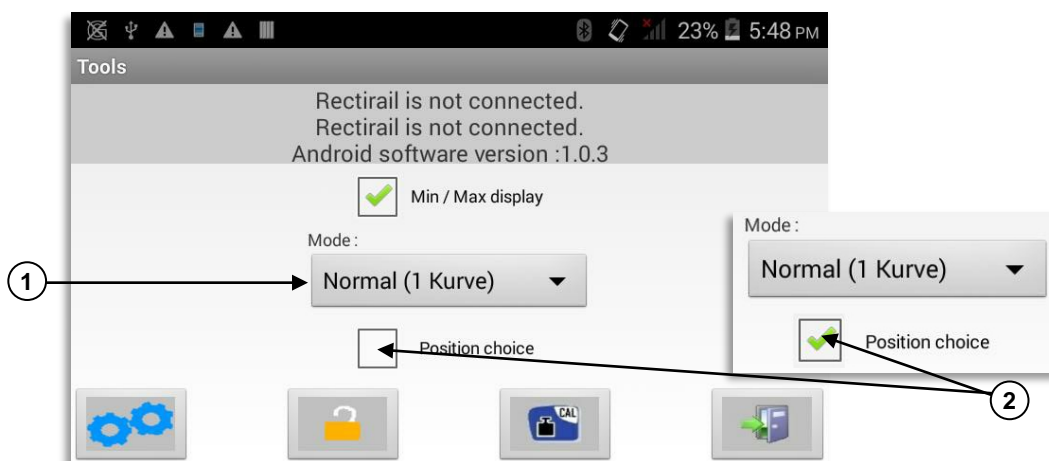


The display units can be defined:


- In the international system, in mm
- In the imperial system: in this case, graphs are graduated in mil (1 mil = 0.001 in = 0.0254 mm).

6 Taking a measurement in normal mode

6.1 Parameter setting

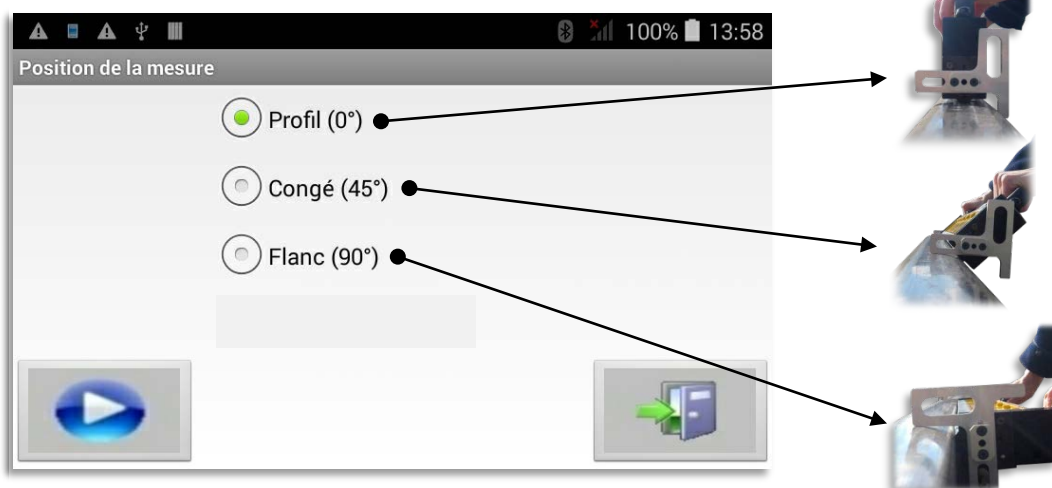


- If the “choose position” box Ref. ② is ticked in the “Settings” menu, then when the measurement is started, a screen will ask you for rule position before each measurement is taken:

- To validate the settings, exit the menu by clicking on .




When you select the “Normal (1 curve)” measurement mode Ref. ①, you can choose whether the position must be requested prior to each measurement



This screen lets the user define the position of the rule used for the measurement (see §0). Rule position is saved on measurement backup, and can be visualised in the RectiPC software.

This choice has no effect on the measurement taken, and no information concerning this position will be displayed in **RectiAndroid**.

6.2 Starting to measure

- Back in the main screen, the measurement is started by validating the "measurement" choice  in the main menu. If the screen for choosing the position is displayed (see §0) click on the current position of the rule and start to measure.


- A progress bar then indicates acquisition status:

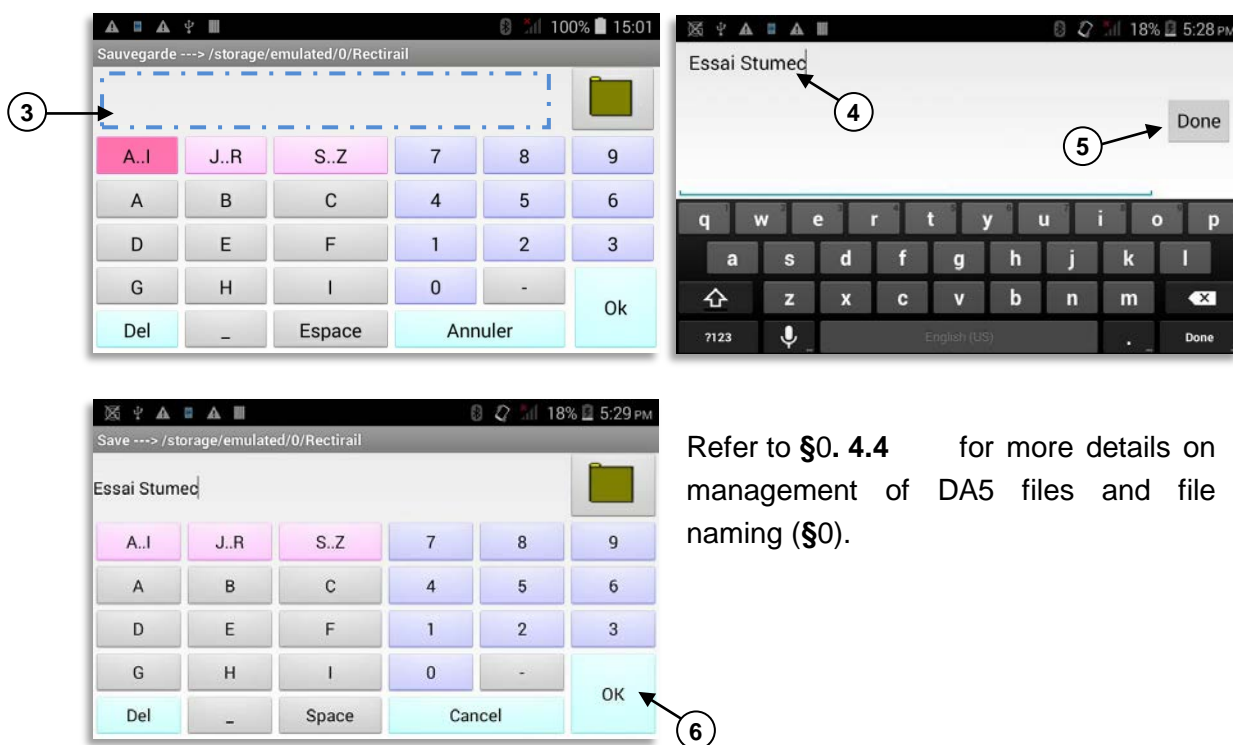


- After a few seconds, acquisition is complete and the measurement is displayed on the screen:



6.3 Backup

- Backup takes place by selecting 
- Click in the input area Ref. ③
- Enter the name of the measurement taken Ref. ④ and click on OK Ref. ⑤
- Validate by OK Ref. ⑥



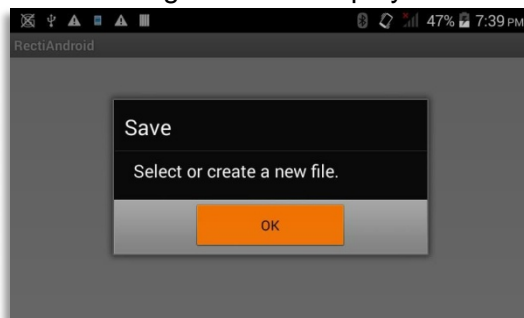
Refer to §0. 4.4 for more details on management of DA5 files and file naming (§0).

The folder in which the save will be made is recalled in the title bar.

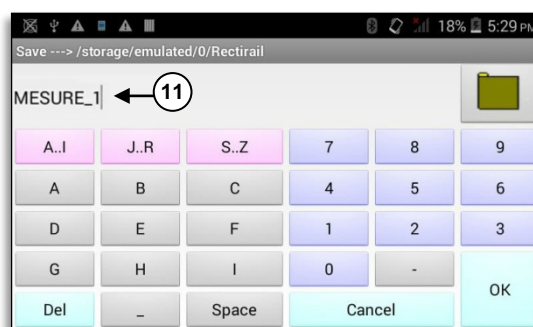
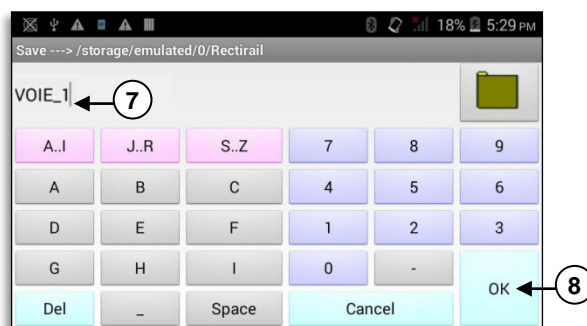
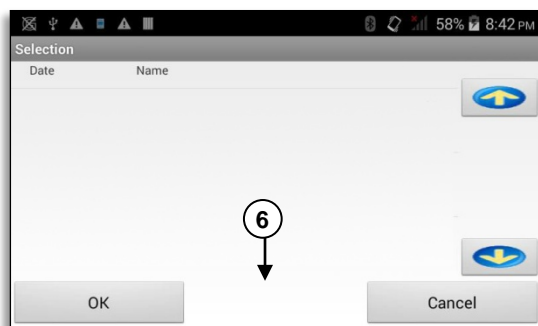


6.3.1 There is no DA5

- The following screen is displayed.



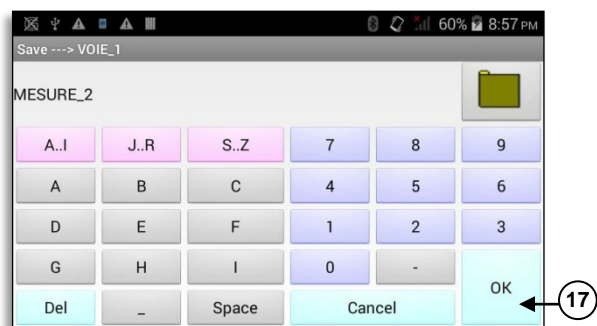
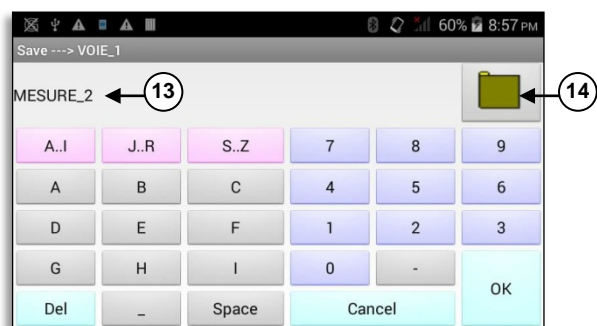
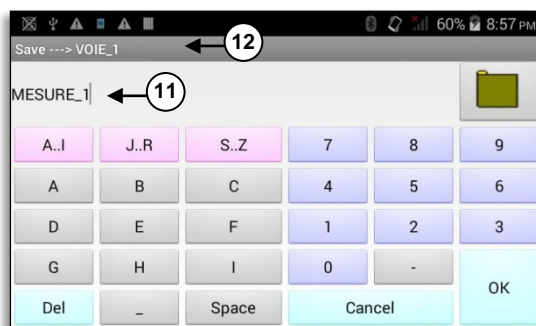
- Click on OK and follow the steps described below to create a DA5 and save the measurement
- Click on DA5 Ref. ⑥
- Name the DA5 Ref. ⑦ and validate by OK Ref. ⑧
- Once the DA5 has been named, select the Ref. ⑨ and validate Ref. ⑩
- Name the measurement Ref. ⑪



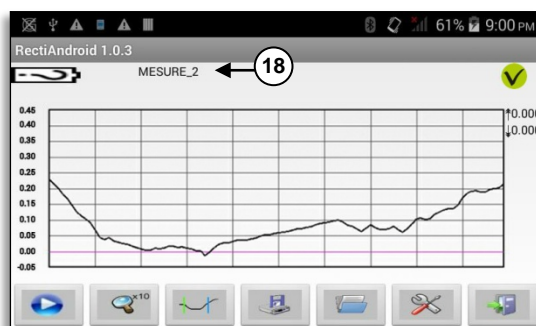
Refer to “§0. 4.4 ” for more details on management of DA5 files and file naming “§0”

6.3.2 There is already a DA5 in the PDA


- The DA5 in which the save will be made is recalled in the title bar *Ref* ⑫
- The screen displays the last measurement saved *Ref* ⑪
- Enter the name of the new measurement *Ref* ⑬
- Click on the folder *Ref* ⑭ to choose the DA5 in which you want to save the measurement
- Choose the DA5 *Ref* ⑮ and validate *Ref* ⑯
- Validate the measurement save *Ref* ⑰

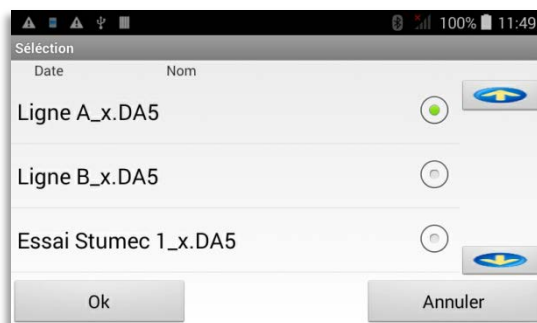


- Once the save has been validated, the measurement name will be visible above the graph *Ref* ⑱





6.4 Reading



- Once the “Reading” choice  has been validated, the following input screen will be displayed:



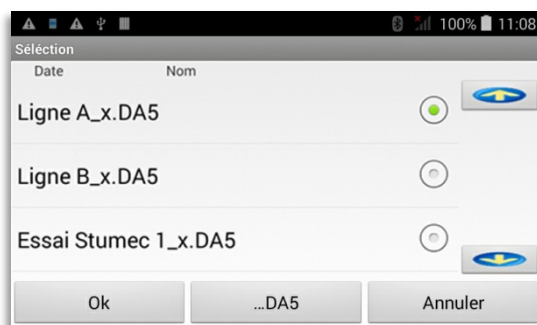
- The joystick, pen or finger are used to select the reading to be displayed:

Rule	Screen	Meaning
Joystick upwards	Arrow 	Previous reading
Joystick downwards	Arrow 	Next reading
“Validation” button	OK	Display of the selected reading in the main screen
“Escape” button	Cancel	Cancellation of the operator and back to the main screen

Open a file:

- Select the relevant file, which will move from white  to green 
- You can abort at any time via the “Cancel” button.

Just as for the input screen, you can also change or select a measurement save file by pressing the “DA5” key *Ref* (19)



↑
(19)



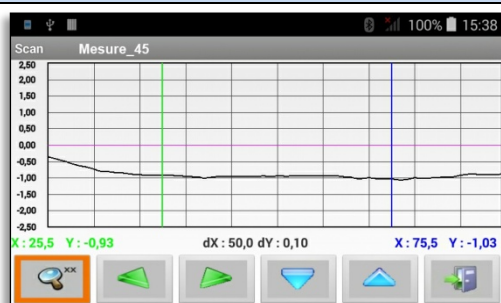
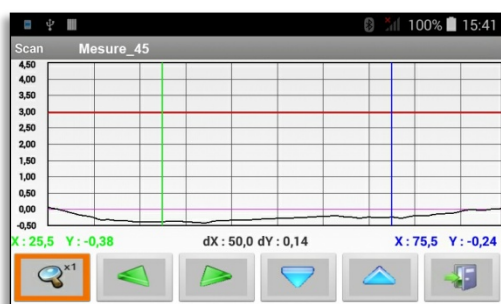
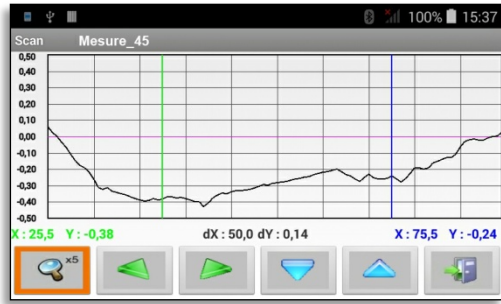
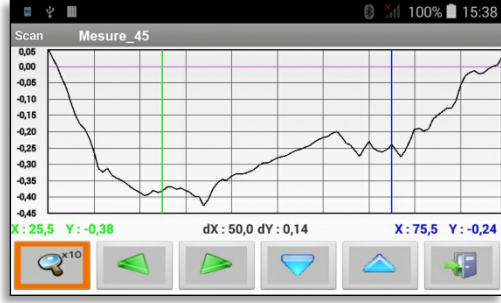
Reading operations can be carried out “offline” (e.g. in the office)

6.5. Zoom

Once the curve has been displayed on the screen, the display zoom (scaling factor) can be modified.

To do this, select and validate the “Zoom” choice .

On each validation, the current zoom moves to the next value.

Mode	Scale scope	Rectification	
XX	-2.5 to 2.5 mm	no	
x1	5 mm	yes	
x5	1 mm	yes	
x10	0.5 mm	yes	

x1, x5, x10 zoom

The curves displayed with these zoom factors are rectified.

Rectification allows measurements to be presented in the form of their difference with the reference line based on the rail points measured under the 3rd and 98th sensors, or the 1st and 100th sensors, according to the chosen parameter setting in the Options (protected) menu.

In the first case, the 3rd and 98th values will thus always be at 0, else the 1st and 100th values will be at 0.

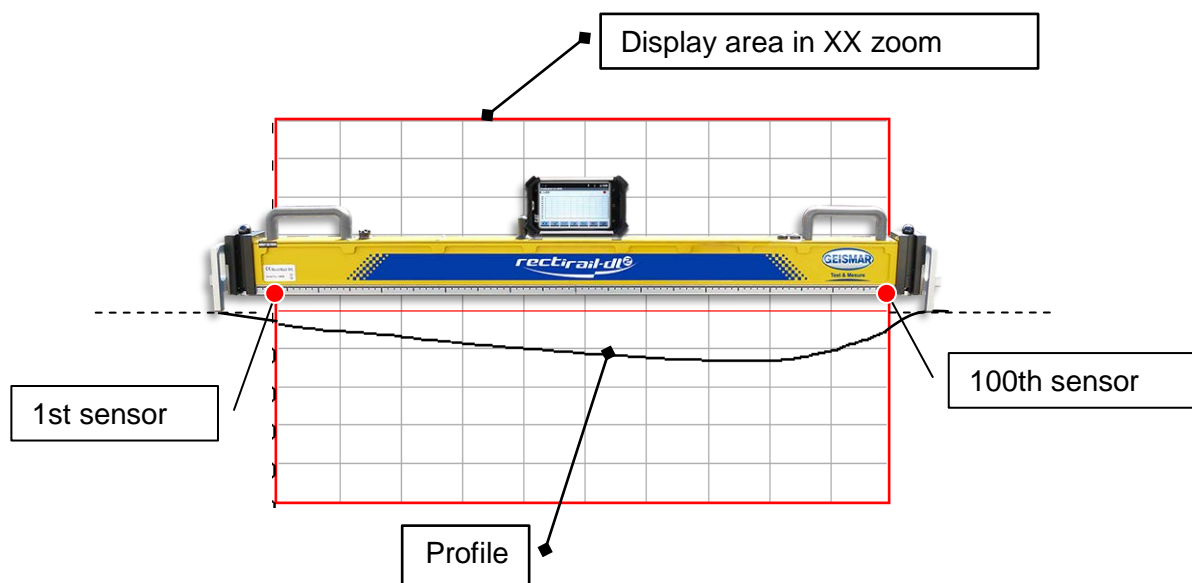
On the curves presented above, the 3rd and 98th sensors are at 0.

XX zoom

This mode presents non-rectified values, unlike the other zoom factors.

The curve thus presents an “image of the differences” between the rule sensor plane and the measured rail.

Schematically, the XX zoom presents a measurement corresponding to:

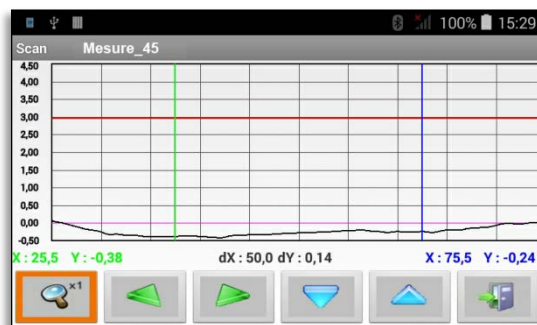


This mode can be used in the event of measurement problems (for example display problems), as it can help identify the problematic measurement area.

6.6 Scan mode

The scan mode is used to display and move cursors on the graph for accurate measurement of the coordinates of a specific point.

Access is via the button .



The graph area consists of:

- **2 cursors** (blue and green)

These cursors can be moved using:

- The **RectiRail DL2** joystick
- The green and blue arrows on the **PDA** screen
- A **pen**, by clicking on and dragging the blue or green lines

- **3 value pairs**

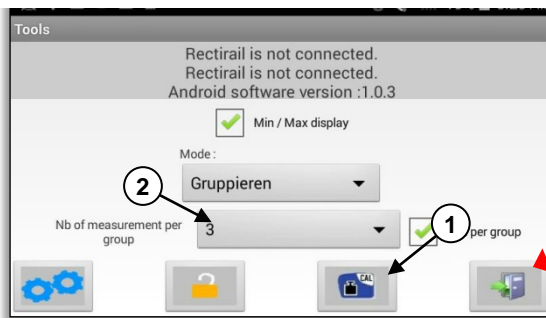
The values displayed to the right (in blue) and to the left (in green) correspond to the intersections between the measurement curve and the cursors:

- X = sensor position
- Y = measured value

The third coordinate in the middle (in black) gives the difference between these intersections.

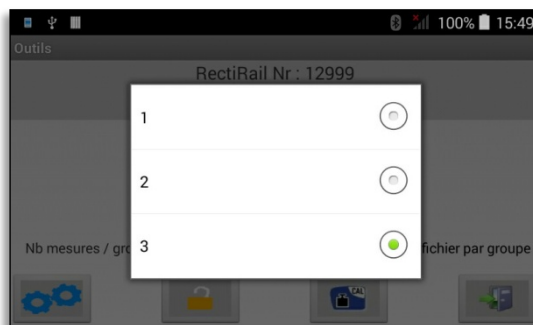
7 Taking a measurement in grouped mode

7.1 Parameter setting



By selecting the “grouped” measurement mode, you can choose the file generated when measurements are saved:

- **1 file per group** (*ticked box*) Ref ①
 - In this mode, the 1, 2 or 3 measurements taken will be automatically grouped in the same DA5 when saving.
 - Open the drop-down menu Ref ② and select the number of measurements between 1 and 3



- This option is particularly suited to complete inspection of the profile around a position (for example a weld), as it can display simultaneously and save together the measurements corresponding to the various positions 0°, 45° and 90°.
- This mode is described in the following sections.


- **1 file for several groups** (*unticked box*) Ref ①

In this mode, several measurements taken at the same point can be compared by displaying them simultaneously on the screen. It is thus easy to compare two measurements taken at two different times (for example before and after grinding).

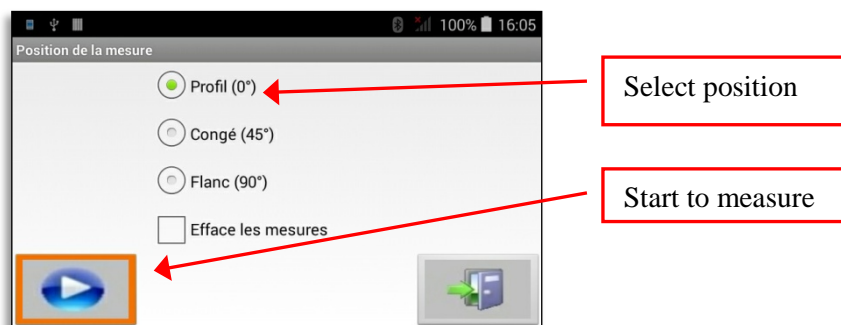
Refer to “§0 7.8 *Grouped mode, with several files per group*” to discover the specific features of this mode.

To validate the settings, exit the menu by clicking on

7.2 Starting to measure

- Back in the main screen, the measurement is started by validating the "measurement" choice  in the main menu.


- The screen for choosing the position is displayed:

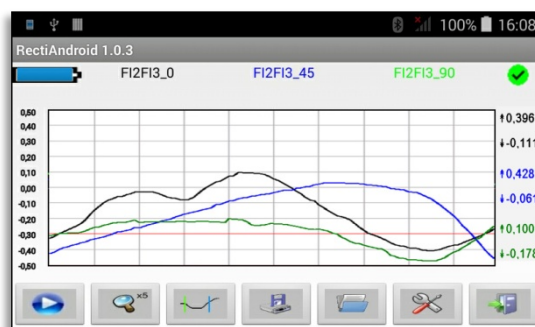


- A progress bar then indicates acquisition status:



- After a few seconds, acquisition is complete and the measurement is displayed on the screen.

- Click again on "measurement"  to choose a different position, and validate. The second measurement is displayed on the screen. Repeat the operation to obtain 3 measurements on the screen:



If the selected position already has a measurement, the latter will be deleted automatically.

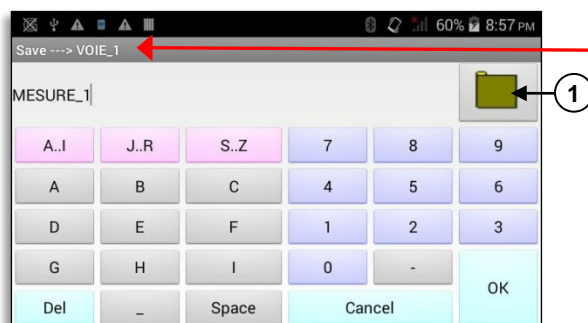
7.3 Backup

In this measurement mode (grouped measurement, 1 file per group), the user only chooses the name that will identify this measurement group. This name will be that of the DA5.

For example, if the chosen name is “my measurement” then:

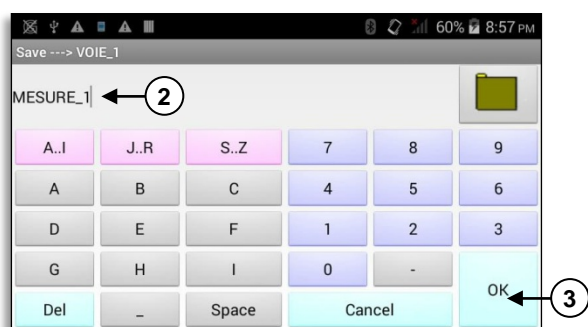
- The DA5 will be: “my measurement_x.DA5”
- The measurements contained will be automatically named:
my measurement _0 ;
my measurement _45
my measurement _90

Once the 2 or 3 measurements have been taken, validation of the “Backup” choice on the main screen will bring up the following input screen:

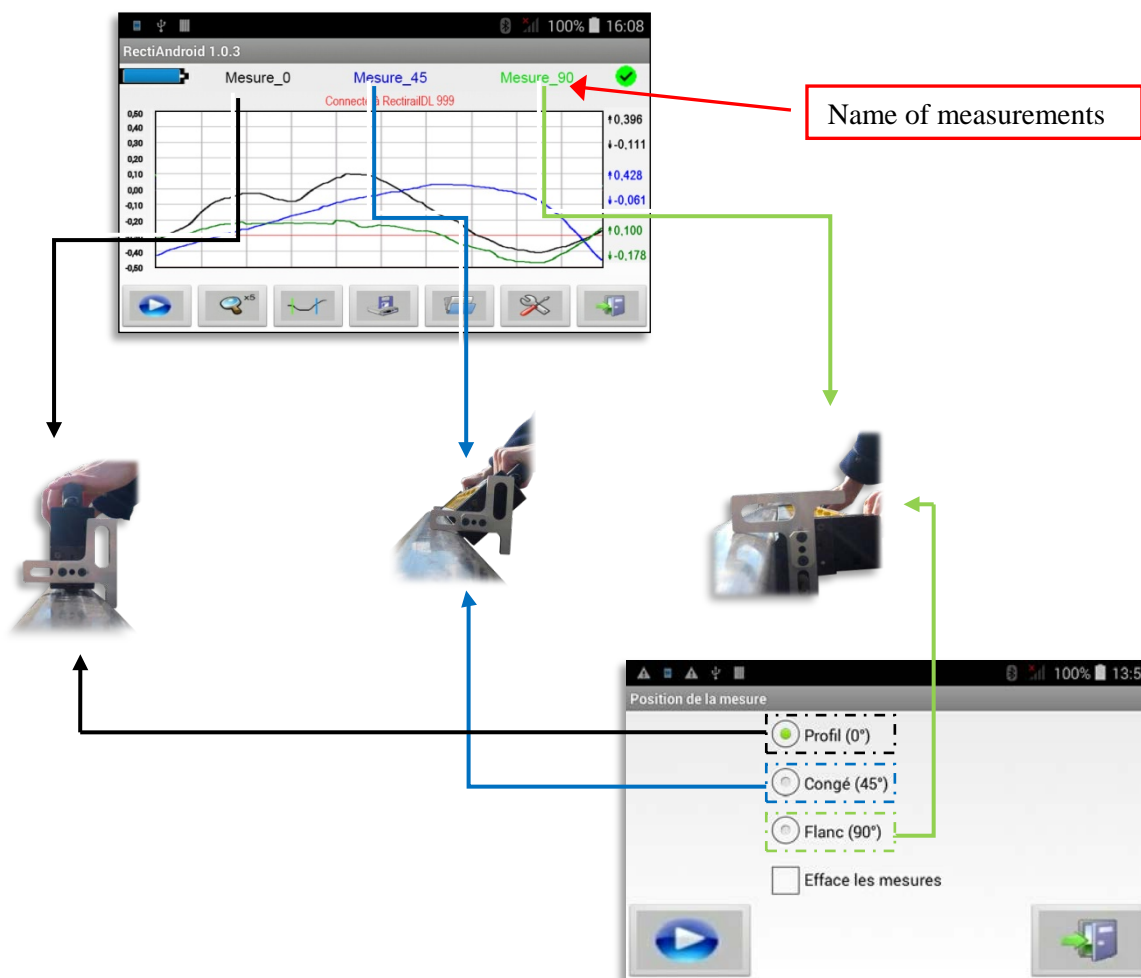


Reminder of the folder in which the save will be made

In the screen below, enter the name required for the measurement group in question *Ref* ② and validate by OK. *Ref* ③



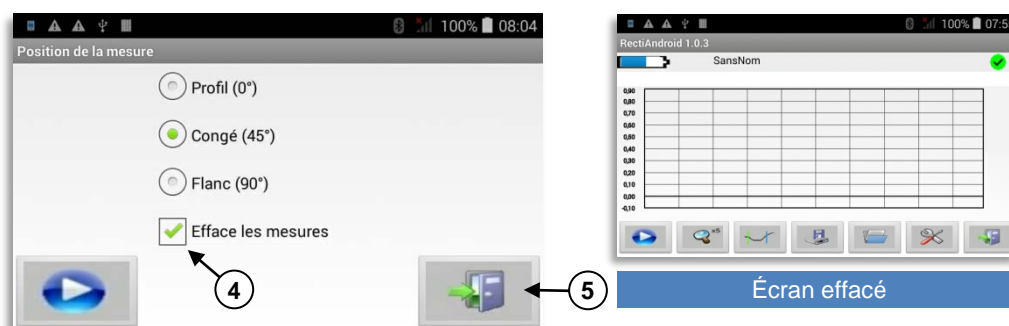
The measurements are then saved:



7.4 Resetting the screen

When new measurements need to be taken, it may prove useful to reset the screen.

To do so, follow the steps below:



In the main screen, select “measurement”, and in screen for choosing the position, click on the **“Delete measurements”** box Ref ④ and validate with the “exit” key Ref ⑤.

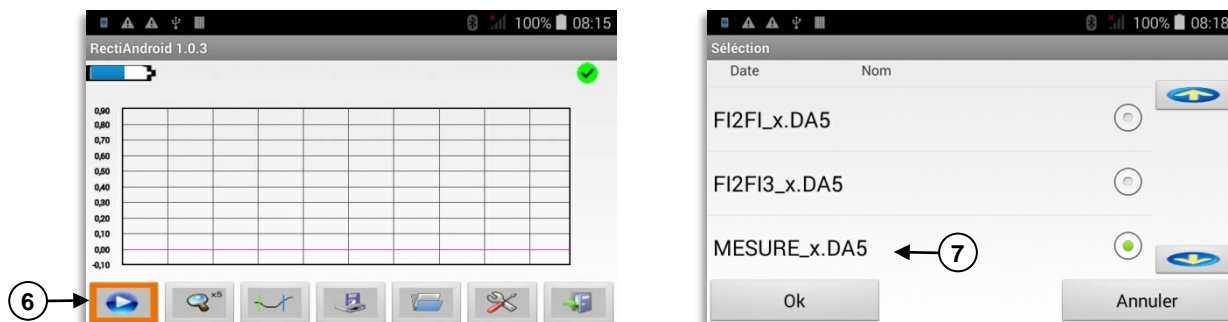
You can tick this box when a new group is measured for the first time.

7.5 Reading

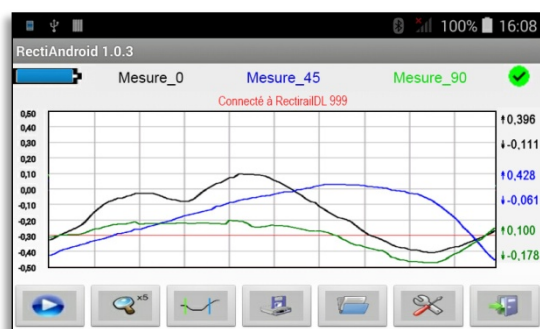
In this measurement mode, you can read the DA5 files specifically created in the “grouped measurement, 1 file/group” mode.

- Click on reading *Ref* ⑥

As explained in the above section, these files are identified by the suffix “_x”, automatically added to the DA5 name. *Ref* ⑦




The 2 or 3 measurements in the DA5 are displayed on the screen:




7.6 Zoom

Various zoom factors can be used to visualise measurements. Refer to “§6.5 Zoom” for a complete description of this function.

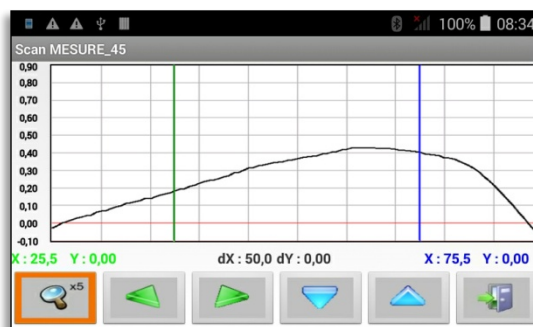
7.7 Scan

The scan mode (see §6.6 Scan mode) is accessible via the button , but is limited to the display of one curve. Following validation of this mode, the screen below lets you choose the curve you want to visualise:

Select the curve and validate by 



The scan mode is now activated for this curve (refer to “§6.6 Scan Mode” for use of this mode):



7.8 Grouped mode, with several files per group

In this measurement mode:

- The software displays several separate curves on the screen (3 at most)
- Each curve must be saved separately
- Several measurements taken at the same point can be compared by displaying them simultaneously on the screen

In the “Settings” menu, remove the tick from the “1 file per group” box: Ref ①



To validate the settings, exit the menu by clicking on

7.8.1 Taking measurements

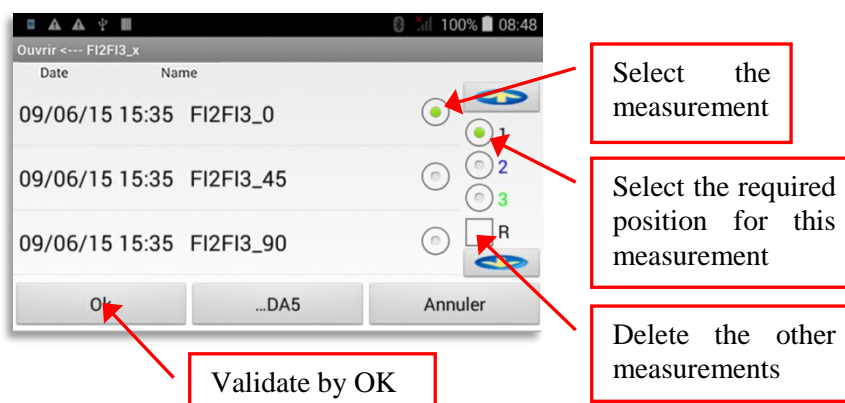
- Measurements are taken in the same way as in the grouped mode “see §0”.

7.8.2 Backing up measurements

- Measurements must be backed up immediately after they have been taken.
- If a measurement is taken, but not backed up and a new measurement is taken, the previous measurement cannot be backed up without being taken again.
- Curves are saved as in the simple mode
“see §0 6.3 ”

7.8.3 Reading and comparing measurements

When reading a measurement, the following screen is displayed:



Once the choice has been validated by OK, you can request reading of a second measurement. To do this, select "open", then

- Highlight the required curve
- Select a **different** position

Validate by OK: both curves are now displayed. Proceed likewise to visualise a 3rd curve.



If ticked, the "R" box lets you reset the display (deletion of the curves on the screen)

8 Exit

Click on the "Exit" button  to exit the software.



Confirmation is required to exit the application.

Exiting the application will automatically switch off the RectiRail.

9 **TROUBLESHOOTING**

Below is a troubleshooting guide for the RectiRail DL2. Should the problem persist after you have tried the solutions described below, we suggest you contact your Geismar representative.

➤ **STOP CONTACT PROBLEM**

is displayed when taking a measurement:

This means that there is no contact or that contact is insufficient between the rule electric stops and the rail. These stops are located between the magnets and the side stops (see §2.3). Thoroughly brush and descale the rail at these points to ensure good electric contact with these stops. Check that the magnets are not jammed and that the stops are in contact with the rail.

➤ **NOISY MEASUREMENT**

is displayed when taking a measurement:

This means that several rule sensors are damaged, or that the RectiRail has moved during measurement. Contact your Geismar representative.

➤ **READING DATE IS INCORRECT**

RectiAndroid is based on the system date. The date and time must thus be entered/revalidated in Android Mobile to synchronise the RectiRail and its readings with the PDA.

➤ **THE SOFTWARE REFUSES TO DISPLAY SEVERAL CURVES ON THE SCREEN**

To display several curves simultaneously, the “Grouped” mode must be selected beforehand (See §0)

➤ **THE CONNECTION ICON IS RED** (in the top right of the screen)

This means that the connection between the RectiRail and the PDA has failed. Follow the reconnection procedure “See §0 4.3.2 Reconnecting the RectiRail”

10 PRECAUTIONS OF USE

- **RectiRail DL2** is a measurement device
 - ➔ avoid all impacts on the rule
(falling, miscellaneous impacts, etc.).
- Also avoid impacts on the supporting parts and side stops.
- Likewise, leave the rule to settle in event of sudden changes in temperature or dampness (moving from heated premises to the outside, etc.). As a rule, avoid all thermal and hygrometric shocks.
- Carefully wipe and dry the **RectiRail DL2** once it is returned to dry conditions, if it has been exposed to rain or damp.
- The contact stops and holding magnets must be kept clean: remove any accumulation of grease and dust on these parts.
- Regularly check the protection condition and cleanliness of the measurement area. If necessary, wipe with a clean, non-abrasive cloth (do not use solvents).
- Presence of foreign bodies, water (droplets, etc.) or grease on the measured surface may affect the result. Wipe the part before starting to measure.
- To guarantee measurement accuracy, calibrations must be performed regularly (frequency depends on use) and at least once a year using a calibration kit.
- When not used, store the rule in its transport case and in a dry, temperate place.
- As the 2 stops on the RectiRail DL2 are connected by an electric wire, there must be no voltage difference between the 2 stops on the rail. Caution must thus be paid to the insulating joints.
- Insulating joints will not be measured correctly. Only the conductive parts on each side will be measured if they are in contact with the stops.

11 TICKET BACK

BON DE RETOUR / RETURN FORM

Nom / Name :

Société / Client :

Tél. / Tel : Courriel / Email :

☐ **Demande de prise en garantie**
Requests to take under guarantee

☐ **Demande de devis**
Requests to take under guarantee Quotation request

Contenu / Contents :

☐ ☐
☐ ☐

Raison du retour / Reason for return:

Le matériel doit nous être retourné nettoyer et les batteries chargées
The material must be returned clean and charged batteries
à l'adresse suivante / at the following address :

SOCIÉTÉ TURRIPINOISE DE MECANIQUE | Route d'Italie 38352 La Tour du Pin - France

• Tel. : +33 (0)4 74 97 24 88 | • Fax : +33 (0)4 74 97 30 76 | • E-mail : sav-stumec@geismar.com

