



Moisture and Thermal Tracer



Model no.: **MS-WITC3** (3 in 1)
Thermal Tracer

MS-WITC3M (4 in 1)
Moisture and Thermal Meter (Pin Type Sensor)

MS-WITC3MT (6 in 1)
Moisture and Thermal Tracer (Dual Moisture Sensor)



Trace to find 'more wetter' location !

Thanks for purchasing MEET's Moisture and Thermal Tracer !

1. Contents

- Either thermal tracer / moisture and thermal meter / tracer
- Handheld stand
- USB Type-C charging cable
- Operation manual

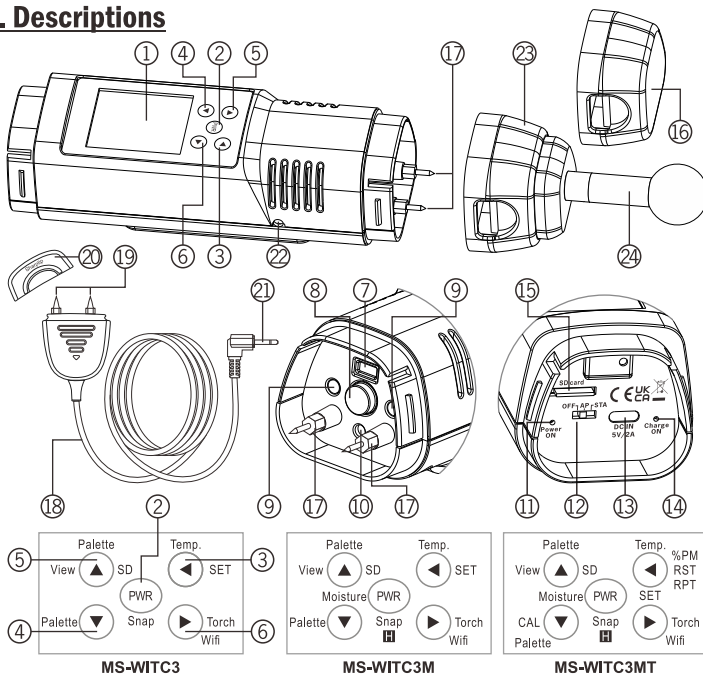


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Model No.:	MS-WITC3 / MS-WITC3M / MS-WITC3MT
Adjustable emissivity	0.1 ~ 0.99
Max. / Min. / Target object temperature display	
Max. / Min. / Max.+Min. auto trace object temperature with thermal in picture display	
NEW Max. / Min. / Max.+Min. auto trace object temperature with floating target icon display	
NEW Auto trace object temperature hot / cold / (hot + cold) isotherm map display at grey palette or only visual display or only thermal display	
NEW Alarm set, auto trace high or low temp. with beep and or laser pointer trigger	
NEW Data logging, auto trace and capture high or low temperature every 10 seconds. and stored in micro SD card	
NEW Temperature change monitoring function, when the monitoring is triggered, it will take pictures immediately, and then every 10 seconds will save a picture in the micro SD card	
NEW Self Temp. Compensation adjust by manually input for accurate / comparison or matching reading	
Menu setting and display / 1/4" screw for tripod	
Color palette : Rainbow / Fulgurite / White Hot / Iron Red / Black/White / Without thermal image	
Equipped with charging indicator LED: lights up when charging, turns off when fully charged, flashes when using USB power supply after fully charged	
Image storage / File format : Micro SD card (not include, up to 32G) / BMP / CSV	
Type 'C' USB input for charging or continuous operation, 5V DC / 1A	
Operating / Storage conditions	0°C ~ 40°C (32°F ~ 104°F); 10% ~ 80%RH
Power supply and battery life	With rechargeable 3.7V / 1100MAH Lithium battery, sustainable approx. operating time : 45 minutes (Wi-Fi connection status) / 170 minutes (Wi-Fi disconnected state)
Battery charging time	Power on Wi-Fi connection status, more than 100 minutes

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4. Descriptions



2. Thermal Imaging Specifications

Model No.:	MS-WITC3 / MS-WITC3M / MS-WITC3MT	
Wi-Fi wireless connection function introduction	1) Direct to Smartphone / Tablet 2) Through hotspot of Smartphone to Smartphone / Tablet; Smart T.V. / projector 3)Through touter to Desktop; Smartphone / Tablet	
Dual Wi-Fi wireless connection options available	STA 'Station' mode (WLAN mode)	Through a router or Smartphone hotspot as an intermediate, Tracer and the device are connected to the same WLAN.
	AP 'Host' mode (Wi-Fi direct mode)	Tracer will generate a Wi-Fi hotspot, and the device will connect to the hotspot.
Wi-Fi wireless connection distance	< 15M	
- Display - Date / Time	2-inch TFT Colour Display (220x176)	
Visible camera resolution	640 x 480 (pixel), digital visual camera enhancement	
Thermal image detector	Low power CMOS, shutterless	
Thermal image resolution	80(H) x 62(V), 4960 pixels	
Spectral response	8 ~ 14 μm (Thermal LWIR)	
Measure object temp. range	- 20°C ~ 350°C (- 4°F ~ 662°F)	
Accuracy	< ± 2°C (± 3.6°F)	
Resolution	0.1°C (0.1°F)	
Fixed focus distance	0.5M	
Image frequency	≤ 9Hz	
NEW Distance to object meas. display	1cm ~ 320cm	
Thermal calibrate distance	30cm ~ 200cm	

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3. Moisture Specifications (MS-WITC3M / MS-WITC3MT)

Thermal Tracer has a wide range of applications. In addition to the thermal imaging function, MS-WITC3M / MS-WITC3MT also has a moisture detection function for wood / building materials. It is highly practical and has multiple detection methods suitable for various occasions. The detection results have higher accuracy. The meter is designed for use in wide applications, such as:

- For building construction, home / office / factory renovation, water damage restoration, such as locating water leaks behind walls, above ceilings, below floors, measuring content on bricks, concrete, wood before sealing, treating, painting, wall papering. Check for moisture on or below the surface of carpet, or sub-flooring.
- For wood working, measure moisture content before finishing, painting processing.
- For textile industries, regular check moisture content on fabrics, clothes, leather, quality check to prevent mold.
- For printing industries, check moisture content on paper before printing.

Model No.:	MS-WITC3	MS-WITC3M	MS-WITC3MT
Only IR mode (thermal imaging function)	★		
Moisture mode - Pin type Measurement (%PM) Range : 6.0 ~ 99.9 %PM Accuracy : ±(5% rdg +5 digits)		★	★
Moisture mode - Pin type, Relative Surface Trace (RST) Range : 0.1 ~ 99.9 RST Accuracy : Relative reading (REL)			★
NEW Feature Moisture mode - Non-destructive, Relative Penetrate Trace (RPT) Range : 0.1 ~ 99.9 RPT Accuracy : Relative reading (REL) Measuring depth : 100mm / 4.0 inches			★

Note: MS-WITC3 does not have moisture detection function (Moisture mode), It's fixed to IR mode.

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- 2" TFT colour display, display description (IR mode)
 - Temp. change monitoring has been turned on
 - Alarm prompt triggered in 'bmp' mode
 - battery status
 - Current date
 - 'Target / object' temperature value
 - 'Min.' temperature value
 - Wi-Fi wireless connection access address (through Smart device view)
 - The distance from the sensor to object
 - Measured data of moisture currently detected (MS-WITC3M / MS-WITC3MT)
 - Temp. change monitoring has been turned on
 - 'csv' table data logging prompt in progress
 - Current time
 - 'Max. temp. icon' (automatic tracing)
 - 'Target / object' temp. icon (center point)
 - 'Min.' temp. icon (automatic tracing)
 - 'Max.' temperature value
 - Wi-Fi wireless connection turned on indicator
 - Micro SD card inserted indication
- 'PWR' (Power) button:
 - Press and hold for 3 seconds to power ON/OFF
 - In IR mode** (The main value is displayed as the temperature detected by thermal imaging)
 - Press once to snap picture (current measurement screen) and store it in micro SD card. (When the 'File Format' on the 'SETTING' page is set to 'bmp')
 - Press once to start data recording, and '■' is displayed on the top of the screen, press again to stop data recording and store it in micro SD card. (When the 'File Format' on 'SETTING' page is set to 'csv') this operation is same as using the data logging alarm.
 - Press once to start temperature change monitoring function, '■' is displayed on the top of the screen, press again to stop temperature difference monitoring (When the 'AutoCapture' on 'SETTING' page is set to 'Cold / Hot / Tgt.')
 - In Moisture mode** (The main value is displayed as the current value of moisture detection)
 - Press once to freeze/hold the current measurement reading and screen, and then after 2 seconds, the screen will be captured and stored in the micro SD card.
- 'Left' button :
 - Long press for 3 seconds to enter or exit the 'SETTING' page
 - On the 'SD CARD' page, press once to enter the 'DELETE ?' column

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- ③ '◀' (left) button :
- In **IR mode** (The main value is displayed as the temperature detected by thermal imaging)
 - c) In measurement mode, press once to switch between 5 different temp. display modes.
 - In **Moisture mode** (The main value is displayed as the current value of moisture detection) (only MS-WITC3MT could use this function):
 - d) Press once to switch the moisture measurement function : '%PM' / 'RST' / 'RPT'
- ④ '▼' (down) button :
- a) In measurement mode, press and hold for 3 seconds to switch from '**IR mode**' to '**Moisture mode**' or '**Moisture mode**' to '**IR mode**'
 - b) On the 'SD CARD' page : 1) Press once to scroll down to view pictures
2) In the 'DELETE ?' column, press once to select '▼NO' to exit the 'DELETE ?' column.
 - c) On the 'SETTING' page, press once to scroll down: 1) Scroll down to select the next column
2) Decrease the value in the settings bar
- In **IR mode** - The main value is displayed as the temperature detected by thermal imaging
- d) In Measurement mode (under IR mode), press once to switch to the next palette (On 6 palette)
- In **Moisture mode** - The main value is displayed as the current value of moisture detection (only MS-WITC3MT could use 'RST' / 'RPT' function) :
- e) In measurement mode (under Moisture mode), press once to 'CAL' (calibrate) the Tracer of the moisture function:
 - 1) In '**RST**' function press once to 'CAL' the measured reading to 'Zero'. (View page - 36 - for details)
 - 2) In '**RPT**' function press once to 'CAL' the measured reading to 'Zero'. (View page - 37 - for details)
- ⑤ '▲' (up) button:
- a) In measurement mode, press once to switch to the previous palette (On 6 palette)
 - b) On the 'SETTING' page, press once to scroll up: 1) Scroll up to select the previous column
2) Increase the value in the settings column
 - c) On the 'SD-CARD' page : 1) Press once to scroll down to view pictures
2) In the 'DELETE ?' column, press once to select '▲YES' to delete the pictures on the selected micro SD card

- ⑥ '▶' (Right) button :
- a) Press once to turn on/off the flashlight
 - b) Long press for 3 seconds to turn on/off the Wi-Fi Wireless connectivity function
 - c) On the 'SETTING' page, press once to enter the 'Setting Mode'
 - d) On the 'SD-CARD' page, click once to switch 'Save screen format' to 'Large view mode'
- ⑦ Distance measurement sensor
- a) Sensor to object distance measurement (1cm ~ 320cm)
 - b) Used as a distance meter, farther away from measured object, the larger object required
- ⑧ Thermal image sensor
- ⑨ Flashlights / torches:
- a) Use as a flashlight, turn on during detection
 - b) Immediately lights up when the 'bmp' automatically shoots in alarm mode
- ⑩ Visual camera
- ⑪ Power-on indicator LED : lights up after the power is turned on, goes off after the power is turned off.
- ⑫ Wi-Fi wireless connection function - power on/off and mode switch
- ⑬ Type-C USB charging input port, 5V DC / 2A
- ⑭ Charging indicator LED : lights up when charging, turns off when fully charged, flashes when using USB power supply after fully charged
- ⑮ Micro SD card slot

The following features/accessories (⑩) are only in MS-WITC3 / MS-WITC3M

⑬ Protective cover of MS-WITC3 / MS-WITC3M

The following features/accessories (⑰ to ⑳) are only in MS-WITC3M / MS-WITC3MT

⑰ Pin type moisture test sensing probe (replaceable)

⑱ Remote Pin type moisture sensor

⑲ Replaceable Pins

⑳ Remote Pin sensor protective cover

㉑ Remote Pin sensor connector

㉒ Socket for Remote Pin sensor

The following features/accessories (㉓ and ㉔) are only in MS-WITC3MT

㉓ Protective cover of MS-WITC3MT

㉔ Spherical sensor (connected to the front of MS-WITC3MT when in use 'RPT' function)

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5. Safety informations

Please read the manual thoroughly before using this product !

WARNING !

A improper operation pose hazards to the user.
To avoid personal injury, follow these guidelines.

- If the Tracer is abnormal, don't use it.
- Don't submerge it in water.
- Don't put the thermal image camera on or near to objects with high temperature.
- Don't operate it in the ambient of explosive gas, vapor, dust.

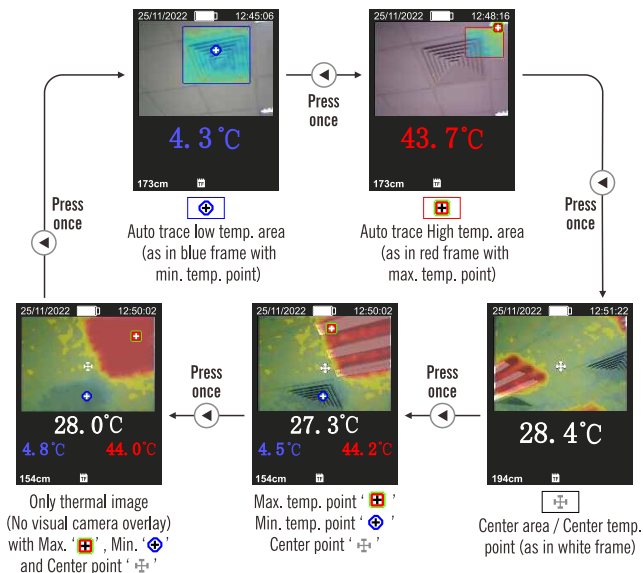
6. Care and Handling

- Keep the instrument dry. If it gets wet, dry it immediately.
- Use and store the instrument in normal room temperature. Temperature extremes can shorten the life of the electronic parts and distort or melt plastic parts.
- Handle the instrument gently and carefully. Dropping it can damage the electronic parts or case.
- Keep the instrument clean, wipe the case occasionally with a cloth.
- Do not use chemicals, cleaning solvents, or detergents.

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2) Select between 5 types of temperature display modes '◀' ③

Press once left '◀' button to select different temperature display mode, such as below.



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7. How to Use Buttons

A) 'PWR' button ②

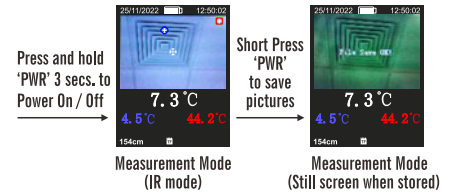
- Press and hold for 3 secs. to Power On / Off

In **IR mode** :

- Press once to capture picture and save into micro SD card ('bmp' mode)

In **Moisture mode (MS-WITC3M / MS-WITC3MT) :**

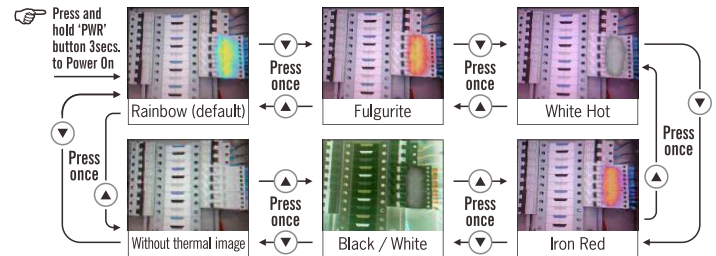
- Press once to freeze/hold the current measurement reading and screen. After 2 seconds, the screen will be captured and stored in the micro SD card.



B) Measurement mode ('◀' ③ / '▼' ④ / '▲' ⑤)

1) Select between six palettes '▼' ④ / '▲' ⑤

Press once UP '▲' or DOWN '▼' button to select among six palettes as below.

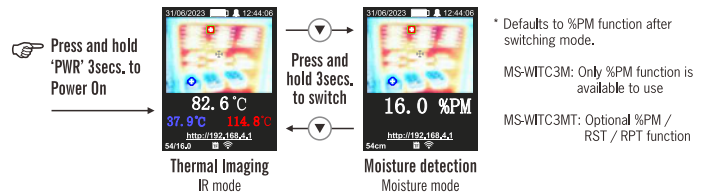


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3) Select between IR mode and Moisture mode '▼' ④

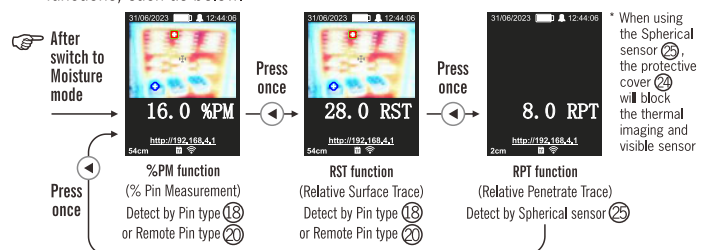
IR mode (The main value is displayed as the temperature detected by thermal imaging) or **Moisture mode** (The main value is displayed as the current value of moisture detection) (Only MS-WITC3M/MS-WITC3MT could switch to Moisture mode, MS-WITC3 is fixed to IR mode)

Press and hold down '▼' button for 3 seconds to switch from '**IR mode**' to '**Moisture mode**' or '**Moisture mode**' to '**IR mode**'



4) In Moisture mode, 3 moisture meas. function selectable (Only MS-WITC3MT)

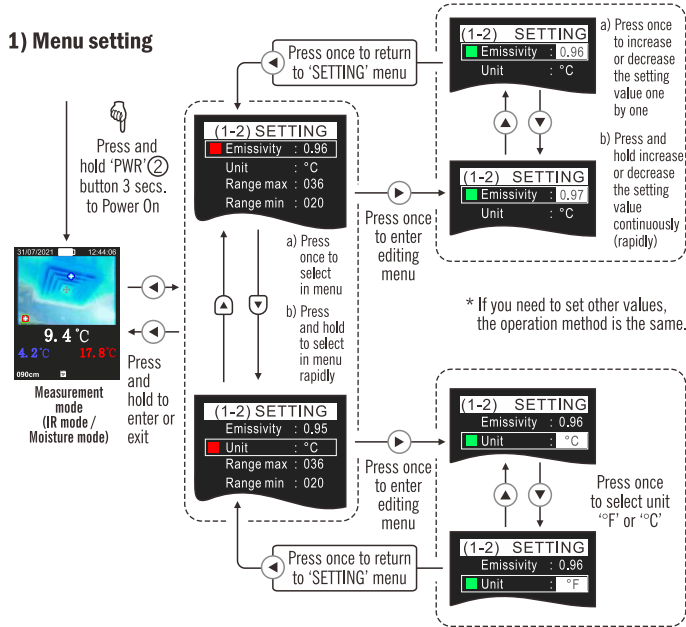
Press once left '◀' button to switch between the 3 moisture measurement functions, such as below.



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C) 'SETTING' mode (3) (4) (5) (6)

1) Menu setting



2) Explanation in 'SETTING' menu page

(1-2) SETTING	
Emissivity	: 0.95
Unit	: °C
Range max	: 036
Range min	: 020
Range auto	: Off
Beep	: On
WeekDay	: Thu
Day	: 10
Month	: 06
Year	: 2022
Hour	: 16
Minute	: 48
Second	: 33

Emissivity: Set the emissivity from 0.00 ↔ 0.99

Unit: Set temperature unit °C or °F

Range max: Set the high temp. alarm or record from -9 ↔ 120 (°C/°F)

Range min: Set the low temp. alarm or record from -10 ↔ 119 (°C/°F)

Range auto: Normally 'On'. 'Off' when manual setting high / low temp. alarm or alarm with data logging

Beep: Turn on / off buzzer for alarm

WeekDay: Set weekday from MON. ↔ SUN.

Day: Set date from 01 ↔ 31

Month: Set month from 01 ↔ 12

Year: Set year from 2020 ↔ 2070

Hour: Set hour from 00 ↔ 23

Minute: Set minute 00 ↔ 59

Second: Set second 00 ↔ 59

Hori-Flip: Set horizontal flip on ↔ off

(1-2) SETTING Menu Page 1

(2-2) SETTING	
Hori-Flip	: Off
Camera x	: 058
Camera y	: 032
Calibration	: 000
Threshold	: 1.0
File format	: csv
Alm/Rec	: Off
AutoCapture	: Off

Camera x: Adjust the horizontal coordinates of the overlap image (visible image + thermal image), adjustable range from 000 to 159

Camera y: Adjust the vertical coordinates of the overlap image (visible image + thermal image), adjustable range from 000 to 119

Calibration: Self Temperature Compensation adjust by manually input from -29.8 to 30.0 for accurate reading when measure at a distance far away from target object

Threshold: Set the sensitivity threshold of Red / Blue palette from 0.5 to 5.0, If activated 'High' / 'Low' temperature tracing mode

File Format: 'bmp': save image in measurement mode and alarm data logging mode
'csv': save data table in measurement mode (by 10 second) and alarm data logging mode

Alm/Rec: Normally 'Off'. Set 'On' to open 'High' / 'Low' temperature alarm data logging mode

AutoCapture: Normally 'Off'. Set 'On' to open Temperature change monitoring mode

(2-2) SETTING Menu Page 2

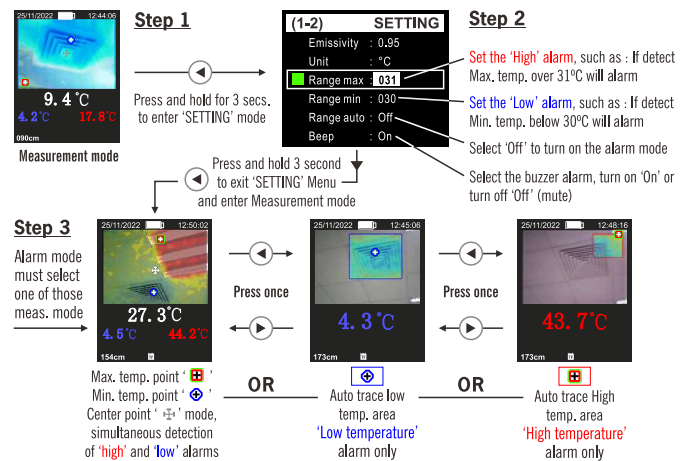
8. Start Measuring

- Hold the Tracer or install on a tripod, point to the object perpendicularly.
- Press and hold the 'PWR' button (2) until 'bi...bi...' buzzer sounds and the Tracer is ON, then release.
- If operating for a long duration, please connect to the type 'C' socket with 5V DC/ 2A power adaptor.



9. How to Set the 'Max.' / 'Min.' / 'Max. and Min.' Temp. Alarm Mode

In the alarm mode, when the detection value of the Tracer is higher than the 'Range max' or lower than the 'Range min', the Tracer will emit a beeping alarm sound. [Only turn on the alarm mode, and the alarm information will not be saved and recorded in the micro SD card.] Here's how to turn it on:

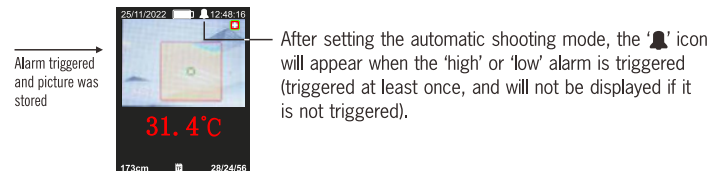


If want to increase or decrease the frequency of palette range changes, you can adjust 'Threshold' the sensitivity threshold on '(2-2) SETTING'

10. How to Set Automatic Capture (bmp) when 'high' or 'Low' Alarm

- The Tracer must be inserted micro SD card (maximum support 32GB)**
- This function (alarm data logging) is based on the function of capture a picture (bmp) of the screen when the 'High' or 'Low' alarm occurs in the alarm mode. When shooting, the Flashlights (9) will lights up and the pictures will be saved in the micro SD card.
- Note: The following steps need to be operated after setting the 'High' or 'Low' alarm.**

Data logging is activated when one of the above 'Alarm' modes is selected.



NOTE:

1. Trigger the alarm according to the measurement mode ('high' alarm uses the high temperature measurement mode, 'low' alarm uses the low temp. mode), and both require the alarm to select the Max., Min. and target/object temp. meas. mode).
2. When the alarm temperature is exceeded, the 'Torch' (9) will light up momentarily.
3. Automatically trace and capture of 'high' or 'low' temperature and store them in the micro SD card every ten seconds (even if multiple alarms are triggered within 10 secs., it will only be recorded once).
4. The Tracer automatically scans / traces the 'Max.' or 'Min.' temperature on any surface/object in the screen, automatically capture and saves 'full screen'.
5. The screen when the automatic shooting triggers the alarm is stored in the micro SD card, which can be viewed and managed in the 'SD-CARD' browser mode, or browsed on the computer through the micro SD card reader.

11. How to Save the Table Data (csv) when 'high' or 'Low' Alarm

The Tracer must be inserted micro SD card (maximum support 32GB)

This function is based on the alarm mode, when the 'high' or 'low' alarm, the triggered data will be recorded on the form (during the form data record is turned on), the data record form (csv) is saved in micro SD card.

Note: The following steps need to be operated after setting the 'High' or 'Low' alarm.

Step 1

Press and hold for 3 secs. to enter 'SETTING' mode

(2-2) SETTING

- Hori-Flip : Off
- Camera x : 088
- Camera y : 044
- Calibration : 0.0
- Threshold : 1.0
- File format : csv
- Alm/Rec : On

Step 2

Press '▲' button several times to go to (2-2) page

Select 'csv' mode
Select 'On' to turn on alarm data logging mode

Press and hold 3 second to exit 'SETTING' Menu and enter Measurement mode

Step 3

Alarm mode must select one of those meas. mode

Max. temp. point: [Icon]
Min. temp. point: [Icon]
Center point: [Icon] mode, simultaneous record 'high' and 'low' alarm

OR Auto trace low temp. area only record 'Low' alarm

OR Auto trace High temp. area only record 'High' alarm

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After selecting one of the above 'Alarm' modes, the activation data logging needs to be turned on manually.

Step 3

Select any meas. mode
This function could use in any mode

Step 4

Press the 'power button' to start record
The '●' icon appears above the thermal image

Step 5

Press the 'power button' to end record
The '●' icon disappears above the thermal image

NOTE :

1. Trigger the alarm according to the measurement mode ('high' alarm uses the high temperature measurement mode, 'low' alarm uses the low temp. mode, and both require the alarm to select the Max., Min. and target/object temp. meas. mode).
2. When the alarm temperature is exceeded, the 'Torch' (🔦) will light up momentarily.
3. The data record is recorded in the 'csv' form that is opened at the time of every 10 secs. , and the 'csv' form is stored in the micro SD card after the recording is stopped manually.
4. Each time **step 4** → **step 5** will store a new 'csv' data table.
5. After the 'File format' is set to 'csv', you cannot press the 'power button' (🔦) to take picture manually. You need to change the 'File format' to 'bmp' for the taking picture function.
5. The 'csv' data table stored in the record cannot be viewed on the Tracer, it needs to be viewed on the PC through a micro SD card reader.

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12. Temp. Change Monitoring Function (record temp. change process)

The Tracer must be inserted micro SD card (maximum support 32GB)

This function is suitable for monitoring the temperature change of the test target. When the temp. of the test target changes by more than 2°C (compared with the temperature at startup), the Tracer will automatically capture a picture and save it to the micro SD card.

Step 1

Press and hold 3 second to enter 'SETTING' Menu

(2-2) SETTING

- Hori-Flip : Off
- Camera x : 058
- AutoCapture: Hot

Step 2

Press '▲' button several times to go to (2-2) page

Select 'Hot' Max. temp. monitoring / 'Cold' Min. temp. monitoring / 'Tgt.' Target / object temp. monitoring

Press and hold 3 second to exit 'SETTING' Menu and enter Measurement mode

Step 3

After exit the 'SETTING' menu, it will automatically enter the selected detection mode (it cannot be switched by the '◀' / '▶' button)

The following uses 'Cold' mode as an example

'Cold' mode [Icon] Monitor the Min. temp. change

'Hot' mode [Icon] Monitor the Max. temp. change

'Tgt.' mode [Icon] Monitor the target / object temp change

Step 4

Press the 'PWR' button to start monitoring

The flashing water drop icon [Icon] indicates that the monitoring function has been turned on, and the temperature at the time of turning on is used as the reference temperature.

Step 5

When trigger monitoring, the water drop icon will change [Icon] and icon will flash

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Step 6 - Case 1 : End monitoring automatically

Capture immediately when the monitoring is triggered, and then capture every 10 seconds until the monitored temp. returns to close to the reference value (that is, the difference between the detected value and the reference value when it is turned on is less than 1°C), it will automatically stop capturing and End monitoring.

When the water drop icon [Icon] stops blinking Means end monitoring automatically

When the temp. returns close to the ref. value (difference is less than 1°C) The water drop icon will become steady on, and the monitoring will stop automatically.

Step 6 - Case 2 : End monitoring manually

If the difference between the detected value and the reference value when it is turned on is greater than or equal to 1°C and does not continue to drop, it will still capture (capture every 10 seconds) and will not stop automatically. To stop, you need to press the 'power button' to manually stop shooting, thus ending the monitoring.

After pressing, the water drop icon disappears, which means that the monitoring has been manually stopped and ended.

Step 7

Exit the temp. change monitoring mode

(2-2) SETTING

- Hori-Flip : Off
- Camera x : 058
- AutoCapture: Off

If you need to exit the temperature change monitoring function, you can turn off and restart the thermal tracer or set 'AutoCapture' to 'Off' in the 'SETTING' mode and then return to the measurement mode. (*Note: Turn off the thermal camera, and then turn it on again, 'AutoCapture' will automatically change to 'Off'. You need to turn it 'ON' manually before each use.)

NOTE :

1. If the sampled reference value is not suitable when the temperature change monitoring function is started, you can first press the 'PWR' button to end the current monitoring mode (when the monitoring is not triggered to automatically end the monitoring), and when a suitable measured value appears during the detection, press the 'power button' to restart the temperature change monitoring function. Photos will not be saved to micro SD if the monitoring function is not triggered during activation.
2. When the temperature difference monitoring is triggered to take pictures, the 'flashlight' (🔦) will light up instantly.
3. Take pictures immediately when the monitoring is triggered, and then save a picture in the micro SD card every 10 seconds.
4. The screen when the temperature difference monitoring is triggered to automatically shoot is stored in the micro SD card, which can be viewed and managed in the SD-CARD browser mode, or browsed on the computer through the micro SD card reader.

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Example of temperature change monitoring function

Use ice water and 'Cold' mode in summer (hot water and 'Hot' mode in winter) to monitor the source of ceiling leaks:

1. Fix the Tracer a tripod, select a suitable location for detection (the probe is 0.5m away from the detection target, and the detection screen covers the leakage range). After setting the 'AutoCapture' to 'Cold', pour ice cubes on the floor.

'AutoCapture' setting 'Cold' will automatic tracing of Min. temp.

Ceiling Stain leakage marks

Pour ice cubes on the floor, Wait for the ice to melt and seep downstairs

2. Wait for the ice water to leak downstairs and create a temperature change with the ceiling. The thermal tracer will automatically take pictures. After stop the monitoring, you can look through the pictures taken to analyze and judge the location / path of the leakage (Min. temp.).

Wait and observe whether the temp. change monitoring icon changes to [Icon] and flashes

When the icon is no longer flashing [Icon], it means that the ice water has been dissolved and the monitoring is stopped

Look through the pictures taken to analyze the source and direction of leakage

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Description table of temperature indicator icon changes

AutoCapture setting	icon display	Detection situation (description of the data interval where the monitored temp. value is located)
'Cold' mode Monitor the Min. temp. change	[Icon]	Display after start monitoring
	[Icon]	2°C below Ref. temp. Ref. temp. - 4°C < Min. temp. ≤ Ref. temp. - 2°C
	[Icon]	4°C below Ref. temp. Min. temp. ≤ Ref. temp. - 4°C
'Hot' mode Monitor the Max. temp. change	[Icon]	Display after start monitoring
	[Icon]	2°C above Ref. temp. Ref. temp. - 4°C ≤ Max. temp. < Ref. temp. - 2°C
	[Icon]	4°C above Ref. temp. Max. temp. ≥ Ref. temp. - 4°C
'Tgt.' mode Monitor the Target object temperature change	[Icon]	Display after start monitoring
	[Icon]	2°C below Ref. temp. Ref. temp. - 4°C < Target temp. ≤ Ref. temp. - 2°C
	[Icon]	4°C below Ref. temp. Target temp. ≤ Ref. temp. - 4°C
	[Icon]	2°C above Ref. temp. Ref. temp. + 2°C ≤ Target temp. < Ref. temp. + 4°C
	[Icon]	4°C above Ref. temp. Target temp. ≥ Ref. temp. + 4°C

The following icons only appear when the automatic stop monitoring is triggered (after the temp. monitoring function is triggered, the monitoring temp. returns to close to the reference value)

'Cold' / 'Tgt.'	[Icon]	bright	within 1°C of the reference temperature (Ref. temp.)	Ref. temp. - 1°C < Min temp. / Target temp.
'Hot' / 'Tgt.'	[Icon]	bright		Ref. temp. + 1°C > Max temp. / Target temp.

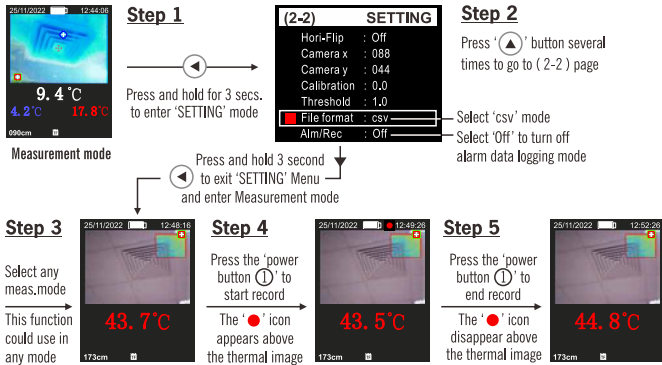
* The 'reference temperature (Ref. temp.)' in the above table is when the 'power button' is pressed to turn on the temperature change monitoring mode : **Min. temperature value (when using 'Cold' mode) / Max. temperature value (when using 'Hot' mode) / Target object temperature value (when using 'Tgt.' mode).**

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13. How to use the 'csv' data recording function

The Tracer must be inserted micro SD card (maximum support 32GB)

This function is to record the test data such as the 'Center point' temperature value, 'min.' temperature value, and 'max.' temperature value in the Tracer screen on a file every ten seconds. And save the file (csv) to micro SD card.

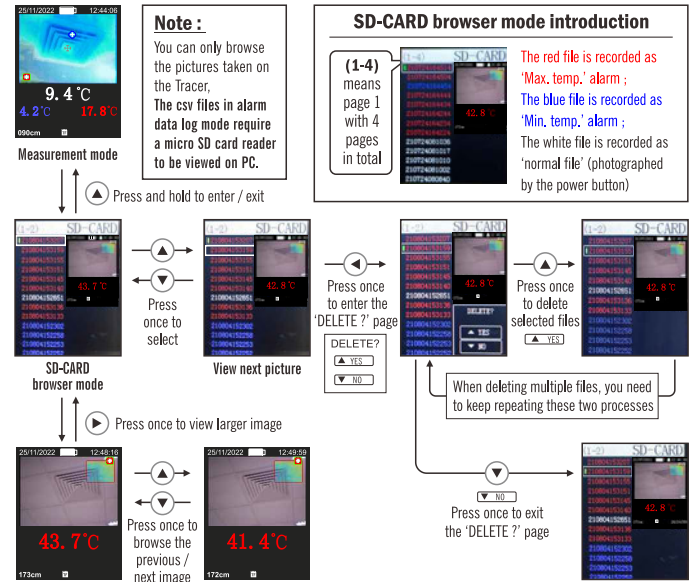


NOTE :

1. The data record is recorded in the 'csv' form that is opened at the time of every 10 seconds, and the 'csv' form is stored in the micro SD card after the recording is stopped.
2. Each time **step 4** → **step 5** will store a new 'csv' data table.
3. The 'csv' data table stored in the record cannot be viewed on the thermal tracer, it needs to be viewed on the PC through a micro SD card reader.

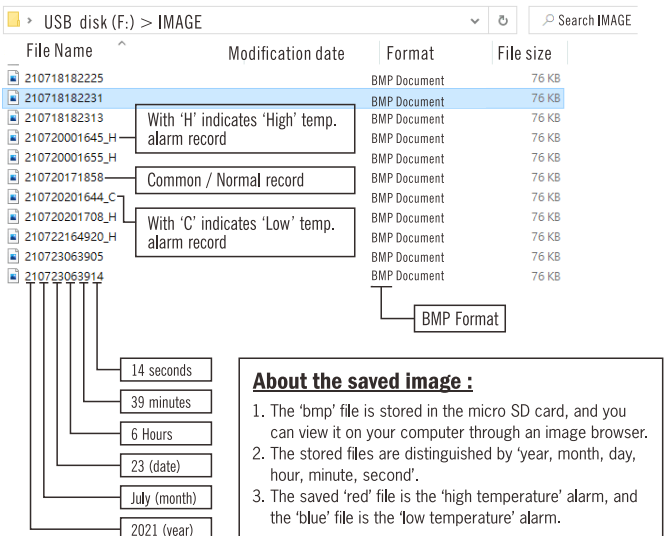
14. Files management (browse picture on the Tracer)

How to delete captured pictures and view larger pictures

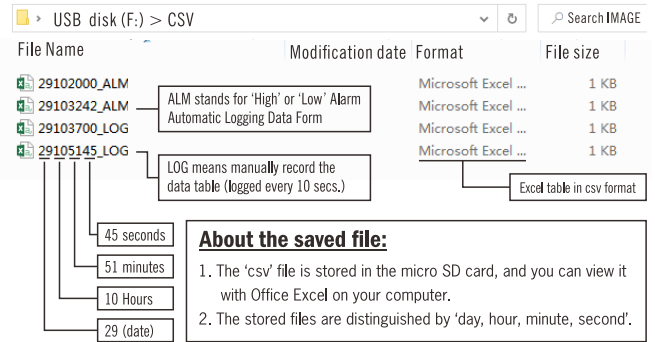


15. Browse the saved images or data on the computer through the micro SD card reader

1) Browse pictures taken manually and those automatically taken when at 'high' or 'low' alarm is triggered



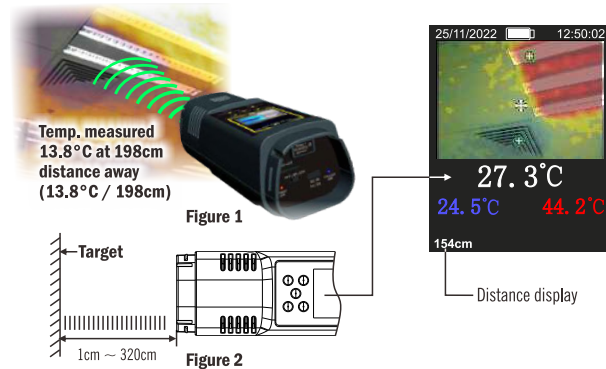
2) Browse the recorded 'CSV Excel' data table



3) Description of the data column of the recorded 'csv' data table

Record date	Record time	Object distance	maximum temperature	minimum temperature	Target/object temperature	Environment temperature	Environment humidity	Alarm mode or not
Date	Time	ToF(CM)	Max.To(°C)	Min.To(°C)	Cen.To(°C)	Air.Ta(°C)	Air.Rh(%)	Alarm
2022/8/29	10:37:10	39	29.3	26.7	27.4	32.4	54.1	
2022/8/29	10:37:20	24	29.6	26.5	28.3	32.7	53.6	
2022/8/29	10:37:30	22	29.4	26.5	28.5	32.6	54	
2022/8/29	10:37:40	8	30.2	27.3	28.9	32.6	53.7	
2022/8/29	10:33:10	111	38.3	26.6	34.2	33.2	54.4	A.H
2022/8/29	10:33:26	32	68.2	27.5	31.4	33.2	54.4	A.H

16. Display of the target distance measurement



Measuring temperature with distance information :

- Distance measurement range: 1cm ~ 320cm. The larger the measurement target (object), the more accurate the readings can be measured at a greater distance. If the target (object) is too small, the reference object may not be recognized.
- To evaluate the difference in distance from the measured object to the sensor, we can look at the reading in 'cm' on the lower left corner.
- As shown in **Figure 1**, the measured temperature reading is 13.8°C and the distance from the object to the sensor is 198cm, so it can be concluded that the temperature measured at a distance of 198cm is 13.8°C.
- As shown in **Figure 2**, we can also use this meter as a distance measurement.

17. How to use Wi-Fi Wireless Connectivity function, MS-WITC3 / MS-WITC3M / MS-WITC3MT (Tracer) connect with your Smartphone/Tablet/PC

Factory default set at AP 'Host' mode. Recommend to use AP 'Host' mode to connect and familiarize yourself with the operation for first use.

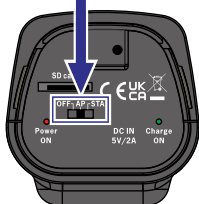
AP 'Host' mode (Wi-Fi direct mode)

Tracer will generate a Wi-Fi hotspot, and the device will connect to the hotspot.

Max distance to connection < 15 meters

Wi-Fi Direct

Shift Off / STA / AP mode by the toggle switch



Slide left **Slide right**

One Tracer can only be connected and operated with one smart device or PC at the same time.

STA 'Station' mode (WLAN mode)


Through a Router or Smartphone hotspot as an intermediary, Tracer and the device are connected to the same WLAN.

WLAN

connect in network coverage

Generate a connection via AP 'Host' mode

- Long press the '▶' (6) button to turn on Wi-Fi, the screen will display connection: 192.168.4.1 (fixed link, will not change), and then operate on the smartphone.



After power on, It shows that the Wi-Fi function is turned on
- Turn on the Smartphone Wi-Fi, find and connect MS-WITC3-XXXXXX (Your MS-WITC3 own fixed Wi-Fi hotspot), and enter the factory default Wi-Fi password (12345678). After connecting, the phone may prompt up that there is no network connection, please keep it connected.

* Some Smartphone need to turn off mobile network to connect, please turn off manually when you could not connect.

Fixed Wi-Fi connection information in AP 'Host' mode
 name: MS-WITC3-XXXXXX
 password: 12345678
 *XXXXXX is an independent number please ignore

→

MS-WITC3-XXXXXX
 12345678
 Cancel **Connect**

Smartphone interface of settings connect to Wi-Fi

Generate a connection via STA 'Station' mode

- Turn on the Smartphone personal hotspot and enter the setting Wi-Fi hotspot device (MS-WITC3) and password (12345678) preset by the Tracer at the factory.

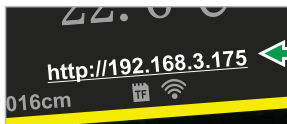
* In the initially STA 'Station' mode, it will automatically connect to the Wi-Fi hotspot named MS-WITC3.

Wi-Fi hotspot connection information in STA 'Station' mode
 name: MS-WITC3
 password: 12345678

→

Set up Wi-Fi hotspot
 Network name MS-WITC8C
 Password 12345678

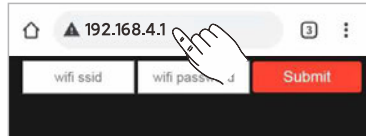
Smartphone interface of setting Wi-Fi hotspot
- Turn on your Tracer, it will automatically connect with the Smartphone when the hotspot turned on. After a successful connection, the screen will display connection: 192.168.XXX.XXX (varies according to the connected device).

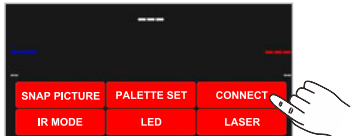


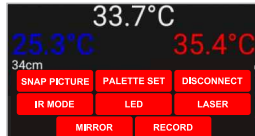
Displayed after connection

After one of the above connections, you may start connecting through Smartphone or PC

- Open Chrome (Android / Apple) or Safari (Apple) on your Smartphone and enter the link displayed by the Tracer : AP 'Host' mode as 192.168.4.1 / STA 'Station' mode as 192.168.XXX.XXX.


- After open the page, click the Connect button to connect with the Tracer. After connection, you can view the current image displayed sending through Tracer to the device.


- The device can also remote instruct related operations to the Tracer, such as saving photos, select color palettes, select measurement modes, turning on/off the flashlight, data recording etc.



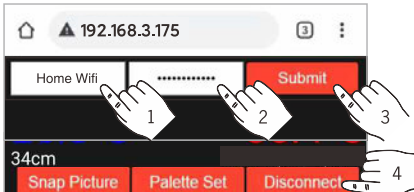
STA 'Station' mode (WLAN mode) How to modify the Wi-Fi connection information built-in to your Tracer ?

- After completing the establishment and entering the browsing, if you do not use the smartphone Wi-Fi hotspot, use the Wi-Fi network of the home/office's router and view the thermal imaging screen on the device connected to the same network.

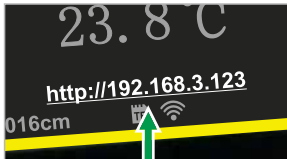
Router connect to :
 name: Home Wifi
 password: 12345678
 Modify the name and password for the router

→

Home Wifi 88888888 **Submit**
- In the browser interface, you could see that there are two columns for inputting information (connected Wi-Fi information) at the top of the thermal image screen. After modifying, click the Submit button first, and then click disconnect button.


- Restart your Tracer. Open Google Chrome or Apple Safari and access the newly generated link address of your Tracer to view and operate.

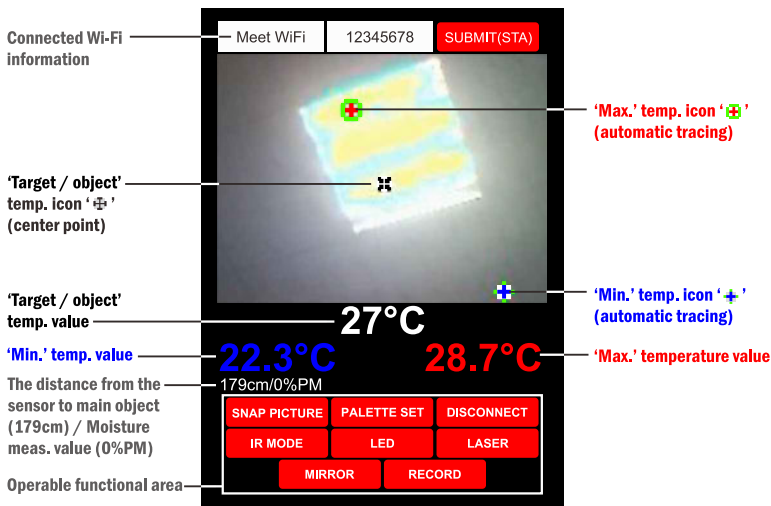
* Device (Smartphone / PC) must connect with the same WLAN.



Newly generated link

18. How to use the functions of Wi-Fi connectivity through Smartphone/PC

In IR mode : Display interface introduction and Functions available on Chrome / Apple Safari (browser side)



SNAP PICTURE
Press once to snap picture (current meas. screen) and store it in micro SD card.

PALETTE SET
Press once to switch palette (between six palettes).

IR MODE
Press once to switch measurement mode (between five measurement modes).

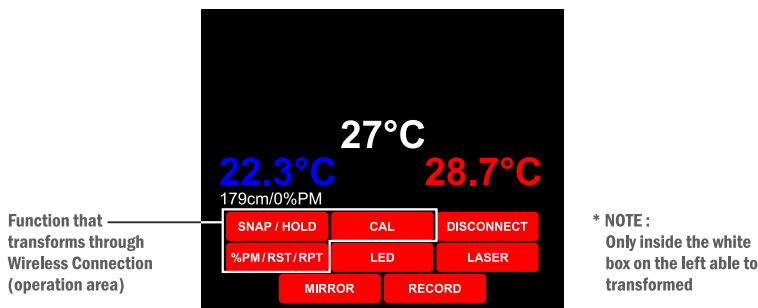
MIRROR
Press once to horizontal flip the meas. image (Set 'ON' / 'OFF' of 'Hori-Flip' in Setting menu).

LED
Press once to open / close torches.

DISCONNECT / CONNECT
Disconnect your Tracer or Connect.

RECORD / SAVE
Press once to start data recording, the icon will display 'SAVE', it means your Tracer is recording data **once a second**. And then press once the icon 'SAVE' will stop data recording and store the data on your Smartphone / PC. Chrome browser will Automatic download an 'txt' file in your Smartphone / PC, you could find in 'C:\Users\Administrator\Documents\Downloads' (Addresses normally stored on your PC).
*Note: data recording in this way will not saved in the Micro SD card of your Tracer.

In Moisture mode : Display interface introduction and Functions available on Chrome / Apple Safari (browser side)



MS-WITC3M / MS-WITC3MT After switching the 'IR mode' to 'Moisture mode' by long pressing the '▼' ④ button, the operating area functions of the browser will also change (as shown on the left)
*Note: Switching between 'IR Mode' and 'Moisture Mode' can only be switched from the Tracer, not the browser (on the device connected to the wireless device).

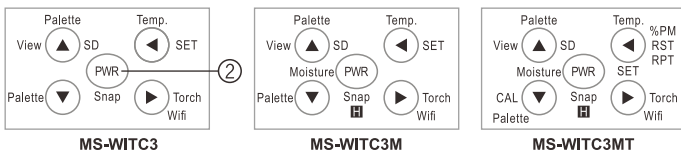
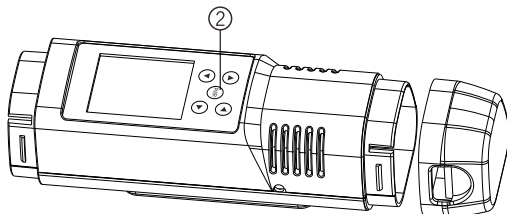
SNAP / HOLD
Press once to freeze/lock the current measurement reading and screen, capture and store in micro SD card after 2 secs.

CAL
Press once to calibrate 'CAL' (needs to be used in 'RST' or 'RPT' function).
*Only for MS-WITC3MT

%PM/RST/RPT
Press once to switch between three Moisture measurement modes.
*Only for MS-WITC3MT

19. • Auto trace 'Highest / lowest' temp. • Measure moisture • Trace to find 'Wetter' (moisture)

MS-WITC3 / M / MT : 'Highest' / 'Lowest' Temperature location



- Press and hold the 'PWR' button ② to turn on the Tracer and automatically scan and trace the 'Highest' / 'Lowest' surface temperature of the object through the infrared sensor.



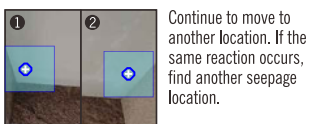
Measure the temperature of the water seepage area through a thermal sensor, compare the temperature differences in different areas such as walls / ceilings / floors, etc., and automatically trace the location of water seepage (highest / lowest temperature location).



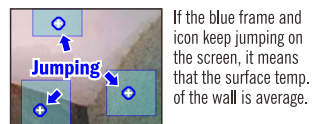
Face the infrared sensor towards the wall / ceiling / floor about 0.5M to 2M (depending on the detection position)



The icon in the blue frame stops moving to indicate that the location of the 'lowest' temp. (lowest moisture) has been found.



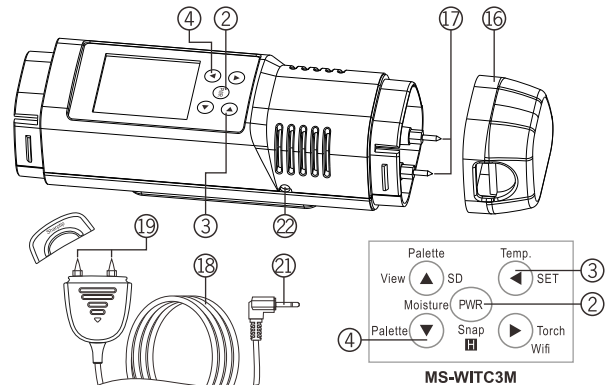
Continue to move to another location. If the same reaction occurs, find another seepage location.



If the blue frame and icon keep jumping on the screen, it means that the surface temp. of the wall is average.

* Note: 1) Select the 'Blue' mode for low temperature, and you can look for it when low temperature moisture' leaks out.
2) When 'high temperature moisture' leaks, please select 'Red' mode.

MS-WITC3M : Moisture detection : %PM (Pin Measurement)



- Press and hold the 'PWR' button ②. After turning on the Tracer, press and hold the down '▼' ④ button for 3 seconds to switch from 'IR mode' to 'Moisture Mode'.

- Remove the protective cover ⑬ and then contact the Pins with surface of the object for measurement, or insert the Remote Pin type moisture adapter ⑱ (connection plug ⑳) into the socket ㉑ and use the probe ⑲ to detect between narrow gaps.



Use the Tracer's Pin type ⑰ probe to measure the surface moisture of concrete etc.



Measure moisture leakage through narrow gaps through the adapter ⑱

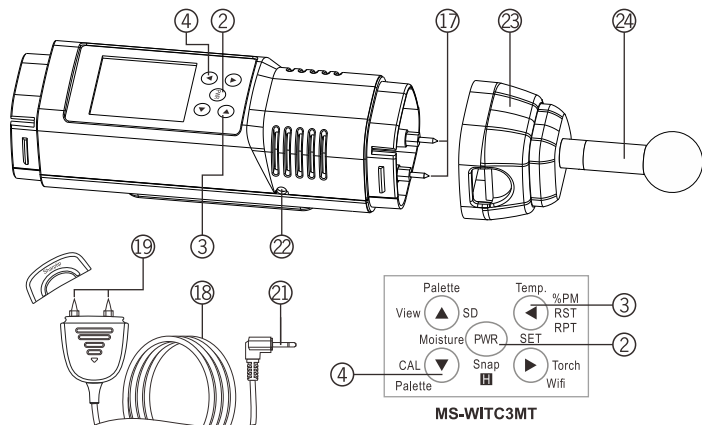


Measure and trace moisture leaks where hard-to-reach location via Wi-Fi Wireless Connectivity function

- Higher the reading measured by the probe, thus higher the moisture content of the wall/ceiling/floor indicates.
- The following data can be used as a reference :
a) **Normal** - < 20.0%
b) **Slightly seepage** - 21.0 ~ 34.0%
c) **Obviously seepage** - > 35.0% ~ 79.0%
d) **Under high risk** - > 80.0%

MS-WITC3MT : Moisture detection : %PM / RST / RPT Function

- a) **%PM (Pin measurement)**, use Pin type sensor (17/19) to measure moisture.
- b) **RST (Relative Surface Trace)**, use Pin type sensor (17/19) to detect, compare and trace 'wetter' moisture content on the building materials.
- c) **RPT (Relative Penetrate Trace)**, use spherical sensors (24) to penetrate sense, compare and trace 'wetter' moisture content under the tiles / marble etc.



- Press and hold the ② 'PWR' button. After turning on the Tracer, press and hold the down '▼' ④ button for 3 seconds to switch from 'IR mode' to 'Moisture Mode'.

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- b) **RST, Relative Surface Trace**, applying MEET's RST technology, using Pin type probes (17/19) to find and trace 'wetter moisture' locations on a wide area on concrete surfaces, it is necessary to use 'CAL (Calibration, clear the reading)' method to find 'wetter moisture' locations step by step from the starting location or reference moisture location approach closer to the 'source of water / seepage' can be found more accurately.



Use 'RST' function to locate 'wetter' moisture leakage locations on concrete walls

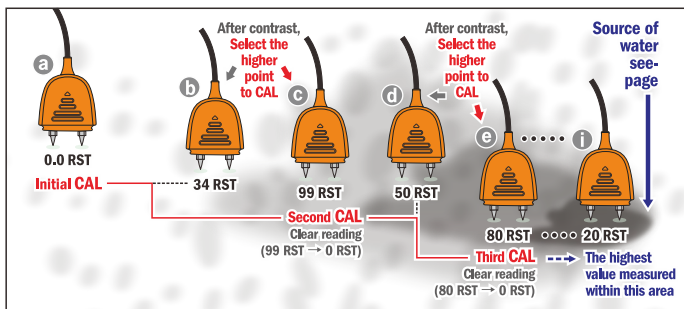
Using surface moisture as a comparison to find where it is 'wetter'



Measure and trace moisture leaks where hard-to-reach location via Wi-Fi Wireless Connectivity function

How to find and trace 'Wetter' moisture locations on concrete surfaces?

- 1) To enter Moisture Mode, press and hold the down '▼' ④ for 3 secs. to enter %PM function, then press the left '◀' ③ once to enter RST function.



- 2) At the starting point 'a' (detection starting point or reference point), fully contact the Pin type sensor 19 with the concrete surface, and then press once the down '▼' ④ button to 'CAL' (Calibration, clear reading), '0.0 RST' will appear on screen (the reading is clear to zero). This is used as a basis to detect moisture value according to the new sensitivity, after then move the Pin type sensor 19 up / down / left / right until a reading (moisture measurement value) appears.
- 3) For example, at the 'b' point display '34 RST' and the 'c' point displays '99 RST'. Stay at the point where the 'relatively higher reading' c is obtained after comparison, and then press once the down '▼' ④ button for the second 'CAL' to clear the reading (0.0 RST). After then, use the new sensitivity of the Tracer to detect the 'Wetter point'.
- 4) According to the new sensitivity of the second 'CAL', detect the 'd' point display '50 RST', and the 'e' point displays '80 RST'. Just like the example in step 3), perform the third 'CAL' in the relatively higher reading 'e', get the newer sensitivity to the next detect.
- 5) After performing 'CAL' multiple times of the ways like step 3) and step 4), the 'relative max. reading' could be traced. If the 'f' point is only '20 RST', but no other location has a higher reading than this point f, so the location closest to the 'Source of water seepage' has been found.
- 6) If click the 'f' point closest to the 'Source of water seepage' and press once the down '▼' ④ button 'CAL' again. At this time, there will be no reading or even very low reading in the surrounding area, which further confirms that the location closest to the 'Source of water seepage' has been found.

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- After switching to 'Moisture Mode' function entered to %PM (Pin measurement) mode.
- Press the left '◀' ③ button, shift to the %PM → RST → RPT → %PM mode.
- Before switching to 'RST' or 'RPT' function, the screen will display 'CAL...' for a short period and then switch to the related 'RST' or 'RPT' function.
- Remove the protective cover 23 and then contact the Pins with surface of the object for measurement, or insert the Remote Pin type moisture adapter 18 (connection plug 21 into the socket 22) and use the probe 19 to detect between narrow gaps.

a) %PM (Pin measurement) Pin type sensor measure moisture on concrete surface



Use the Tracer's Pin type 17 probe to measure the surface moisture of concrete etc.



Measure moisture leakage through the adapter 18



Measure and trace moisture leaks where hard-to-reach location via Wi-Fi Wireless Connectivity function

- Higher the reading measured by the probe, thus higher the moisture content of the wall/ceiling/floor indicates.
- The following data can be used as a reference :
 - a) **Normal** - < 20.0%
 - b) **Slightly seepage** - 21.0 ~ 34.0%
 - c) **Obviously seepage** - > 35.0% ~ 79.0%
 - d) **Under high risk** - > 80.0%

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- c) **RPT, Relative Penetrate Trace**, applying MEET's RPT technology, using the Spherical sensor 24 to detect and trace 'wetter' moisture location on a wide range of concrete / marble / ceramic tile objects, step by step from the starting point or reference moisture location using 'CAL (Calibration, clear reading)' method to find the 'wetter moisture' location approach closer to the 'source of water / seepage' can be found more accurately.



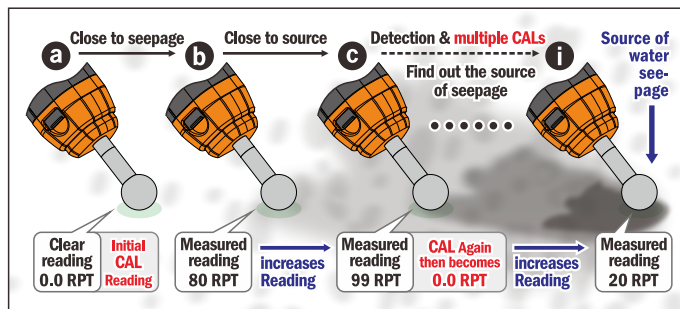
Use 'RPT' function to locate 'wetter' moisture leakage locations under tiles / marble



Measure and trace moisture leaks where hard-to-reach location via Wi-Fi Wireless Connectivity function

How to find and trace 'Wetter' moisture locations on the bottom of concrete / ceiling / tiles?

- 1) To enter Moisture Mode, first press and hold the down '▼' ④ for 3 secs. to enter %PM function, then press the left '◀' ③ twice to enter RPT function.



- 2) At the starting point 'a' (detection starting point or reference point), fully contact the Spherical sensor 24 with the concrete / marble / ceramic tile, and then press once the down '▼' ④ button to 'CAL' (Calibration, clear reading), '0.0 RPT' will appear on screen (the reading is clear to zero). This is used as a basis to detect moisture value according to the new sensitivity, after then move the Spherical sensor 24 up / down / left / right until a new reading (moisture measurement value) appears.
- 3) For example, at the 'b' point it is '80 RPT'; further up, the 'c' point displays '99 RPT'. Each time the 'relative maximum reading' is detected, press the down '▼' ④ button 'CAL' once to clear the reading, and then find a new 'relative maximum reading' again, or when the reading is very small, such as the 'f' point is only '20 RPT' and there is no other location with a higher reading than this point, the closest 'Source of water seepage' has been found on this area.
- 4) Perform 'CAL' operations multiple times to find the location of the 'water seepage source' more accurately.

NOTE :

- Keep the Spherical sensor 24 in full and smooth contact with the surface, such as concrete / marble / tiles, during each test.
- During each 'CAL...' process, the position where you hold the Tracer must be consistent.
- Try to keep and hold the Tracer in the same position and manner during the measurement process.

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