

EN

INSTRUCTIONS
MOISTURE MEASURING
DEVICE

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Information on the use of these instructions

Symbols



Warning

This signal word indicates a hazard with an average risk level which, if not avoided, can result in serious injury or death.



Warning of electrical voltage

This symbol indicates dangers to the life and health of persons due to electrical voltage.



Caution

This signal word indicates a hazard with a low risk level which, if not avoided, can result in minor or moderate injury.

Notice

This signal word indicates important information (e.g. material damage), but does not indicate hazards.



Info

Information marked with this symbol helps you to carry out your tasks quickly and safely.



Follow the manual

Information marked with this symbol indicates that the instructions must be observed.

You can download the current version of these instructions via the following link:



T520



<https://hub.trotec.com/?id=47776>

Safety

Read this manual carefully before starting or using the device. Always store the manual in the immediate vicinity of the device or its site of use!



Warning

Read all safety warnings and all instructions.

Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

- Do not use the device in potentially explosive rooms or areas and do not install it there.
- Do not use the device in an aggressive atmosphere.
- Do not immerse the device in water. Do not allow liquids to penetrate into the device.
- The device may only be used in dry surroundings and must not be used in the rain or at a relative humidity exceeding the operating conditions.
- Protect the device from permanent direct sunlight.
- Do not expose the device to strong vibrations.
- Do not open the device.
- Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
- Use batteries of type LR06 (AA).
- Never charge batteries that cannot be recharged.
- Different types of batteries and new and used batteries must not be used together.
- Insert the batteries into the battery compartment according to the correct polarity.
- Remove discharged batteries. Batteries contain materials hazardous to the environment. Dispose of the batteries according to the national regulations.
- Remove the batteries from the device if you will not be using the device for a longer period of time.
- Never short-circuit the terminals of batteries!

- Do not swallow batteries! If a battery is swallowed, it can cause severe internal burns within 2 hours! These burns can lead to death!
- If you think batteries might have been swallowed or otherwise entered the body, seek medical attention immediately!
- Keep new and used batteries and an open battery compartment away from children.
- Observe the storage and operating conditions (see Technical data).

Intended use

Only use the device to measure the moisture content of wood and other soft building materials (e.g. gypsum, plaster). Observe and comply with the technical data.

Any use other than the intended use is regarded as misuse.

Reasonably foreseeable misuse

Do not use the device in potentially explosive atmospheres, for measurements in liquids or at live parts.

Any unauthorised changes, modifications or alterations to the device are forbidden.

Personnel qualification

People who use this device must:

- have read and understood the instructions, especially the Safety chapter.

Residual risks



Warning of electrical voltage

There is a risk of a short-circuit due to liquids penetrating the housing!
Do not immerse the device and the accessories in water. Make sure that no water or other liquids can enter the housing.



Warning of electrical voltage

Work on the electrical components must only be carried out by an authorised specialist company!



Warning

There is a danger of suffocation for children due to packaging material! Keep packaging films and parts away from children. There is a risk of death due to suffocation.



Warning

The device is not a toy and does not belong in the hands of children.



Warning

Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way! Observe the personnel qualifications!



Caution

Keep a sufficient distance from heat sources.

Notice

To prevent damages to the device, do not expose it to extreme temperatures, extreme humidity or moisture.

Notice

Do not use abrasive cleaners or solvents to clean the device.

Information about the device

Device description

The material moisture measuring device T520 enables the determination of the moisture content in wood and other soft construction materials (e.g. gypsum, plaster) according to the resistance measurement method.

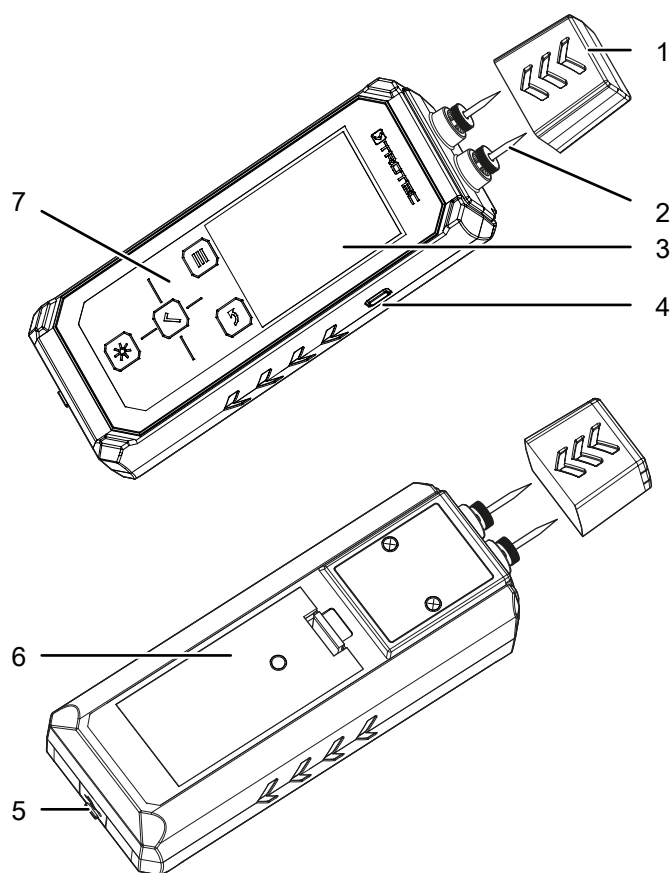
The device comes with two different measuring modes: for wood moisture on the one hand and for building moisture on the other. Different types of wood can be selected.

The device can be operated via a capacitive touchscreen control panel. When not in use, an automatic switch-off saves the battery.

External resistance electrodes can be connected optionally using the TC25 adapter set, which is available separately.

Using the Bluetooth function, you can connect the device to a mobile terminal device and read and analyse your measurement results with the optional MultiMeasure Mobile application.

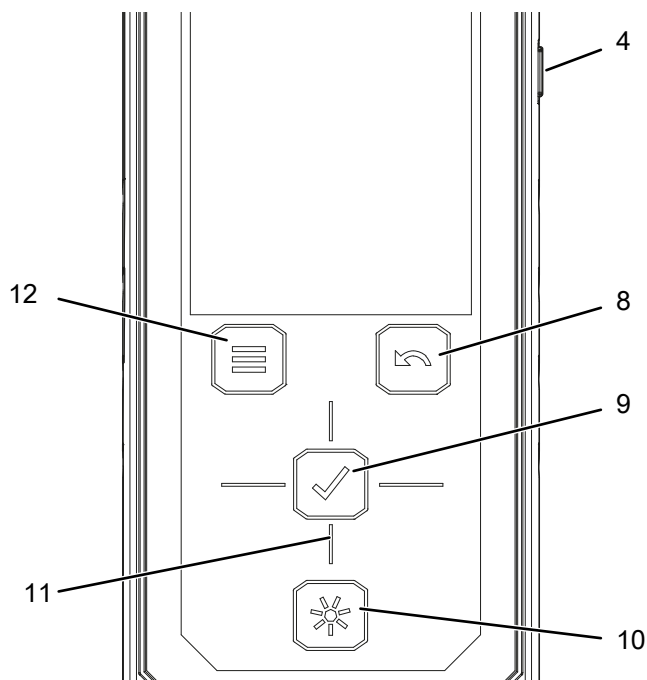
Device depiction



No.	Designation
1	Protective cap
2	Exchangeable measuring tips
3	Display
4	Power button
5	USB type C interface
6	Battery compartment with cover
7	Operating elements

Operating elements

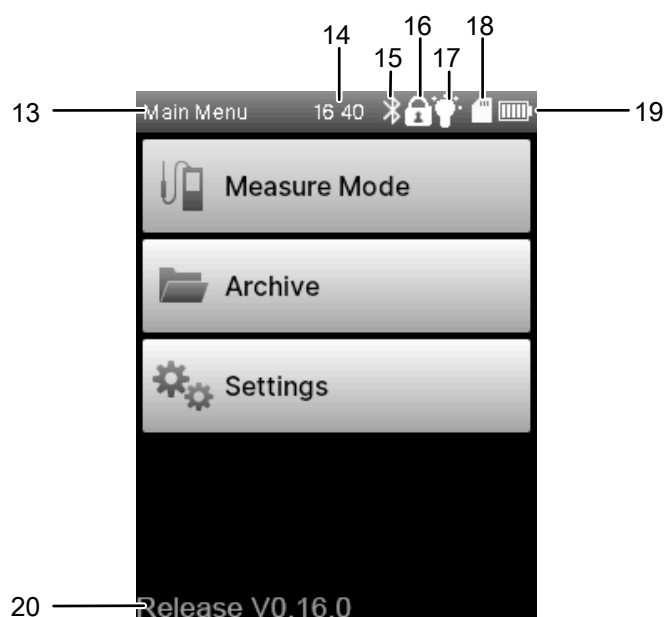
The device can be operated both using these operating elements and the touchscreen display.



No.	Operating element	Function
4	Power button	Switching on the device: press for approx. 2 s Activating or deactivating large print: press for approx. 1 s Activating or deactivation key lock: press for approx. 2 s Switching the device off: press for approx. 5 s
8	Back button	Opening the previous menu
9	Confirm button	Opening the submenu Confirming settings
10	Illumination button	Adjusting the display brightness: press briefly Taking a screenshot: press and hold
11	Cross control with Up, Down, Left, Right buttons	Navigating through menus Setting values
12	Main menu button	Opening the main menu

For safety reasons, some options can only be selected and configured by using the cross control and the *Confirm* button (9) (e.g. date and time in the *Settings* menu).

Display



No.	Indication	Meaning
13	<i>Title</i>	Name of the current screen or connected sensor type
14	<i>Time</i>	Current time
15	<i>Bluetooth</i>	Bluetooth enabled
16	<i>Padlock</i>	Key lock activated
17	<i>Lamp</i>	Additional display illumination activated
18	<i>Memory card</i>	microSD card inserted
19	<i>Battery</i>	Battery charge level
20	<i>Footer</i>	Software version number

Technical data

Parameter	Value
Model	T520
Wood Humidity	
Measuring range	0.0 to 100.0 M%
Accuracy	0 to 5 M%: ± 0.8 M% 5 to 30 M%: ± 0.2 M% 30 to 100 M%: ± 0.1 M%
Temperature compensation	0.0 to 60.0 M%
Material moisture	
Measuring range	0 to 100 digits
Accuracy	0.1 digits
Resolution	0.1 digits
Penetration depth (coupling)	approx. 10 mm
General technical data	
Measuring method	resistance measuring method
Display	LCD
Interface	USB-C
Operating conditions	0 °C to 50 °C with < 90 % RH (non-condensing)
Storage conditions	-20 °C to 60 °C with < 90 % RH (non-condensing)
Power supply	4 x 1.5 V, AA batteries
Weight	approx. 285 g
Dimensions (length x width x height)	209 mm x 63 mm x 35 mm
Bluetooth	
Frequency	2.4 GHz
maximum transmission capacity	-24 dBm

Scope of delivery

- 1 x Device T520 (without batteries)
- 1 x Protective cap
- 2 x Electrode tip (1.5 x 20 mm)
- 2 x Union nut
- 1 x Factory test certificate
- 1 x MultiMeasure Mobile app for download, see Operation chapter
- 1 x Quick guide

Transport and storage

Notice

If you store or transport the device improperly, the device may be damaged.

Note the information regarding transport and storage of the device.

Transport

Make sure that the protective cap is attached to the measuring tips.

When transporting the device, ensure dry conditions and protect the device from external influences e.g. by using a suitable bag.

Storage

When the device is not being used, observe the following storage conditions:

- dry and protected from frost and heat
- protected from dust and direct sunlight
- at the temperature specified in the technical data
- Batteries are removed from the device

Operation

Inserting a microSD card (optional)

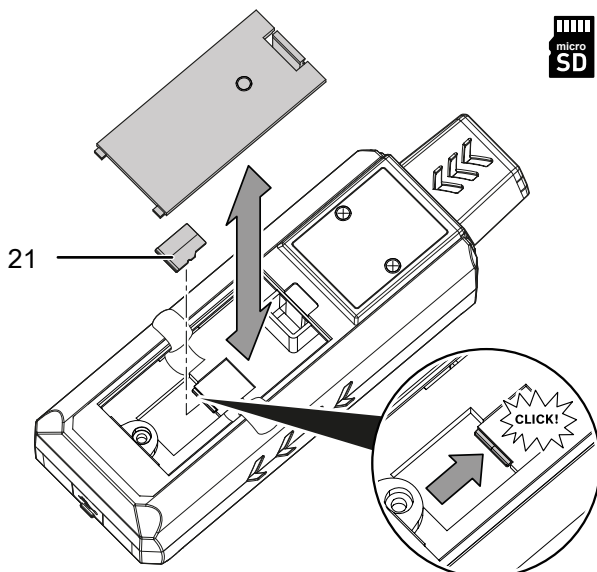
A microSD card can be inserted into the device to expand the internal measured value memory and transfer measured values to a computer. Please proceed as follows:



Caution

Make sure that the surface of the device is dry and the device is switched off.

1. Open the cover of the battery compartment (6).



2. Insert the microSD card (21) into the slot provided as shown.
⇒ You will hear a clicking sound and feel the microSD card click into place.
3. Refit the battery compartment cover or continue with inserting the batteries if required.

Inserting the batteries

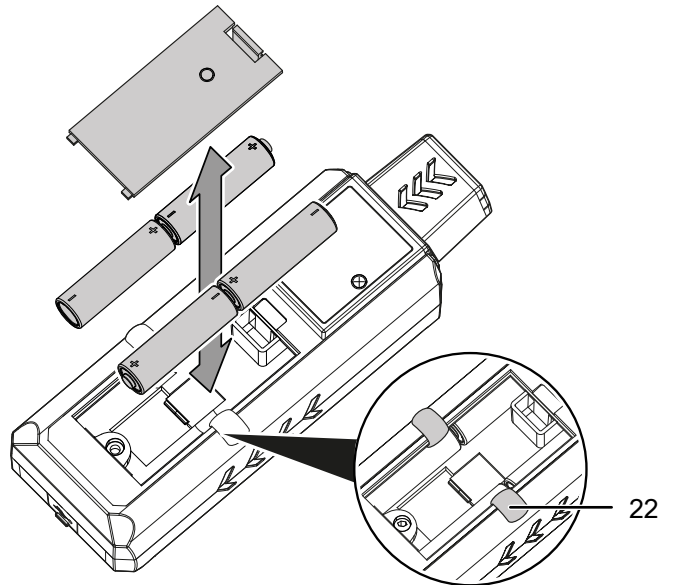
Insert the batteries into the device before first use.



Caution

Make sure that the surface of the device is dry and the device is switched off.

1. Open the cover of the battery compartment (6).



2. When inserting the batteries, make sure that the integrated pull tab (22) is positioned as shown.
⇒ It makes it easier to remove the batteries.
3. Insert the batteries with correct polarity.
4. Insert the cover of the battery compartment.
⇒ The device can now be switched on.

USB type C interface

Notice

Do not carry out any measurements while the device is connected to a USB power adapter.

Due to technical factors, measurement readings may vary if the device is connected to a USB power adapter while a measurement is being taken.

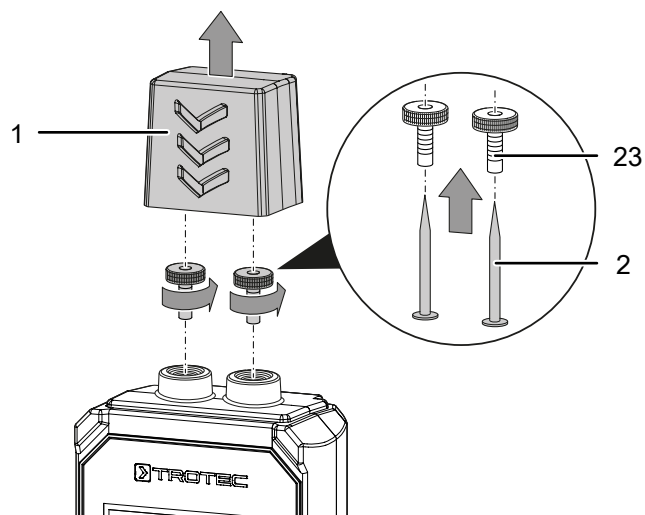
You can connect the device to a suitable USB power adapter via the USB-C interface (5) to provide it with a continuous power supply.

Installing the measuring tips

Mount the measuring tips included in the scope of delivery before first use.

Notice

Exclusively use the original measuring tips included in the scope of delivery. Other measuring tips might bend or damage the holder at the measuring device.



1. Remove the protective cap (1).
2. Unscrew the union nuts (23).
3. Insert the measuring tips (2) in the union nuts (23).
4. Reattach the union nuts (23) to the device.

Switching the device on

1. Press and hold the *Power* button (4) for approx. 2 seconds.
 - ⇒ An acoustic confirmation signal is emitted.
 - ⇒ After approx. 3 seconds, the colour display will be switched on. The device is ready to go as soon as the main menu is shown.

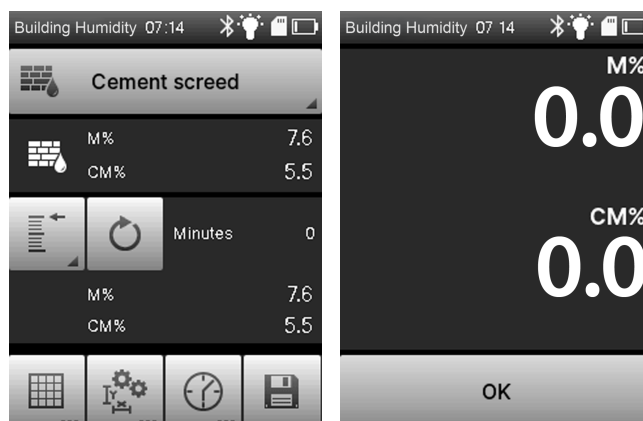
Key lock

1. Press the *Power* button (4) for approx. 2 seconds during operation.
 - ⇒ Key lock is activated.
 - ⇒ The *Padlock* indication (16) is shown on the display.
2. Press the *Power* button (4) for approx. 2 seconds again.
 - ⇒ Key lock is no longer activated.
 - ⇒ The *Padlock* indication (16) disappears.

Activating large print

The current measured values shown in the upper half of the display can also be displayed in large print.

1. Briefly press the *Power* button (4) in any measuring mode screen.



2. To exit the large print display, press the *Power* button (4) once again.

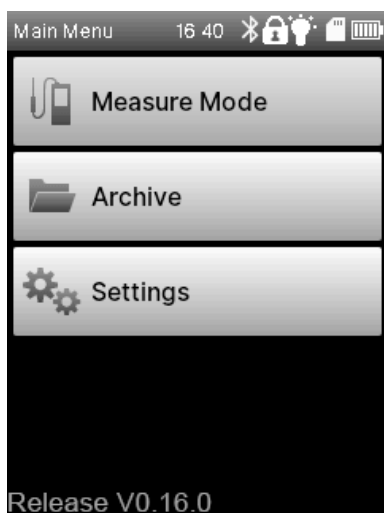


Info

When the key lock is enabled, large print cannot be activated or deactivated.

Main menu

You can open the following submenus from the main menu:



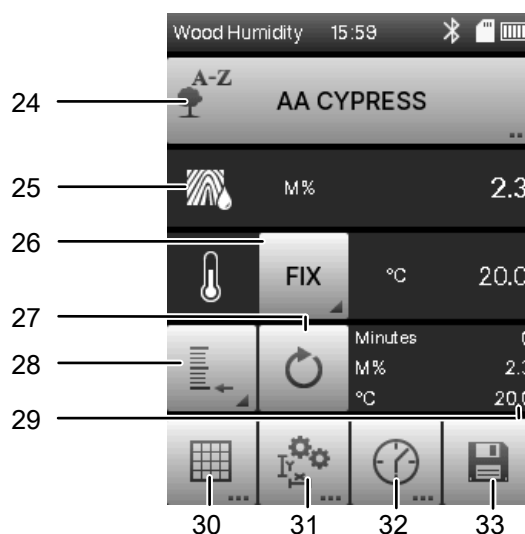
Submenu	Function
<i>Measure Mode</i>	Carry out measurements
<i>Archive</i>	Open archived measured values
<i>Settings</i>	Make device settings

Selecting the measuring mode

In the *Measuring mode* submenu, you can choose between the *Building moisture* and *Wood moisture* measurement methods:



Wood moisture main screen



Item	Designation	Function
24	<i>Wood type selection</i>	Opens the menu for selecting the wood type. See below for a description of how to set the wood type.
25	<i>Wood Humidity</i>	Shows the wood moisture as a mass percentage (relative mass proportion of the humidity to the total mass).
26	<i>Temperature reference</i>	Opens the menu for selecting the internal temperature sensor (INT) or for entering a fixed temperature value (FIX). The measured or manually specified temperature value is shown on the right.
27	<i>Reset</i>	Resets the measured values displayed in (29) to zero.
28	<i>MAX/MIN</i>	Opens the menu for selecting the indication of measured values. Minimum: Indicates the smallest detected measured value from a measuring period. Maximum: Indicates the largest detected measured value from a measuring period. Average: Indicates the average value of all detected measured values from a measuring period. Hold: Pauses the current detected measured value and shows it continually (when this option is selected). Off: Switches off the indication of measured values in (29).

Item	Designation	Function
29	Wood moisture reference values	Measured value indication according to selection in (28): Minute: Duration of the measured interval M%: Shows the measured value (e.g. as average value) as a mass percentage. °C: Shows the measured (INT) or manually specified temperature value (FIX).
30	Grid measurement	Opens the menu for carrying out a grid measurement (see section <i>Carrying out a grid measurement</i>).
31	Measuring range	Opens the menu for setting the measuring range in height x width (edge lengths) and their activation/deactivation as well as the specified temperature value (FIX) (see section <i>Setting the measuring range</i>).
32	Recording	Opens the menu for setting a fixed recording duration for an automatic measurement (see section <i>Carrying out a continuous measurement</i>).
33	Save	Saves the current measured values in the archive as an individual spot measurement.

To change the wood type, please proceed as follows:

1. Tap the displayed type of wood (24).
2. Press the *Confirm* button (9) to activate the *Wood type* input box.
3. Press the *Up* or *Down* button on the cross control (11) to select the initial letter of the desired type of wood.
4. Press the *Right* button to select additional letters of the desired type of wood if necessary.
5. Confirm the setting by pressing the *Confirm* button (9).
6. Use the *Down* button to navigate through the search result list or use the *Left* and *Right* buttons to scroll forwards or backwards through the "Wood type" list page by page.
7. Confirm the selected wood type by pressing the *Confirm* button (9).

Performing the wood moisture measurement



Warning

When handling the device there is a risk of injury due to the exposed measuring tips. Always put on the protective cap when not in use.

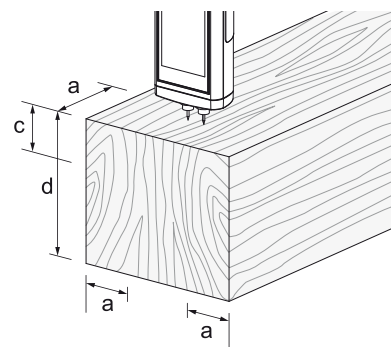
Notice

Never force the measuring device into the material to be measured or yank it out. Applying force can lead to bending or breaking of the measuring tips.

Notice

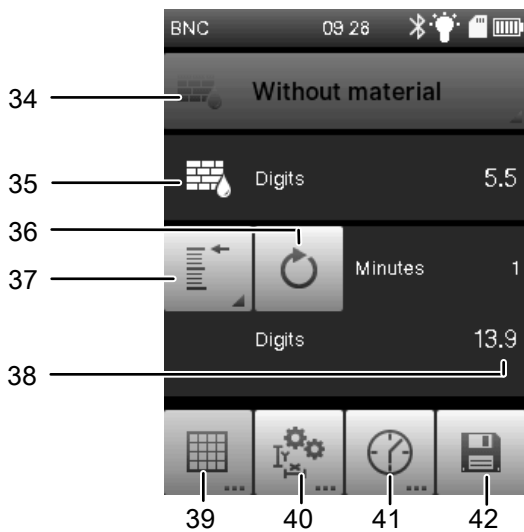
Note that moving from a cold area to a warm area can lead to condensation forming on the device's circuit board. This physical and unavoidable effect can falsify the measurement. In this case, the display shows either no measured values or they are incorrect. Wait a few minutes until the device has become adjusted to the changed conditions before carrying out a measurement.

- ✓ The device is switched on.
 - ✓ The *Wood moisture* measuring mode is set.
 - ✓ The wood temperature is set.
 - ✓ The type of wood has been set.
1. Choose a suitable measuring position. The measurement is not to be performed at places with visible deficiencies (e.g. cracks, resin pockets, branches). Further observe the following:
 - a = 30 cm
 - c = insertion depth
 - d = thickness



2. Insert the measuring tips transverse to the fibre direction with a 30 cm distance to one of the two ends of the sawn timber.
 - If the material to be measured is shorter than 60 cm, the measuring position is in the centre.
3. If possible, prick the measuring tips a few millimetres into the material. Do not use force, and do not use a hammer or any other heavy objects for this purpose.
4. Read the measured value from the measurement value display (25).
5. Carefully pull the device out of the material by gently moving it in turns to the left and to the right.

Building moisture main screen



Item	Designation	Function
34	<i>Construction material</i>	Displays the construction material on which the measurements are based. The construction material is set to <i>No material</i> on the T520. A minimally invasive, indicative (<i>digit</i>) measurement is carried out.
35	<i>Building moisture</i>	Indicates the building moisture in digits
36	<i>Reset</i>	Resets the measured values displayed in (38) to zero.
37	<i>MAX/MIN</i>	Opens the menu for selecting the indication of measured values. Minimum: Indicates the smallest detected measured value from a measuring period. Maximum: Indicates the largest detected measured value from a measuring period. Average: Indicates the average value of all detected measured values from a measuring period. Hold: Pauses the current detected measured value and shows it continually (when this option is selected). Off: Switches off the indication of measured values in (38).
38	<i>Building moisture reference values</i>	Measured value indication according to selection in (37): Minutes: duration of the measured interval Digits: dimensionless display of the measured value for the interval (e.g. as an average value)
39	<i>Grid measurement</i>	Opens the menu for carrying out a grid measurement (see section <i>Carrying out a grid measurement</i>).

Item	Designation	Function
40	<i>Measuring range</i>	Opens the menu for setting the measuring range in height x width (edge lengths) and their activation/deactivation as well as the specified alarm value (see section <i>Setting the measuring range</i>).
41	<i>Continuous measurement</i>	Opens the menu for setting a fixed recording duration for an automatic measurement (see section <i>Carrying out a continuous measurement</i>).
42	<i>Save</i>	Saves the current measured values in the archive as an individual spot measurement.

Carrying out a building moisture measurement

Notice

Note that moving from a cold area to a warm area can lead to condensation forming on the device's circuit board. This physical and unavoidable effect can falsify the measurement. In this case, the display shows either no measured values or they are incorrect. Wait a few minutes until the device has become adjusted to the changed conditions before carrying out a measurement.

- ✓ The device is switched on.
- ✓ The *Building moisture* measuring mode is set.
- 1. If possible, prick the measuring tips a few millimetres into the material. Do not use force, and do not use a hammer or any other heavy objects for this purpose.
- 2. Read the measured value from the measurement value display (35).
- 3. Carefully pull the device out of the material by gently moving it in turns to the left and to the right.

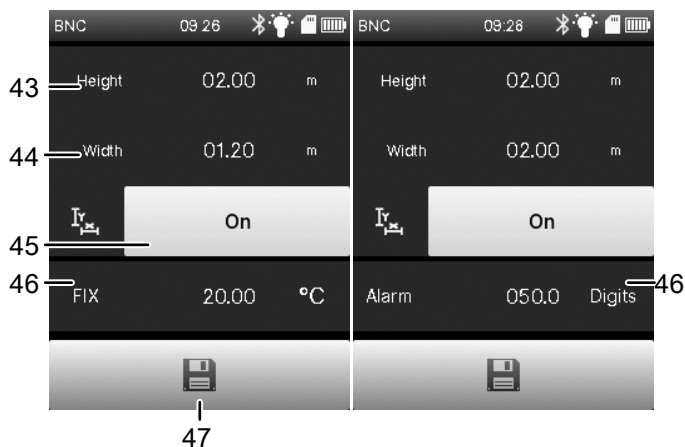
Carrying out a comparative measurement

1. Look for a preferably dry spot at the component to be measured.
2. Perform a measurement as previously described.
⇒ The thus determined measured value will be the reference value for *dry*.
3. If possible, look for a preferably damp or wet spot at the component to be measured.
4. Perform a measurement as previously described.
⇒ With regard to the present conditions, the thus determined measured value will be the reference value for *damp/wet*.
5. Carry out further measurements at the component to be measured.

Higher measured values usually signify a higher moisture content in the near-surface area of the material to be measured.

Setting the measuring range for grid measurement

You can define the dimensions of the measuring range before performing a grid measurement.



Item	Designation	Function
43	<i>Height of measuring range</i>	Total height of the grid area to be measured
44	<i>Width of measuring range</i>	Total width of the grid area to be measured
45	<i>Activate measuring range</i>	Activating ("On") or deactivating ("Off") the set measuring range during grid measurement When deactivated, you must specify the corresponding edge lengths of the grid area in the MultiMeasure app after grid measurement.
46	<i>Temperature /alarm</i>	For wood moisture measurement: Choice between fixed temperature value for precise wood moisture calculation ("FIX") and integrated sensor ("INT") For building moisture measurements: Limit value for the alarm signal of the dimensionless measuring unit "digits"
47	<i>Save</i>	Saves the settings.

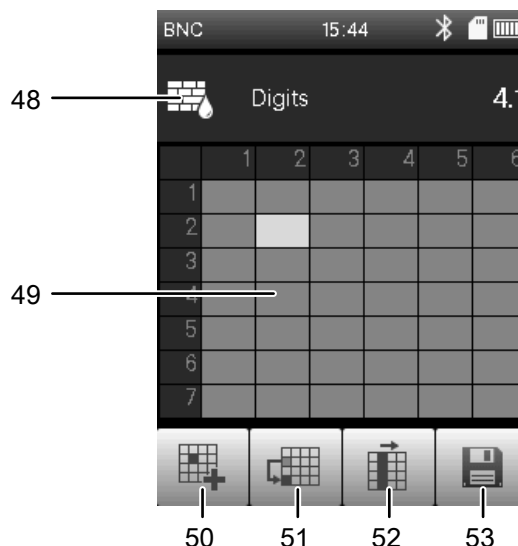
To adjust the grid area dimensions, please proceed as follows:

1. Use the cross control (11) or touch function to select the setting for the height or width of the grid.
2. Open the setting by pressing the *Confirm* button (9).
3. Use the *Up* and *Down* buttons of the cross control (11) to adjust the value.
4. Use the *Left* and *Right* buttons of the cross control to switch between the digits to be set.
5. Save the setting by pressing the *Confirm* button (9).
6. In the *Activate measuring range* selection menu, select whether the dimensions of the area should be used during grid measurement ("On") or not ("Off").

Carrying out a grid measurement

Use the grid measurement function to carry out a grid measurement (e.g. of a wooden surface). The grid measurement can be carried out either with height and length details or without a measuring range (only using the grid).

Grid measurement is available for both measuring modes. The *Wood moisture* measuring mode is shown here as an example.



Item	Designation	Function
48	<i>Measured value</i>	dimensionless display of the measured value in digits: The lower the measured electric resistance, the higher the moisture content in the material and thus the digit value.
49	<i>Measuring grid</i>	Divides the measuring surface into a grid. The colour distribution from white (dry) to light blue (low moisture) and dark blue (wet) graphically shows the moisture distribution in the measured object.
50	<i>Enter measurement</i>	Enters the current measured value to the marked grid measuring spot. Afterwards, the grid measuring spot below will be selected.
51	<i>Skip</i>	Skips the grid measuring spot below the currently selected grid measuring spot and selects the grid measuring spot that follows afterwards. Use this function if no measurement can be made at this position because of a power cabinet or a window etc.
52	<i>Next column</i>	Skips to the start of the next column.
53	<i>Save</i>	Saves the grid measurement in the archive.

Please proceed as follows for grid measurement:

1. Press the *Confirm* button (9) to select the grid.
2. Use the cross control buttons (11) to select the grid measuring spot.
3. Press the *Confirm* button to confirm the selected grid measuring spot.
⇒ The dimensionless measured value is recorded.
4. Use the cross control buttons to select the next grid measuring spot and repeat the process.

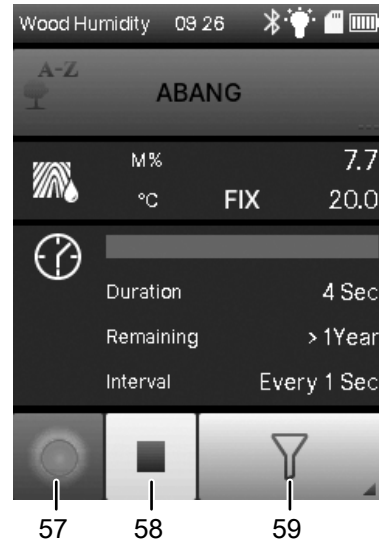
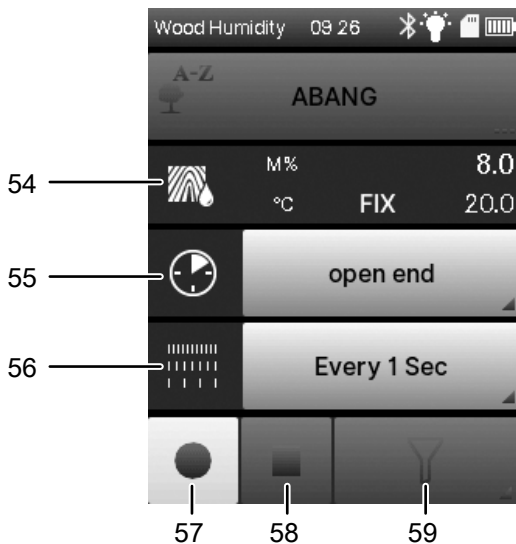
Carrying out a continuous measurement

The recording function allows you to automatically record measured values at regular intervals over a desired period of time.

The recording function is available for both measuring modes. The Wood moisture measuring mode is shown here as an example.

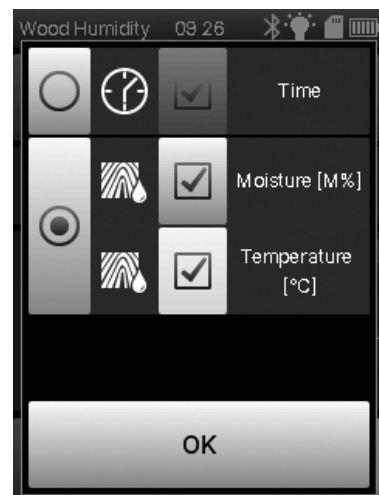
Please proceed as follows to perform a continuous measurement:

1. Open the *Continuous measurement* submenu (32 or 41).
2. Open the *Recording duration* submenu (55) and select the desired recording period.
⇒ The selected period is applied.
3. Open the *Recording interval* submenu (56) and select the desired time interval between the measured values to be saved.
⇒ The selected interval is applied.
4. The selected interval is applied.
5. Press the *Start recording* button (57) to start recording.
⇒ Recording begins.
⇒ The recording symbol (57) is displayed in red.
⇒ The screen for ongoing recordings opens.
⇒ The elapsed and remaining time as well as the selected interval are displayed.



Item	Designation	Function
54	<i>Current measured values</i>	Indication of the current measured values
55	<i>Recording duration</i>	Opens a submenu with options for the duration of the recording.
56	<i>Recording interval</i>	Opens a submenu with options for the interval of the measured values to be saved.
57	<i>Start recording</i>	Starts recording.
58	<i>Stop recording</i>	Recording is stopped and the measured values are saved.
59	<i>Filter</i>	Opens a submenu for selecting the values to be displayed during recording.

6. Open the *Filter* submenu (59) to change the view.
⇒ A selection menu opens, allowing you to choose between time display and a graph showing the measured values. Up to two parameters can be selected simultaneously.



7. Select the desired display options.

- ⇒ When you select one or more measured values, the graph view opens, displaying the selected measured values as a function of time.



8. Tap the *Stop recording* button (58) in any of the views to end the recording.

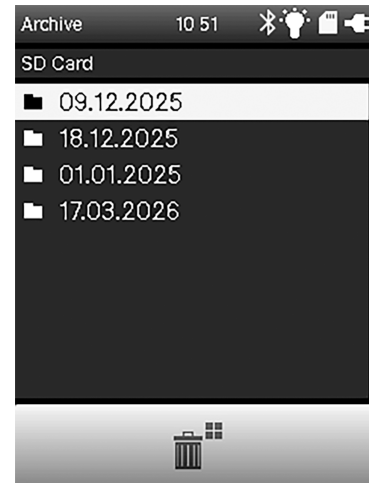
- ⇒ Recording will stop before the set time has elapsed and the collected data will be saved in the device memory or on the SD card.

Opening measurement data from the archive

Individual measured values and the results of continuous measurements can be viewed and deleted in the archive. To do so, please proceed as follows:

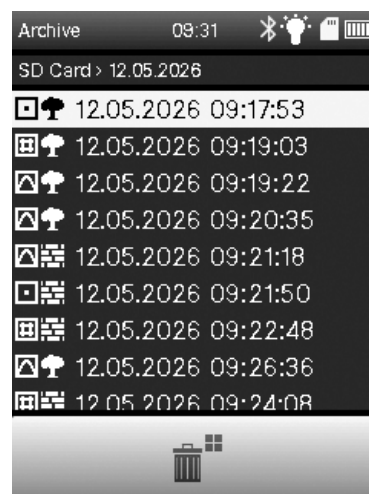
1. Open the *Archive* submenu.

- ⇒ A list of folders is displayed in which the measured data is sorted by date of collection.



2. Open the folder with the desired date.

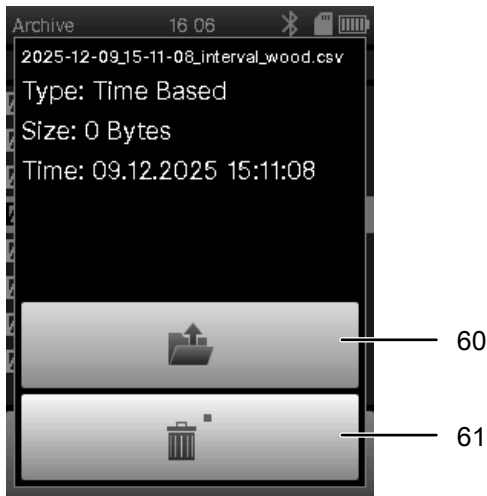
- ⇒ All recordings from the selected date are displayed in the form of a list.



- ⇒ The icons next to the saved measuring projects show each measuring mode. The meaning is as follows:

-  - building moisture measurement
-  - wood moisture measurement
-  - grid measurement
-  - individual spot measurement
-  - continuous measurement

3. Open the desired recording.
 - ⇒ A selection menu for the desired recording is displayed.
 - ⇒ You have the option to delete (61) or open (60) the file.



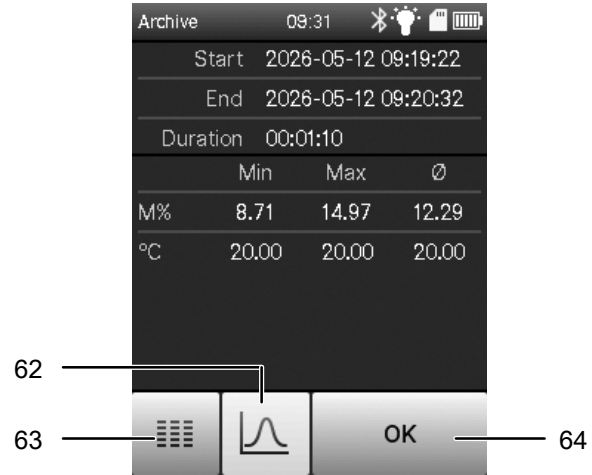
4. Open the file to view the details of the measured values.
 - ⇒ The detailed view of the recording opens.

Notice

Several consecutive individual spot measurements are combined and saved using the date and time of the first individual spot measurement. They can also be displayed as a graph.

The detailed view for continuous and individual spot measurements offers the following options:

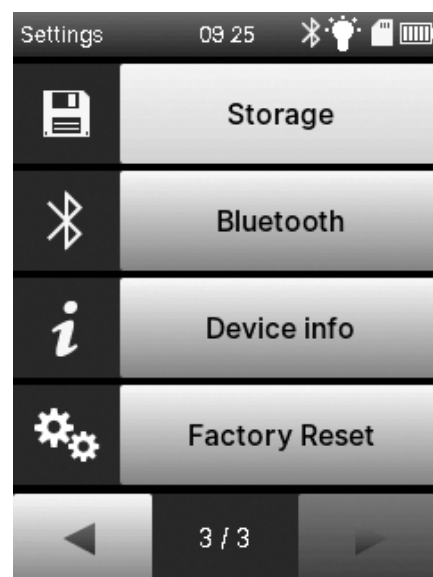
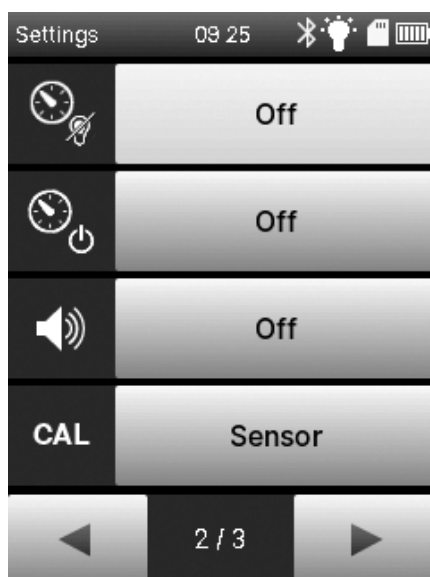
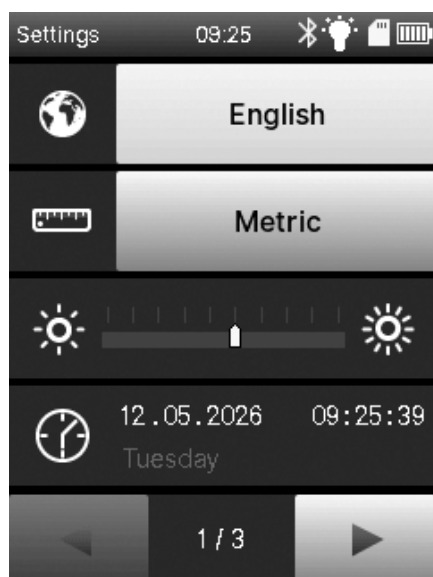
- Overview of the total duration
- List of the individual measured values
- Indication of the measured values as a curve



Item	Designation	Function
62	<i>Graph view</i>	Opens a graph showing the measured values over time.
63	<i>List view</i>	Opens a list of the individual measured values.
64	<i>OK</i>	Closes the detailed view of the archive entry.
65	<i>Filter</i>	Opens the menu for filtering the view by parameters.
66	<i>Magnifying glass</i>	Zooms in on the selected section of the graph.

Device settings

In the *Settings* submenu, you can configure the following device settings:



Icon	Submenu	Function	Icon	Submenu	Function
	<i>Language</i>	Setting the device language		<i>Sounds</i>	Setting the signal sounds
	<i>Units</i>	Switching between metric and imperial units		<i>CAL</i>	Sensor calibration/offset adjustment
	<i>Brightness</i>	Adjusting the display brightness		<i>Memory</i>	Changing the storage location to either internal memory or microSD card
	<i>Date and time setting</i>	Setting the date and time		<i>Bluetooth</i>	Switching Bluetooth on or off
	<i>Screen saver</i>	Setting the timer for the screen saver		<i>Device info</i>	Information about the device and software version
	<i>Automatic switch-off</i>	Setting the timer for automatic switch-off of the device		<i>Reset</i>	Restoring the factory settings

Setting the language

1. From the main menu, select the *Settings* submenu.
2. Open the *Language* submenu.
3. Select the desired language in the following screen.
⇒ The selected screen language is activated immediately.

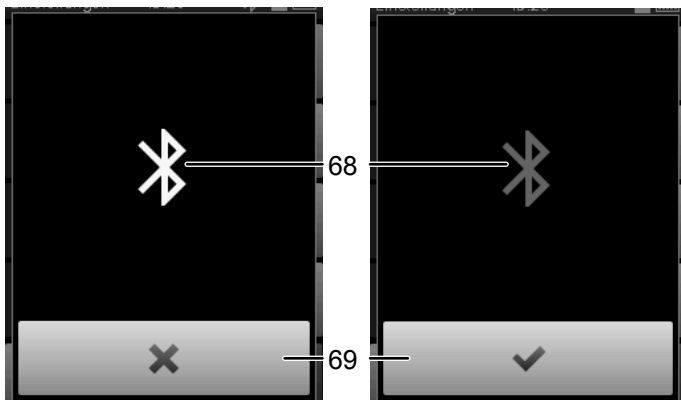


4. Press the *Main menu* button (12) to return to the main menu.

Switching on Bluetooth

To use the MultiMeasure Mobile app, Bluetooth must first be turned on. The Bluetooth function is activated when the *Bluetooth* indication (15) is visible on the display. Please proceed as follows to activate the Bluetooth connection:

1. Open the *Settings* submenu.
2. Open the *Bluetooth* submenu.
⇒ The window for setting up the Bluetooth connection opens.



- ⇒ The Bluetooth icon (68) is white and the button (69) shows an "X" when Bluetooth is turned on.
- ⇒ The Bluetooth icon (68) is greyed out and the button (69) shows a tick when Bluetooth is turned off.
3. Tap the button (69) to switch to the other setting.

Calibrating the sensor

The sensor is calibrated via the *Sensor* submenu in the *Settings*. From this menu, a single-point calibration (zero offset) can be carried out. The sensor is already factory-calibrated and has a corresponding characteristic calibration curve. By specifying a calibration value (offset), a global shift of the calibration curve is performed for the single-point calibration, which has an effect on the entire measuring range.

The offset to be entered is the value by which the calibration curve will be shifted.

Example:

The displayed value is always 5 increments too high.

⇒ Change the offset value for this measurement channel by -5.

The offset value is set to 0.0 at the factory for most sensor types. Changing the offset value brings about an automatic reset of the measured values.

The offset value range depends on the respective sensor type and the unit to be measured. When entering values outside of the respective value range, a fault message stating the setting limits will be emitted. The shift will be saved and therefore also be considered for future measurements.

Performing firmware updates

1. Establish a Bluetooth connection between the T520 and the terminal device on which the MultiMeasure Mobile app is installed.
2. Open the MultiMeasure Mobile app.
⇒ A notification window will open, informing you that a firmware update is available.
⇒ You have the option to run the update now or postpone it until later.
3. Select the option to perform the update.
⇒ The new firmware version is being installed.



Info

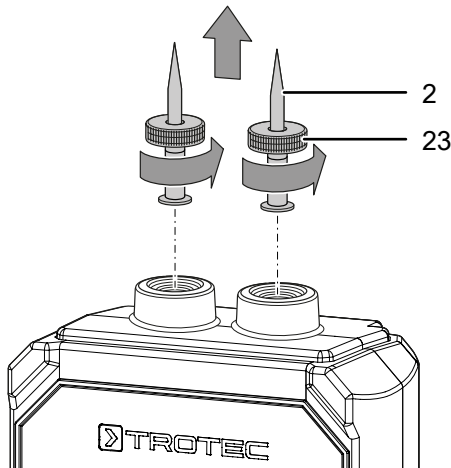
The update can also be downloaded from the Trotec website and transferred using the microSD card. This process is faster than wireless transmission via Bluetooth. To do this, please visit the product website or contact the customer service.

Connecting external electrodes

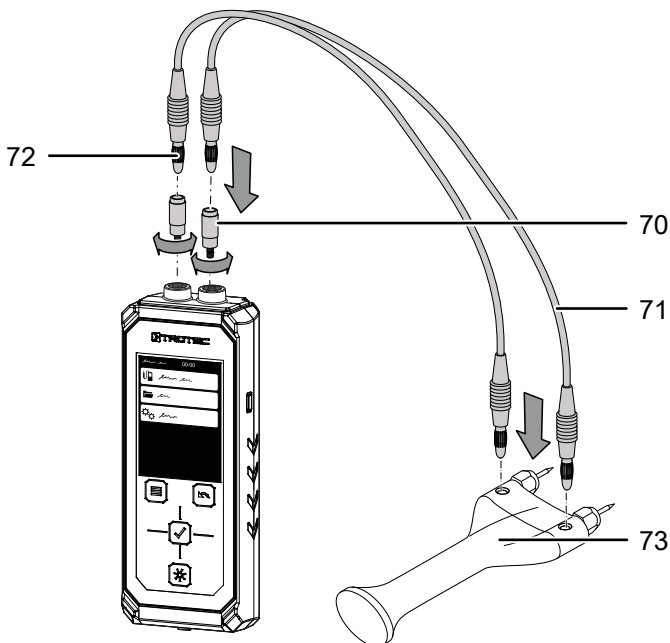
An adapter set and adapter cable are required to connect external electrodes. For further information please contact the customer service.

The adapter set can be used as follows:

1. Detach the union nuts (23) and remove the measuring tips (2), if applicable.



2. Screw the two adapters (70) onto the device.



3. Plug the two cable ends (72) of the adapter cable (71) into the adapters.
 - ⇒ You can now connect external electrodes (example: (73)) to the device.
 - ⇒ Please note the technical data and specifications of the external electrodes and prepare these for the measurement, if required.
 - ⇒ For further information on suitable electrodes please contact the customer service.

MultiMeasure Mobile app



Install the Trotec MultiMeasure Mobile app on the terminal device you want to use in combination with the device.



Info

Some of the app's functions require access to your location and an active Internet connection.

The app is available for download in the Google Play Store as well as in Apple's app store and via the following link:



<https://hub.trotec.com/?id=43083>

Switching the device off

1. Press and hold the *Power* button (4) until the colour display turns off.
 - ⇒ The device is switched off.
2. Put the protective cap (1) back on the measuring tips.

MultiMeasure Mobile app

The T520 can also be used with the MultiMeasure Mobile app. To do so, connect it to your terminal device via Bluetooth.

The operation of the MultiMeasure Mobile app is illustrated using the building moisture measuring mode as an example. The operation of the Wood moisture measuring mode is the same, unless otherwise stated.

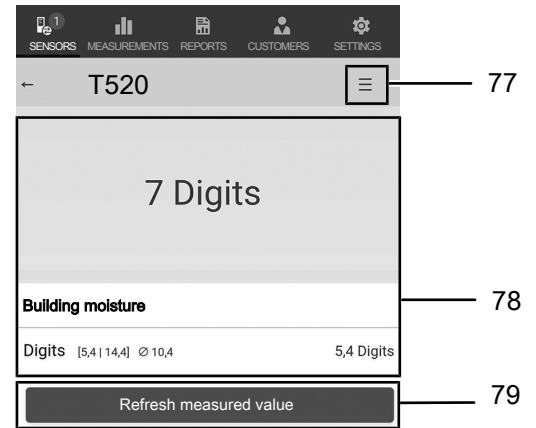
Connecting a measuring device

Proceed as follows to connect the measuring device to the terminal device:

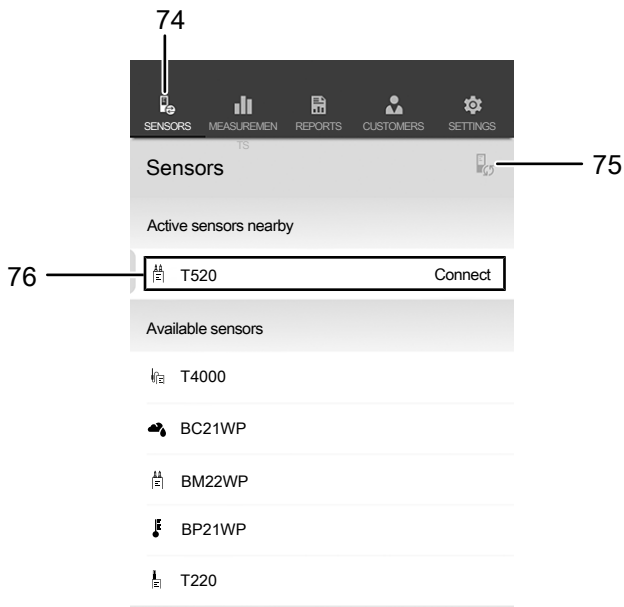
- ✓ The Trotec MultiMeasure Mobile app is installed on your terminal device.
 - ✓ The Bluetooth function on your terminal device is activated.
 - ✓ The T520 is switched on.
 - ✓ Bluetooth is enabled on the T520.
1. Start the Trotec MultiMeasure Mobile app on the terminal device.
 2. Press the *Sensors* button (74) on the terminal device.
 - ⇒ The sensors overview opens.
 3. Press the *Refresh* button (75).
 - ⇒ If scan mode was not active before, the colour of the *Refresh* button (75) will change from grey to black. The terminal device will now search for all available sensors.
 4. Press the *Connect* button (76) to connect the T520 to the terminal device.
 - ⇒ The measurement value display opens.

Measurement value display

After selecting the sensor, the measurement value display opens.



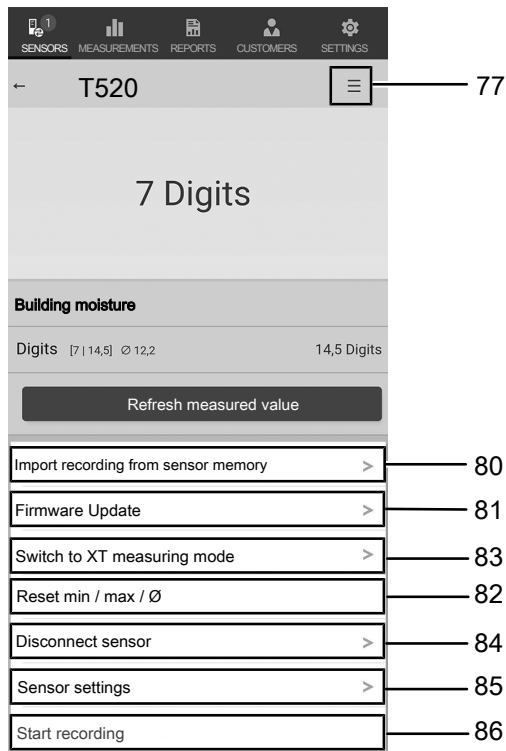
No.	Designation	Meaning
77	<i>Menu</i> button	Opens the menu for making settings for the current measurement.
78	Numeric <i>value</i> display	Displays the measured values collected by the connected sensor as well as average, maximum and minimum values.
79	<i>Refresh measured value</i> button	Performs an individual measurement and refreshes the displayed values.



No.	Designation	Meaning
74	<i>Sensors</i> button	Opens the sensors overview.
75	<i>Refresh</i> button	Refreshes the list of sensors near the terminal device.
76	<i>Connect</i> button	Connects the displayed sensor to the terminal device.

Measurement settings

The *Menu* button (77) opens options for adjusting the measurement settings.



No.	Designation	Meaning
77	<i>Menu</i> button	Opens the menu for making settings for the current measurement.
80	<i>Import recording</i> button	Imports recordings from the device's memory.
81	<i>Firmware update</i> button	Performs a firmware update on the device.
82	<i>Reset min / max / Ø</i> button	Deletes the determined values in (78).
83	<i>X/T measurement</i> button	Switches between X/T measuring mode and Matrix measuring mode. X/T measuring mode: Indication of the measured values as a curve. Actuating the <i>Start recording</i> button (86) starts a continuous measurement. Matrix measuring mode: Numerical indication of the measured values. Actuating the <i>Start recording</i> button (86) starts individual spot measurements or matrix measurements.
84	<i>Disconnect sensor</i> button	Disconnects the T520 from the terminal device.
85	<i>Sensor settings</i> button	Opens the settings menu for the connected device.
86	<i>Start recording</i> button	Starts a recording of the determined measured values for later evaluation.

Recording measured values

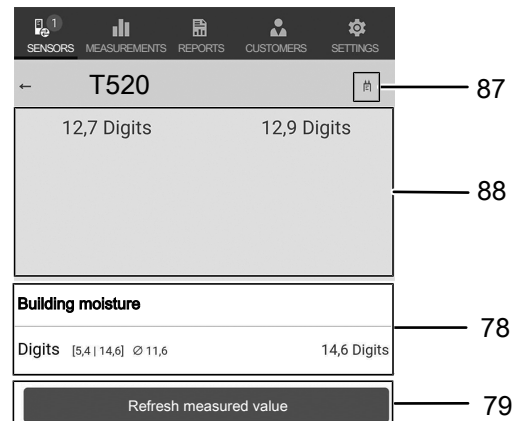
Proceed as follows to record measured values for later evaluation:

1. Press the *Menu* button (77).
⇒ The context menu opens.
2. Press the *Start recording* button (86).
⇒ A menu with various measurement methods is displayed:
 - individual spot measurement without image
 - individual spot measurement with image
 - matrix measurement without background image
 - matrix measurement with background image
3. Select one of the measurement methods by tapping the respective button on the terminal device.
⇒ Recording begins.
⇒ The *Menu* button (77) changes to the sensor icon and flashes while recording is in progress.

Performing an individual spot measurement without image

The individual spot measurement without image allows you to record several individual measuring points. To do so, please proceed as follows:

1. Repeatedly press the *Refresh measured value* button (79) until you have recorded all the required measured values.



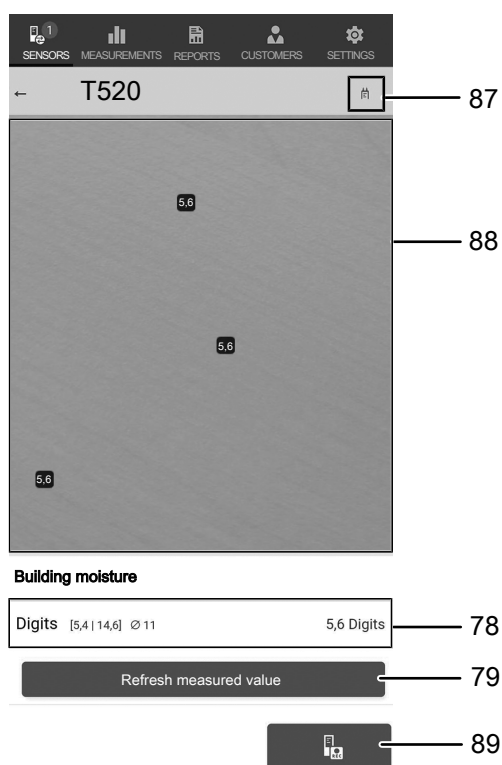
No.	Designation	Meaning
87	<i>REC</i> button	Opens the context menu for sensors.
88	<i>Measurement series</i> indication	Indicates the measured values in rows.
78	<i>Numeric value</i> display	Displays the measured values collected by the connected sensor as well as average, maximum and minimum values.
79	<i>Refresh measured value</i> button	Performs an individual measurement and refreshes the displayed values.

Performing an individual spot measurement with image

Once you have selected individual spot measurement with image, you will then be taken to the image selection mode. The desired image can either be selected from the gallery on your mobile device or created directly within the app. Choose an image section that best matches the measuring surface.

For measured value data logging please proceed as follows:

1. Tap the screen at the exact measuring location. The measured value will be displayed at this location.
 - ⇒ The measured value will be displayed in a specified grid on the background image. Pressing the *Shift measuring point* button (89) allows you to adjust the position of the measuring points. By pressing the *Shift measuring point* button (89) once more you can return to the measuring mode.

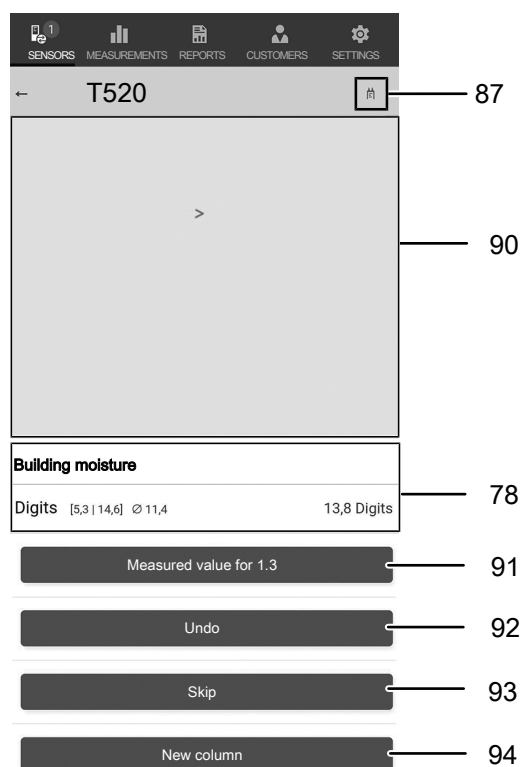


No.	Designation	Meaning
87	REC button	Opens the context menu for sensors.
88	Measurement series indication	Indicates the measured values in rows.
78	Numeric value display	Displays the measured values collected by the connected sensor as well as average, maximum and minimum values.
79	Refresh measured value button	Performs an individual measurement and refreshes the displayed values.
89	Shift measuring point button	Stops the measured value data logging and allows you to relocate the measuring points on the background image.

Performing a matrix measurement without background image

In case of a matrix measurement an entire series of measuring points is captured using a grid the size of which has to be selected.

1. Always start a matrix measurement in the top left corner (1st row, 1st column).
 - ⇒ The grid field to be measured flashes.
2. Perform the measurement in the flashing grid field.
3. Confirm the measured value by pressing the *Measured value data logging* button (91). You can reset a logged value by pressing *UNDO* (92). You can skip the indicated grid field and continue with the measurement in the next by pressing the *SKIP* button (93).
 - ⇒ The displayed measurement grid (90) moves on to the next line.
4. Perform the next measurement at the given point.
5. Press *NEW COLUMN* (94) when you have completed the measurements of all lines in one column so as to move on to the next.



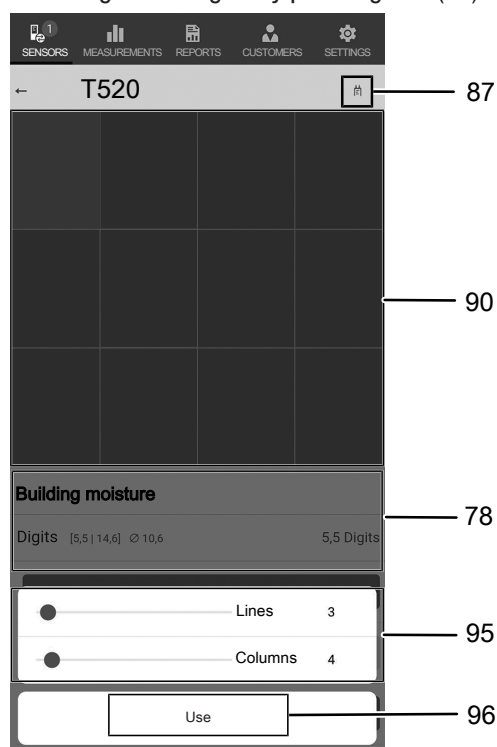
No.	Designation	Meaning
78	Numeric value display	Displays the measured values collected by the connected sensor as well as average, maximum and minimum values.
87	REC button	Opens the context menu for sensors.
90	Measuring field with grid	Indicates the measurement grid of the measuring field (grid field to be measured flashes red).

No.	Designation	Meaning
91	<i>Measured value data logging</i> button	Saves the measured value for the flashing grid field.
92	<i>UNDO</i> button	Deletes the saved measured value for the respective grid field.
93	<i>SKIP</i> button	Skips the grid field flashing red and moves on to the next grid field.
94	<i>NEW COLUMN</i> button	Starts a new column.

Performing a matrix measurement with background image

If you select a matrix measurement with a background image, you will then be taken to the image selection mode. The desired image can either be selected from the gallery on your mobile device or created directly within the app. Choose an image section that best matches the measuring surface. You will then reach the settings menu for the measurement grid.

1. Adjust the grid's number of columns and lines by use of the slider (95).
2. Confirm the settings for the grid by pressing *Use* (96).

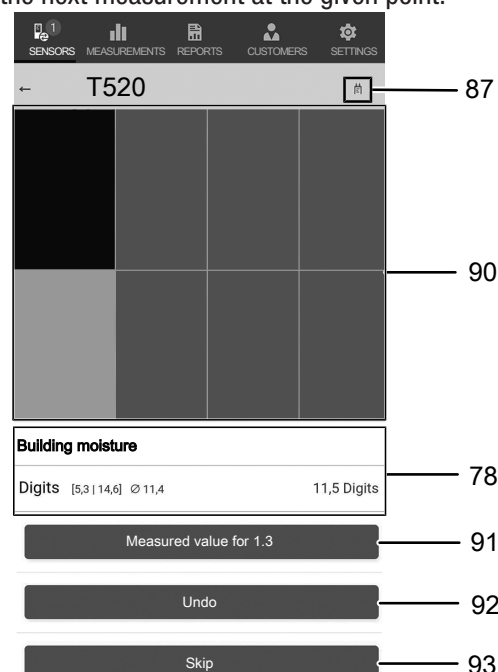


No.	Designation	Meaning
78	Numeric <i>value</i> display	Displays the measured values collected by the connected sensor as well as average, maximum and minimum values.
87	<i>REC</i> button	Opens the context menu for sensors.
90	Measuring field with grid	Indicates the measurement grid of the measuring field (with or without background image).
95	Slider	Changes the grid's number of columns and lines.

No.	Designation	Meaning
96	<i>Use</i> button	Confirms the settings and leads to the measurement menu.

Then start to carry out the measurements:

1. Always start a matrix measurement in the top left corner (1st row, 1st column).
⇒ The grid field to be measured flashes.
2. Perform the measurement in the flashing grid field.
3. Confirm the measured value by pressing the *Measured value data logging* button (91). You can reset a logged value by pressing *UNDO* (92). You can skip the indicated grid field and continue with the measurement in the next by pressing the *SKIP* button (93).
⇒ The displayed measurement grid (90) moves on to the next line.
4. Perform the next measurement at the given point.

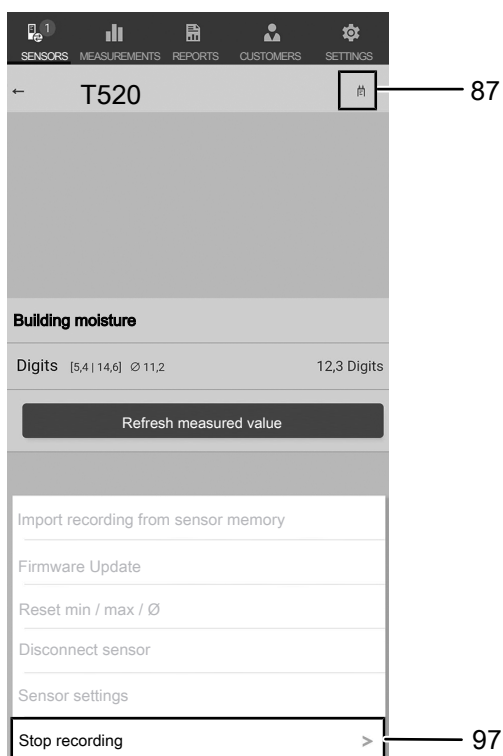


No.	Designation	Meaning
78	Numeric <i>value</i> display	Displays the measured values collected by the connected sensor as well as average, maximum and minimum values.
87	<i>REC</i> button	Opens the context menu for sensors.
90	Measuring field with grid	Indicates the measurement grid of the measuring field (grid field to be measured flashes red).
91	<i>Measured value data logging</i> button	Saves the measured value for the flashing grid field.
92	<i>UNDO</i> button	Deletes the saved measured value for the respective grid field.
93	<i>SKIP</i> button	Skips the grid field flashing red and moves on to the next grid field.

Stopping a recording

Proceed as follows to stop recording the measured values:

1. Press the *REC* button (87).
⇒ The context menu for sensors opens.
2. Press the *Stop recording* button (97).
⇒ The context menu for saving the recording opens.
3. You can optionally save, discard or resume the measurement.



No.	Designation	Meaning
87	<i>REC</i> button	Opens the sensor settings menu.
97	<i>Stop recording</i> button	Stops the current recording of measured values and opens the submenu for saving recordings.

Saving a recording

Proceed as follows to save the recorded measured values:

1. Press the *Save* button (98) to save the recorded measured values on the terminal device.
⇒ The input mask for logging the recorded data opens.
2. Enter all the data relevant for an unambiguous assignment, then save the recording.
⇒ The recording will be saved on the terminal device.

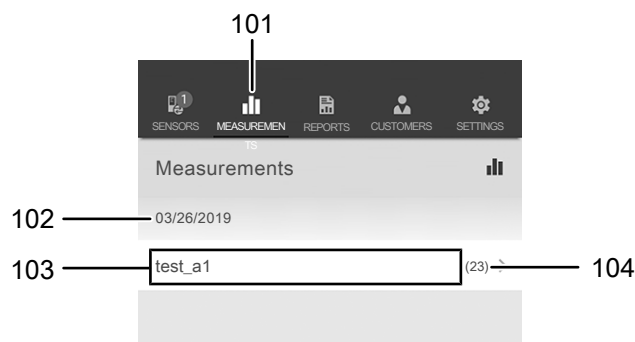


No.	Designation	Meaning
98	<i>Save</i> button	Stops the current recording of measured values and opens the input mask for logging recording data.
99	<i>Discard</i> button	Stops the current recording of measured values and discards the recorded measured values.
100	<i>Continue</i> button	Resumes the recording of the measured values without saving.

Analysing measurements

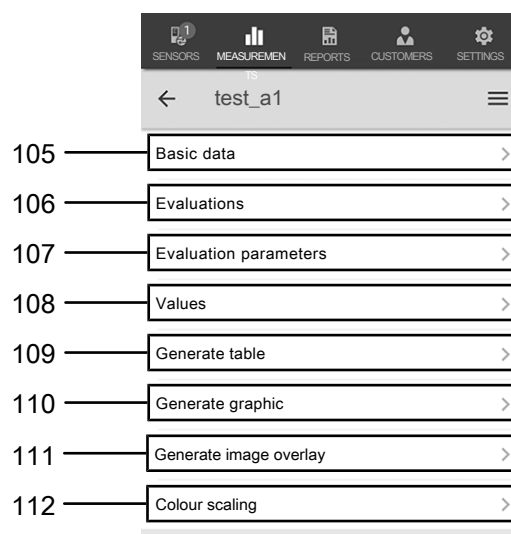
Proceed as follows to call up the saved measurements:

1. Press the *MEASUREMENTS* button (101).
⇒ An overview of already saved measurements will be displayed.
2. Press the *Display measurement* button (103) for the desired measurement to be indicated.
⇒ A context menu for the selected measurement opens.



No.	Designation	Meaning
101	<i>MEASUREMENTS</i> button	Opens the overview of saved measurements.
102	Indication of the <i>date of the measurement</i>	Indicates the date on which the measurement was recorded.
103	<i>Display measurement</i> button	Opens the context menu for the selected measurement.
104	Indication of the <i>number of measured values</i>	Indicates the number of individual measured values constituting the saved measurement.

Depending on the type of measurement, the following functions can be called up in the context menu of the selected measurement:

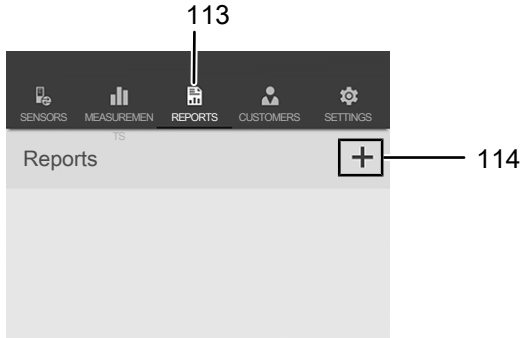


No.	Designation	Meaning
105	<i>Basic data</i> button	Opens an overview of the data saved for the measurement.
106	<i>Evaluations</i> button	Opens an overview of the evaluations generated for the measurement (graphics and tables).
107	<i>Evaluation parameters</i> button	Opens a menu to select and deselect individual evaluation parameters.
108	<i>Values</i> button	Opens a tabular overview of all the values logged for the measurement..
109	<i>Generate table</i> button	Creates a table containing the logged values of the measurement and saves it as a *.CSV file.
110	<i>Generate graphic</i> button	Creates a graphic representation of the logged values and saves it as a *.PNG file.
111	<i>Generate image overlay</i> button	Combines a background image with the coloured representation of the measured moisture values.
112	<i>Colour scaling</i> button	Allows you to adjust the colour display of the measured moisture values.

Generating a report

The reports generated in the MultiMeasure Mobile app are short reports providing a fast and simple documentation. Proceed as follows to generate a new report:

1. Press the *REPORTS* button (113).
⇒ The reports overview opens.
2. Press the *New report* button (114) to create a new report.
⇒ An input mask for entering all the relevant information opens.
3. Enter the information via the input mask and save the data.



No.	Designation	Meaning
113	<i>REPORTS</i> button	Opens the overview of saved reports.
114	<i>New report</i> button	Creates a new report and opens the input mask.



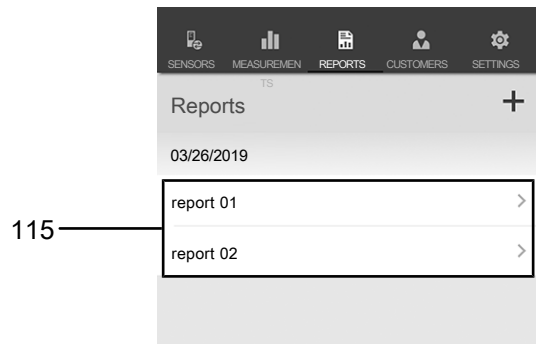
Info

The customer can acknowledge the report directly in the integrated signature field.

Calling up a report

Proceed as follows to call up a created report:

1. Press the *REPORTS* button (113).
⇒ The reports overview opens.
2. Press the corresponding button (115) to display the desired report.
⇒ An input mask opens in which you can view and edit all the information.

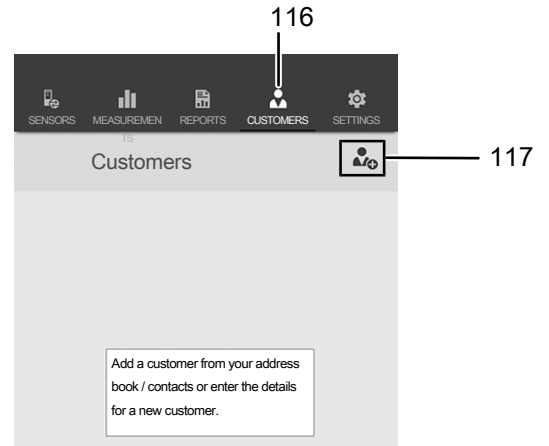


No.	Designation	Meaning
115	<i>Display REPORT</i> button	Opens the selected report.

Creating a new customer

Proceed as follows to create a new customer:

1. Press the *CUSTOMERS* button (116).
2. Press the *New customer* button (117).
⇒ An input mask for entering all the relevant information opens.
3. Enter the information via the input mask and save the data.
4. Alternatively, you can also import existing contacts from the phone book of the terminal device.

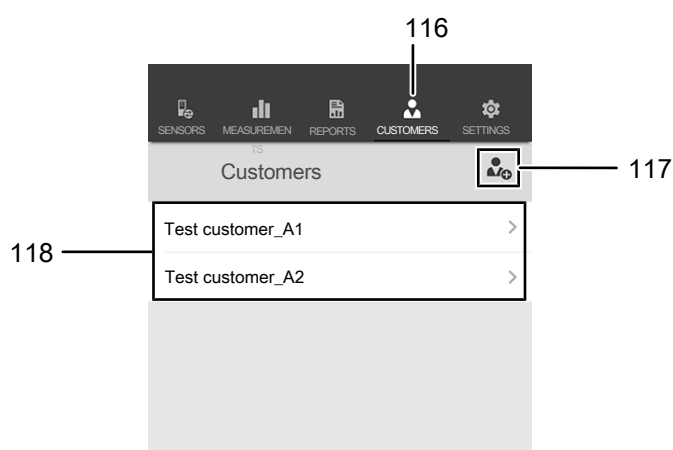


No.	Designation	Meaning
116	<i>CUSTOMERS</i> button	Opens the overview of saved customers.
117	<i>Add customer</i> button	Creates a new customer and opens the input mask.

Calling up customers

Proceed as follows to call up an already created customer:

1. Press the *Customers* button (116).
⇒ A list of the customers created so far opens.
2. Press the *Customer X* button (118).
⇒ An input mask opens in which you can view and edit all the information for the selected customer as well as directly start a new measurement.
⇒ The *New customer* button (117) changes. In this menu it can be used to delete the selected customer data record.

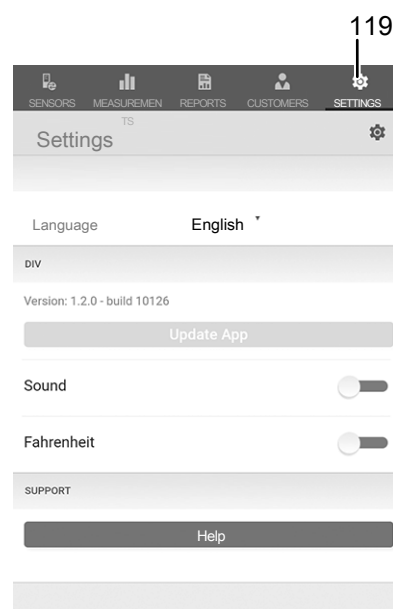


No.	Designation	Meaning
116	<i>CUSTOMERS</i> button	Opens the overview of saved customers.
117	<i>Add customer</i> button	Creates a new customer and opens the input mask. Allows deletion whilst the input mask is open.
118	<i>Customer X</i> button	Opens the input mask for reading and changing the information for a saved customer.

App settings

Proceed as follows to make settings in the Trotec MultiMeasure Mobile app:

1. Press the *SETTINGS* button (119).
⇒ The settings menu opens.
2. Adjust the settings as required.



No.	Designation	Meaning
119	<i>SETTINGS</i> button	Opens the overview for the app settings and information.

Disconnecting the measuring device

Proceed as follows to disconnect the T520 from the terminal device:

1. Press the *Sensors* button (74).
⇒ A list of connected and available sensors will be displayed.
2. Swipe left on the device you want to disconnect until the *Disconnect sensor* button appears.
3. Press the *Disconnect sensor* button.
⇒ The T520 is now disconnected from the terminal device and can be switched off.

Measuring principle

During moisture measurement according to the resistance principle an electric measuring current is generated within the measuring device, which is conducted through the material to be measured by means of electrodes.

With an increasing water content of the measured material to be examined the resistance drops and conductivity builds up.

If the material to be measured has a high resistance, the moisture content is low.

If the material to be measured has a low resistance, the moisture content is high.

Thus, moisture measurement according to the resistance principle is an indirect measurement method, since the humidity is deduced from the conductivity of the measured material.

Wood moisture measurement

Every type of wood has a distinct conductivity. In order to take this fact into consideration for the measurement, every wood type comes with a material code that can be set.

The wood's conductivity is further influenced by the wood temperature. In order to take this fact into consideration for the measurement, the wood temperature can also be determined. The wood temperature is to be determined before moisture measurement and set accordingly.

The measuring device comes equipped with an internal temperature compensation. The resistance curves of the selected wood type are automatically adapted depending on the set wood temperature.

Error sources

During resistance measurement the accuracy of the measurement method needs to be examined. Two fundamental types of error sources become apparent within the measuring range from 0 to 100 M%.

- There is one error stemming from the measuring principle of the resistance measurement. This is particularly noticeable in case of high resistance values (low conductivity at less than 5 M%). Due to the low measuring currents the measurement value display is i.a. increasingly falsified by molecular attraction. Listed below are the principle-related measurement errors:

Measured value	Error
0 - 5 M%	0.8 M%
6 - 30 M%	0.2 M%
31 - 100 M%	0.1 M%

- The other typical error source to be considered is material characteristics. This is particularly noticeable in case of high moisture contents above the fibre saturation point (high conductivity above 30 M%). Owing to the irregular cellular structure of various wood types and the i.a. resulting irregular water retention within and outside of the cells, these measured values in part substantially deviate from the actual moisture contents. It is, however, not possible to put a precise number on these deviations, even though the principle-related accuracies with 0.1 M% suggest a higher accuracy than for the medium measuring range from 6 to 30 M%.

When looking at both error sources, one can conclude, that the resistance measurement method is particularly well suited for the determination of the moisture content between 6 and 30 M%.

Notes regarding the wood moisture measurement

- Make sure you have set the correct type of measurement (wood).
- Make sure that the correct material code was selected.
- Prior to the actual measurement process, check the temperature conditions. To do so, for instance a pyrometer is to be used for measuring the surface temperature of the wood type, which should then be compared with the wood temperature set in the device. If both temperatures are identical, measuring can be started.
If the wood temperature is higher than the value set in the measuring device, a higher wood moisture than really there will be displayed as a result.
- When measuring sawn timber, observe the instructions of DIN EN 13183-2.
- Always insert the measuring tips transverse to the wood fibre direction.
The conductivity transverse to the wood fibre direction is lower than that in line with it.
Depending on the type of wood it varies by the factor 2.3 to 8.
- When selecting the measuring positions observe the following:
 - Always measure the material moisture at three different positions in order to achieve a sufficient accuracy by means of the arithmetic average.
 - Do not measure the face, because there are mainly dry areas.
 - Preferably do not measure at cracks, branches or resin pockets either.
- Oily and/or aqueous timber preservatives affect the measurement result.
- If possible, do not measure wood with a temperature below -5 °C. Too low wood temperatures distort the result of the measurement.

- Avoid static charge of the material to be measured due to friction. Static charge distorts the measurement result.
- With a wood moisture of less than 10 %, electrostatic forces can appear at the good to be measured. This can falsify the result of the measurement. Experience has shown that this occurs at the outlet of veneer drying plants. Remove the static charge by use of suitable grounding measures.
- The temperature value set within the device must be identical to the wood temperature.
Example:
With a set temperature value of 20 °C and a wood temperature of 30 °C the measurement result would be distorted upwards by approx. 1.5 %.
- The measurement's accuracy depends on the contact pressure of the measuring tips. The measuring tips must be connected to the wood in a way that the contact resistance is small as compared to the measuring resistance.
- The measurement results ought to be checked on a sample basis by means of the Darr test.

Building moisture measurement

The electric conductivity of a dry, mineral construction material (e.g. cementitious screed) is very low. When the building material absorbs water, the conductivity of the material can quickly increase or the resistance decrease.

What needs to be considered for the assessment of the measurement results is that the results are affected by the material composition of the measured goods:

- The presence of soluble salts can distort the measurement result substantially.
The more salt is present, the higher will be the displayed measurement value.
- Yet another variable for the evaluation of the results is the connection of the electrodes with the construction material. In case of mineral, porous building materials, slight electrode contact can cause a comparatively high contact resistance. This can falsify the result of the measurement.

The accuracy of the measurement results is thus lower for mineral construction materials than for wood.

Building moisture measurements allow only qualitative conclusions about the moisture (dry, damp, wet).

Quantitative conclusions about the moisture content of the mineral material to be measured can only be drawn by applying the Darr procedure or the CM method.

Notes regarding the building moisture measurement

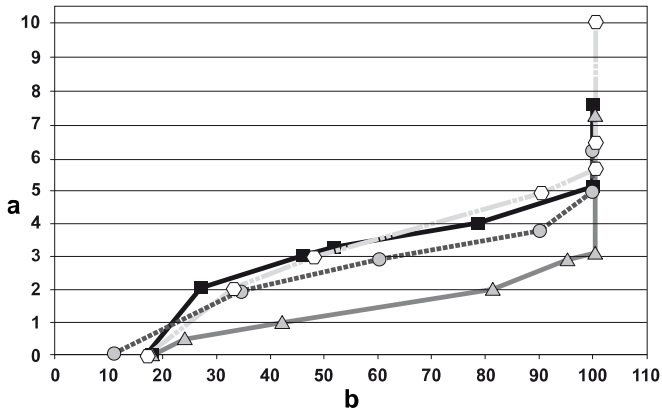
- Make sure you have set the correct type of measurement (build).
- For measuring, the temperature of the building material ought to be in the range of 20 °C.
- Observe disruptive influences due to electrically conducting salts in the material:
Building-related moisture issues often occur in liaison with water-soluble salts. Salts further the conductivity of construction materials. During the measurement, the building material has a lower resistance value. Consequently, a too high measured value will be displayed.
- Observe disruptive influences due to electrically conducting substances:
If a construction material contains electrically conducting substances, it also has a lower resistance value, which then simulates high moisture values. Consequently, a too high measured value will be displayed.
From visual inspection it is usually not apparent, whether there are any electrically conducting substances inside the construction material. Some of the main error sources here are in particular reinforcements, metal laminations and conducting insulation such as slag in timber beam ceiling constructions. Especially in case of insulation materials with metal lamination, measured values are often misinterpreted during the resistance measurement.

Measured value assessment building moisture measurement

For the measured value assessment of building material, the measurement results of the resistance measuring method can only be used as reference for a rough orientation.

Conclusions with respect to absolute humidity in mass % (M%) can only be drawn for measurements, performed with the exact same marginal conditions and compositions of the building material as indicated for the test set-up in the chart below.

This graph was created in collaboration with the Institute of Building Materials Research of the RWTH Aachen (IBAC) and illustrates the correlation between the measured value and the mass-related moisture content of the examined building materials. The presentation of the metrological results in this form now permits a proper comparison of the measured value and the actual moisture content. The list is limited to the most commonly used mineral building materials. The measured values relate to a reference temperature of 23 °C.

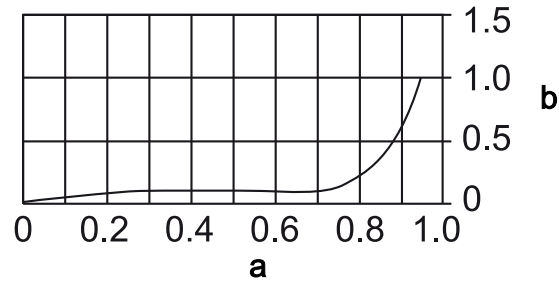


Key	
a	Moisture content (M%)
b	Measured value (digits)
---○---	C 30/37 concrete (conversion not possible)
—■—	Cementitious screed (conversion: CM% = M% - 1.5 to 2)
---○---	Cementitious floating screed (conversion not possible)
—▲—	Anhydrite floating screed (conversion: M% = CM%)

Plaster

The determination of the moisture content of plaster calls for separate examination. As can be seen from the following chart, the volume-based moisture content of plaster changes little at air humidity values between 0 and 0.8 (80 %). However, when exceeding the level of 0.8 (80 %), the moisture content skyrockets.

Sorption isotherm of plaster:



Key	
a	Relative humidity ψ
b	Water content u_v in %

This was also confirmed by the calibration measurements of the Institute of Building Materials Research (IBAC). Therefore, one can conclude, that a direct correlation between measured value and mass-related moisture content is not possible. As sufficient criterion for the classification of the measured values it can however be stated, that plaster can be considered dry, when the measured resistance value is smaller than 30 digits. When evaluating the measured values it is imperative to observe that different marginal conditions prevail for every measurement.

Important variables influencing the worth of the measured value are the connection of the electrodes to the material to be measured, the material temperature, the construction material's composition, salt loading and aggregates.

For construction materials not listed, usually sufficient conclusions can be drawn owing to local reference values. As a consequence, the affected damp area can be narrowed down to such an extent that a comparative measurement is carried out at an evidently dry wall or floor area as basis of valuation.

By use of the higher measured values of the area to be assessed, the spreading of the damp area can well be determined.

Reference values for the assessment of areas damaged by water

In case of water damage a resistance measurement can be carried out to enable an evaluation of the area to be dried. Based on the factual moisture content and the changeable marginal conditions, the following table can be used to assess the necessity for drying by use of technical means.

Here, one has to observe that the measurement results constitute only one component of a comprehensive damage diagnosis. The experience of the evaluator and local circumstances play just as vital a role as the documentation of the measurement results. The documentation further allows to demonstrate the success of a technical drying procedure.

Digit scale values	*	**	***
Insulation layers / packed bed			
polystyrene (particle foam)	< 36	36 to 50	> 50
polystyrene hard foam (extruded)	< 36	36 to 50	> 50
polyurethane hard foam	< 36	36 to 50	> 50
glass fibre	< 36	36 to 45	> 45
rock wool or slag wool	< 36	36 to 45	> 45
silicate foam glass	< 36	36 to 50	> 50
cork, expanded volcanic rock	< 31	31 to 40	> 40
wood-wool slabs	< 41	41 to 50	> 50
clay fill	< 41	41 to 55	> 55
coir	< 36	36 to 40	> 40
Building materials			
Anhydrite screed	< 36	36 to 50	> 50
Cement screed	< 36	36 to 50	> 50
wood cement screed	< 36	36 to 50	> 50
xyloolith	< 41	41 to 55	> 55
Plaster	< 31	31 to 40	> 40
*	dry – no drying required		
**	threshold – drying may be required after evaluation of the damage characteristics		
***	thorough moisture penetration – drying by use of technical means required		
All values are approximations and without warranty.			

Maintenance and repair

Exchanging measuring tips

Exchange the measuring tips when these exhibit signs of wear (e.g. oxidation, heavy contamination). See chapter *Operation, Installing the measuring tips*.

Note:

The device's measuring tips are bordered by use of special cap nuts and screwed in place. A slight clearance within the nuts is intended. To avoid peak load, it is possible that the tips loosen somewhat after a few measurements. Hence, regularly check the cap nuts for tight fit and, if required, retighten them by hand. In order to avoid damage to the threads, please do not use any tools such as pliers when doing so.

Cleaning

Clean the device with a soft, damp and lint-free cloth. Make sure that no moisture enters the housing. Do not use any sprays, solvents, alcohol-based cleaning agents or abrasive cleaners, but only clean water to moisten the cloth.

Repair

Do not modify the device or install any spare parts. For repairs or device testing, contact the manufacturer.

Errors and faults

The device has been checked for proper functioning several times during production. If malfunctions occur nonetheless, check the device according to the following list.

The device does not switch on:

- Check the charging status of the batteries. Change the batteries, if required.
- Check that the batteries are properly positioned. Check the polarity is correct.
- Never carry out an electrical check yourself; instead, contact the manufacturer's customer service service.

Display segments are only faintly visible or flicker:

- Check the charging status of the battery. Change the battery, if required (see chapter Inserting the battery).
- Make sure that the battery is properly positioned. Check the polarity is correct.

The device displays implausible measured values:

- Check the charging status of the battery. Change the battery, if required (see chapter Inserting the battery).
- Make sure that the battery is properly positioned. Check the polarity is correct.
- The measuring tips are bent or dirty, or the union nuts have come loose too much. Clean or replace the measuring tips and tighten the union nuts as described in the Maintenance chapter.

The device runs but no measured values are shown:

- Check the room temperature and the relative humidity. Observe the device's permissible operating range according to the technical data.
- Check whether the device responds to touching the colour display. If it shows no reaction despite an enabled colour display and sufficient battery power, then the device firmware may have crashed. Restart the device. To do so, remove a battery and reinsert it.

Bluetooth connection is terminated or interrupted

- Check whether the *Bluetooth* indication is displayed. If so, switch the T520 off and back on. Establish a new connection to the terminal device.
- Check the charging status of the batteries. Change them if required, see section Inserting the batteries.
- Does the distance between the T520 and the terminal device exceed the radio range of the T520(see chapter *Technical data*) or are there any solid building parts (walls, pillars etc.) situated between the T520 and the terminal device? Shorten the distance between the two devices and ensure a direct line of sight.

The device cannot be connected to the terminal device although it is displayed there.

- Check the Bluetooth settings of your terminal device. A possible reason for this could be special, manufacturer-specific settings relating to an improved location accuracy. Enable these settings, then try to establish a connection to the device again.

Further information and assistance regarding the used sensor type will be provided in the MultiMeasure Mobile app via the menu item Settings => *Help*. Selecting the menu item *Help* opens a link to the app's help page. You can open a drop-down menu with numerous support entries from the *Table of contents*. Optionally, you can also scroll through the entire help page and thoroughly acquaint yourself with the individual help topics.

Your device still does not operate correctly after these checks?

Please contact the customer service.

Disposal

Always dispose of packing materials in an environmentally friendly manner and in accordance with the applicable local disposal regulations.



The icon with the crossed-out wheeled bin indicates that this device and any associated components (e.g. remote controls) must not be disposed of with household waste at the end of their life, in accordance with the Waste Electrical and Electronic Equipment Directive (2012/19/EU) and national laws.

You will find collection points for free return of waste electrical and electronic equipment in your vicinity. The addresses can be obtained from your municipality or local administration. You can also find out about other return options that apply for many EU countries on the website <https://hub.trotec.com/?id=45090>. Otherwise, please contact an official recycling centre for electronic and electrical equipment authorised for your country.

The separate collection of waste electrical and electronic equipment aims to enable the re-use, recycling and other forms of recovery of waste equipment as well as to prevent negative effects for the environment and human health caused by the disposal of hazardous substances potentially contained in the equipment.



This icon with the crossed-out wheeled bin indicates that batteries or accumulators must not be disposed of with household waste at the end of their life. If the device contains batteries or accumulators that contain mercury, cadmium or lead, the respective chemical symbol (Hg, Cd or Pb) is shown below the icon of the crossed-out wheeled bin. To prevent environmental pollution, do not carelessly leave batteries or electrical and electronic equipment containing batteries in public areas. In the European Union, batteries and accumulators must be returned to a designated collection point in accordance with REGULATION (EU) 2023/1542 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 July 2023 concerning batteries and waste batteries. Remove batteries/accumulators and dispose of them separately according to the relevant legal requirements.

Only for United Kingdom

According to Waste Electrical and Electronic Equipment Regulations 2013 (SI 2013/3113) (as amended) and the Waste Batteries and Accumulators Regulations 2009 (SI 2009/890) (as amended), devices that are no longer usable must be collected separately and disposed of in an environmentally friendly manner.

Declaration of conformity

We – Trotec GmbH – declare in sole responsibility that the product designated below was developed, constructed and produced in compliance with all relevant provisions of the EU Radio Equipment Directive in the version 2014/53/EU.

Product model / Product: T520

Product type: moisture measuring device

Year of manufacture as of: 2026

The product also complies with all relevant provisions of the following directives/regulations:

- 2011/65/EU
- 2014/30/EU

Other EU legal acts applied:

- 2012/19/EU

Applied harmonised standards:

- EN 300 328 V2.2.2
- EN 301 489-1 V2.2.3:2019-11
- EN 301 489-17 V3.3.1:2024-09
- EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019

Applied national standards and technical specifications:

- EN 55032:2015 + AC:2016 + A11:2020 + A1:2020
- EN 61000-4-29:2000
- EN 61000-4-8:2010
- EN 61326-2-1:2013
- EN IEC 61000-4-11:2020
- EN IEC 61000-6-2:2019

Manufacturer and name of the authorised representative of the technical documentation:

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Place and date of issue:

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