FLUKE®

972A/972B

Temperature Humidity Meter

Users Manual

4/2023 Rev. 2 1/24 (English)

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Introduction

The 972A/972B Temperature Humidity Meter (the "Product" or "Meter") is a battery-powered temperature and relative humidity measurement meter.

The Meter features:

- Temperature and humidity measurement
- Optional built-in and external sensors.
- 99 sets of stored data (972B only)
- Dew point and wet bulb temperature (972B only)

How to Contact Fluke

Fluke Corporation operates worldwide. For local contact information, go to our website: cn.fluke.com (Chinese) or www.fluke.com (English)

To register your product, view, print, or download the latest manual or manual supplement, go to our website.

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Safety Information

General Safety Information is in the printed Safety Information document that ships with the Product and at www.fluke.com. More specific safety information is listed where applicable.
A **Warning** identifies conditions and procedures that are dangerous to the user. A **Caution** identifies conditions and procedures that can cause damage to the Product or the equipment under test.

⚠ Caution

For reliable operation of the Product:

- **When moving the meter from one extreme temperature/humidity environment to another, allow some time for the meter to stabilize.**
- **Do not touch or place the Product in an environment that is acidic or alkaline (such as but not limited to: ketene, acetone, methanol, ethanol, isopropanol, toluene, formaldehyde, benzene, xylene, hydrogen peroxide, glutaraldehyde, sodium hypochlorite, hydrogen chloride, sulfuric acid, nitric acid, ammonia, cleaning solution, detergent, or in environments with irritating odors), as they may cause offset in the humidity measurement of the sensor.**
- **Do not store in packaging with irritating odors, for example, leather, textiles, static bags, as they can cause an offset in the humidity measurement of the sensor.**

- **Do not place the Product in an environment with a humidity of less than 20 % RH or greater than 80 % RH for more than 48 hours. Long term extreme humidity conditions can cause an offset in the humidity measurement of the sensor.**
- **If the sensor does not meet the humidity specifications, the sensor might be contaminated with organic volatile gases or offset due to long-term exposure to environments with extremely dry humidity (less than 20 % RH) or extremely high humidity (greater than 80 % RH).**
- **If contaminated or exposed to extreme high humidity for a long time, you must bake and rehydrate the sensor. To bake: place in temperature greater than 60 °C but less than 70 °C, relative humidity less than 5 % RH, for 24 hours.**
- **If the offset is due to long-term exposure to extremely dry environments, rehydrate the sensor. To rehydrate: place in 20 °C to 30 °C, relative humidity >74 % RH, for 48 hours.**

Product Familiarization

The manual explains features for multiple models. Because models have different features, not all of the information in the manual may apply to your Product. Understand the features of your Meter by using *Table 3*.

Standard Packaging

To prevent damage during shipment, the Product is shipped in a specially designed package. Please check the Product carefully and inform the carrier of any damage.

When unpacking the Product, please check the standard equipment listed in *Table 2* and other ordered parts listed on the packing list. If there is any shortage of parts, please inform the nearest Fluke Technical Service Center or the Service Center in place of purchase.

If you need to reship the Product, please use the original package. If the original package is not available, a new package can be ordered from Fluke according to the Product's model.

Figure 1 and *Table 2* list the standard items that comes with the Product.

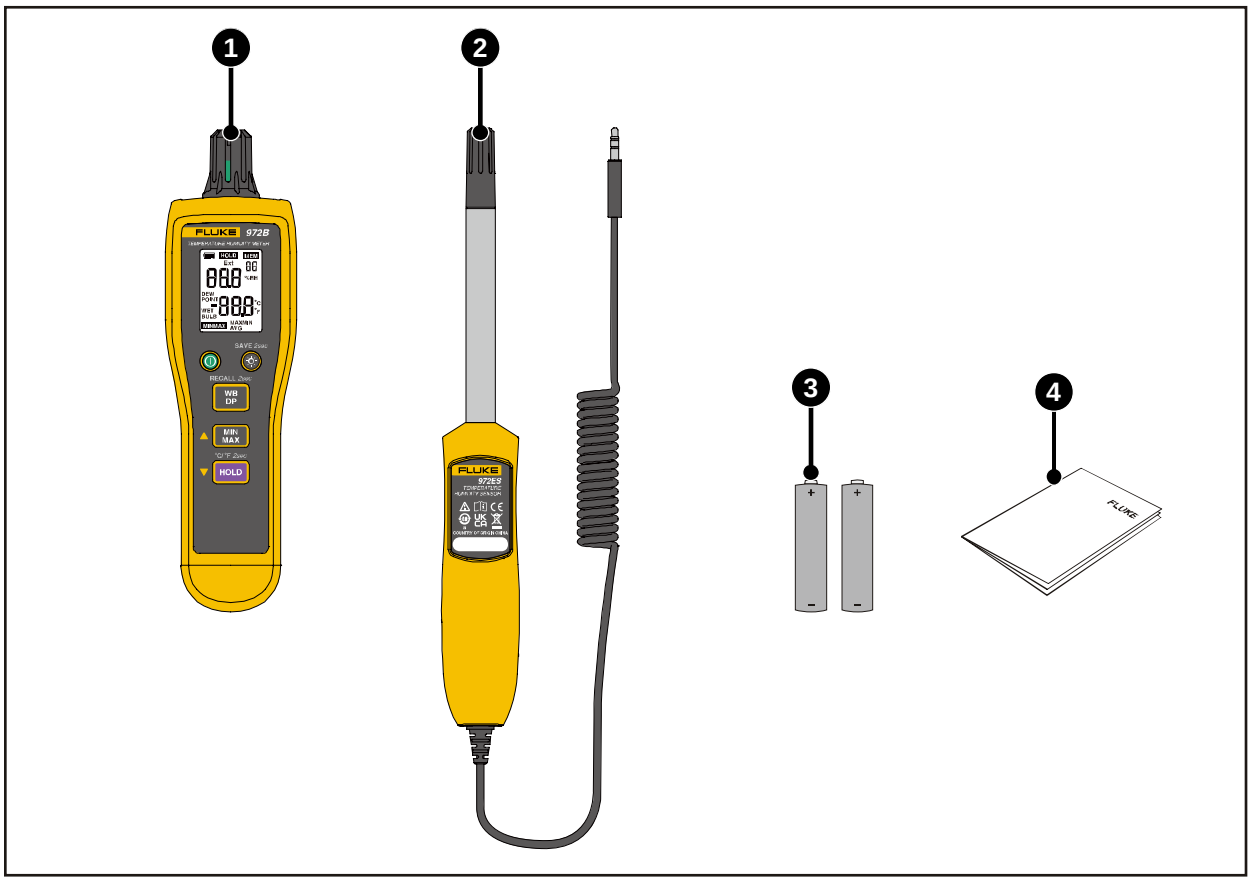

Figure 1. Standard equipment

Table 1. Standard equipment

Item	Description	972A	972B
❶	The Temperature Humidity Meter	1	1
❷	External temperature/humidity sensor (972ES)		1
❸	AAA type battery (installed)	2	2
❹	Documentation, including a Quick Reference Guide, China ROHS, and a Safety Information	1	1

Model Comparison Table

Table 2 lists functional comparison of different models.

Table 2. Model Comparison Table

Features	972A	972B
Built-in sensor	√	√
External sensor		√
Temperature measurement	√	√
Humidity measurement	√	√
Dew point temperature measurement		√
Wet bulb temperature measurement		√
Data storage		√

Operation Features

This section describes the operation panel of the Product and the location and function of the display screen. Please read this section carefully before operating the Product.

The contents of this manual are based on the Model 972B. As different models have different features, some of the information in this manual may not be applicable to your product.

Components and Controls

The components and controls of the Product are shown in _Figure 2_, and _Table 3_ lists the feature and function of each component.

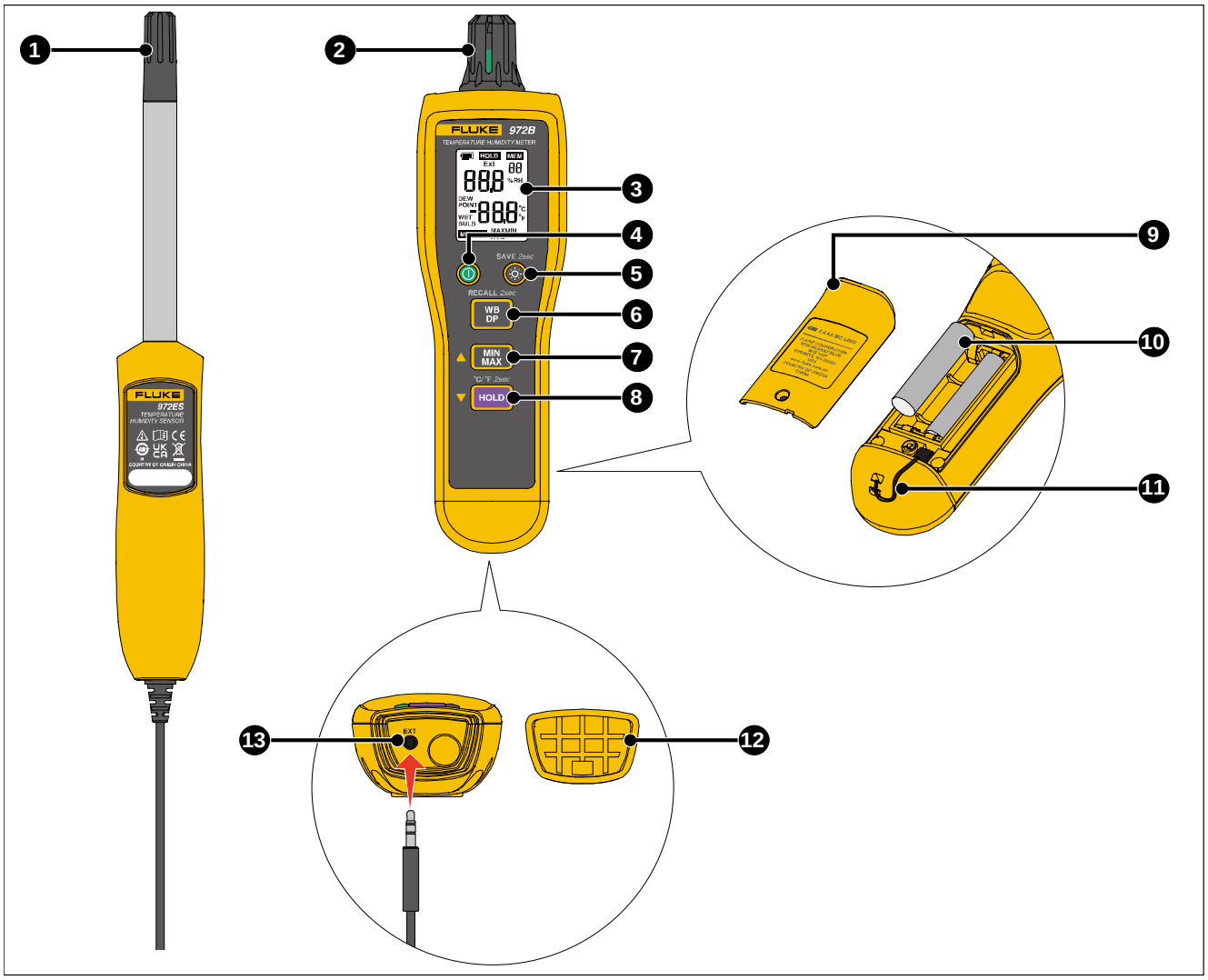

Figure 2. Product Features

Table 3. Product Features

No.	Item	Description
❶	**External sensor**	External temperature/humidity sensor (standard with 972B). See *Use External Sensor* for details.
❷	**Built-in sensor**	Built-in temperature and humidity sensors.
❸	**LCD display**	See *Screen* for details.

No.	Item	Description
❹	**Power button**	 Turn on or off the Meter. - **Power on:** Push and hold for 2 seconds to turn the Meter on. See *Turn On/Off the Meter* for details. - **Power off:** Push briefly to turn the Meter off. See *Turn On/Off the Meter* for details.
❺	Backlight / Save button	 The Meter has a backlight for easy reading of the screen in dim environments. Push to turn on or off the backlight function during measuring. *Note* *If users do not perform any operation within 5 minutes, the backlight will automatically turn off to save battery power.* **SAVE** *2sec*  (972B only) Press and hold for at least 2 seconds during measurement or Hold mode to save the current measurement data to the memory. See *Screen* and *Save Measurement Data* for details.

No.	Item	Description
❻	**Temperature / Humidity button or Wet bulb/dew point button**	T/H **Temperature/Humidity switch button (972A only)** The Meter shows the current measured temperature and humidity by default after it is powered on, and each time the button is pressed briefly, the Meter steps through these screens: - Temperature only - Humidity only - Both temperature and humidity WB DP **Wet bulb / dew point temperature button (972B only)** Each time the button is pressed briefly during measuring or recalling measurement data, the temperature display area on the screen steps through: - Both humidity and wet bulb temperature - Both humidity and dew point temperature - Both temperature and humidity See *Screen* and *Wet Bulb and Dew Point* for details. RECALL *2sec* WB DP (972B only) Press and hold for at least 2 seconds during measurement or hold mode to recall the historical data stored in the Meter. See *Screen* and *Recall* Historical Data for details.

No.	Item	Description
❼	**MAX/MIN button**	MIN MAX When this button is pushed during measurement, the MAX/MIN temperature symbol MINMAX shows on the Meter's screen, indicating that the Meter is in the MAX/MIN/AVE calculation mode. The Meter starts calculating the MAX/MIN temperature and humidity values at the same time. Each time the button is pushed, the screen displays alternately the data obtained from the start of the calculation up to now: - **MAX**: Maximum temperature and humidity value. Maximum dew point and wet bulb temperature (972B only). - **MIN**: Minimum temperature and humidity value. Minimum dew point and wet bulb temperature (972B only). - **AVG**: Average temperature and humidity value. Average dew point and wet bulb temperature (972B only). To exit the MAX/MIN/AVE calculation mode, press and hold for 2 seconds. See *Screen* and *Min/Max/Ave* Values for details. ▲ MIN MAX / ▼ HOLD **Up/down arrow keys** In Recall mode, you can use the up/down arrow keys to select the saved data you want to view. - **Short press:** Increase or decrease the storage location number by 1. - **Long press:** The storage location number increases or decreases rapidly. See *Screen* and *Recall Historical Data* for details.
❽	**Hold key/unit selection key**	HOLD During measurement, briefly push to freeze the current measured temperature and humidity values on the screen, while the Hold symbol HOLD shows. Push the button again to exit Hold mode, The Hold symbol HOLD on the screen disappears, and the measured temperature and humidity values are restored to be updated. ˚C/ ˚F *2sec* HOLD The Meter can display temperature values in: °C and °F. During measurement or Hold mode, push and hold the button for 2 seconds to select °C or °F alternatively. *Note* *The temperature is always shown in °C by default each time the Meter is turned on.* ▲ MIN MAX / ▼ HOLD **Up/down arrow keys**
❾	**Battery Compartment**	See *Battery Replacement* for more details.

No.	Item	Description
⑩	**Batteries**	2 AAA batteries, installed
⑪	**Protective cover lanyard**	The lanyard can effectively prevent losing the interface protective cover. One end of the lanyard is tied to a fixed point on the protective cover, and the other end with a small clip that snaps into a slot inside the battery compartment is threaded through a small groove in the battery compartment cover.
⑫	**Protective cover for external sensor jack**	See *Use External Sensor* for more details.
⑬	**External sensor jack**	See *Use External Sensor* for more details.

Screen

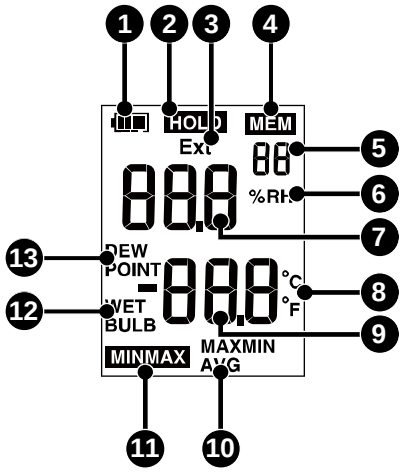

Figure 3. The Meter Screen

Table 4. The Meter Screen

No.	Item	Description
①		**Battery level**
②	HOLD	**Hold** Indicate that the screen data is frozen in hold mode.
③	Ext	**External sensor** Indicated an external sensor is connected. The symbol is not shown on the screen when no external sensor is connected. See *Use External Sensor* for more details.
④	MEM	**Memory** When the symbol flashes on the screen, it indicates that the Meter is in Recall mode. See *Recall Historical Data* for details.

No.	Item	Description
❺	88	**Storage location number** The storage locations are numbered 01 to 99. - In Measurement mode, this number indicates the storage location to be used. - In Recall mode, this number indicates the storage location of the currently viewed data. See *Save Measurement Data* and *Recall Historical Data* for more details.
❻	88.8	**Relative humidity** Current or historical values, minimum, maximum, or average values show depending on the current selection. See *Recall Historical Data* for more details.
❼	-88.8	**Temperature** Current or historical values, minimum, maximum, or average values show depending on the current selection. See *Recall Historical Data* for more details.
❾	DEW POINT	**Dew point temperature symbol** This symbol indicates that the dew point temperature calculated by the Meter is currently shown. See *Wet Bulb and Dew Point Temperatures* for more details.
❿	WET BULB	**Wet bulb temperature symbol** This symbol indicates that the wet bulb temperature calculated by the Meter is currently shown. See *Wet Bulb and Dew Point Temperatures* for more details.
⓫	MINMAX	**MIN/MAX function symbol** Indicate that the Meter is currently in the MAX/MIN/AVE calculation mode. See *Min/Max/Ave Values* for details.
⓬	MAX / MIN / AVG	**MAX/MIN/AVE symbol** When MAX, MIN or AVG is shows, it indicates that the screen shows the maximum, minimum or average temperature and humidity obtained since the start of the calculation. See section *Min/Max/Ave Values* for details.
⓭	°C / °F	**Temperature unit symbol**
⓮	%RH	**Relative humidity symbol**

Use the Meter

Turn On/Off the Meter

Use the Power button on the front panel to turn the Meter on and off.

- **Power on:** Push and hold for 2 seconds, release the button when the screen lights up.
- **Power off:** Briefly push to turn the Meter off.

After powering on and a short self-test, the Meter will automatically display the current temperature and RH measurement.

Note

The Meter will automatically shut down if there is no activity for 20 minutes.

Disable the Auto Power-off Function

To disable the auto power-off function, turn on the product, then simultaneously push and hold and SAVE *2sec* for 5 seconds until the battery level icon flashes, then release the buttons.

The auto-off function is enabled the next time you turn on the Product.

View the Current Measurements

The Meter measures the current temperature and humidity immediately after power on, and the default screen is shown below:

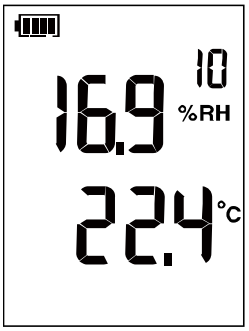

Figure 4. Default Measurement Screen

During measurement, users can select and view different current measurements via buttons on the front panel.

⚠ Caution

When moving from one temperature/humidity extreme to another, allow time for the Meter to stabilize.

Wet Bulb and Dew Point Temperatures (972B Only)

Each time you push WB DP during measurement, the Meter will cycles through these screens:

- **Wet bulb temperature**, WET BULB shows on the screen, as shown on the left in *Figure 5*.
- **Dew point temperature**, DEW POINT shows on the screen, as shown on the right in *Figure 5*.
- Ambient temperature measurement screen

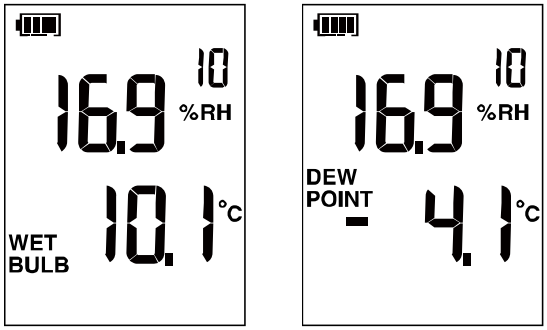

Figure 5. Wet bulb and dew point temperature

Min/Max/Ave Values

Each time you push MIN MAX during measurement, the display shows MINMAX and cycles through these screens:

- **The maximum temperature**, MAX shows on the screen, as shown on the left in *Figure 6*.
- **The minimum temperature**, MIN shows on the screen, as shown in the middle in *Figure 6*.
- **The average temperature**, AVG shows on the screen, as shown on the right in Figure 6.

Figure 6. MIN/MAX/AVG Temperature

To return to the normal display, push and hold MIN MAX for 2 seconds.

Store and Recall Historical Data (972B only)

The Meter can save up to 99 sets of measurement data and can recall any data at any time.

Save Measurement Data

During measurement, to save the current measured value:

1. Push and hold SAVE *2sec* for at least 2 seconds.
2. Release SAVE *2sec* when the number of the storage location increases by 1, as shown in *Figure 7*.

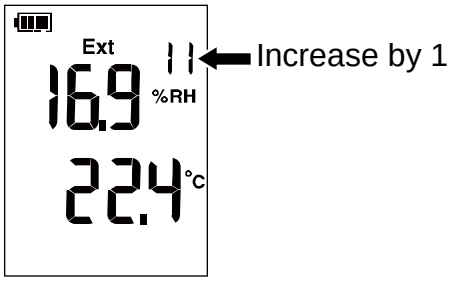

Figure 7. Save Measurement Data

Note

If all 99 storage locations already have data saved, the system automatically overwrites the data stored in location 01 and continues to increase the storage location number.

Recall Historical Data

During measurement, to recall the historical data:

1. Push and hold RECALL *2sec* WB DP for at least 2 seconds.
2. Release RECALL *2sec* WB DP when MEM flashes in the upper right corner of the screen, as shown in *Figure 8.*
3. Use the up arrow key ▲ MIN MAX and/or down arrow key ▼ HOLD to select the storage location you want to view to see the corresponding historical data.

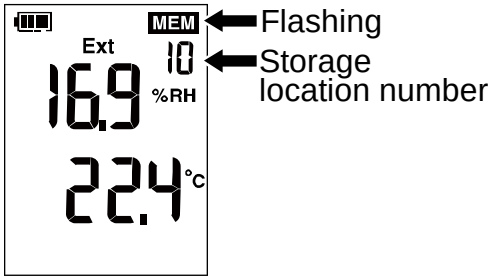

Figure 8. Recall Historical Data

4. To exit the Recall mode, push and hold RECALL *2sec* WB DP for at least 2 seconds and the screen will return to the environmental measurement screen.

Note

In the Recall screen, you can use WB DP *to view the wet bulb/dew point temperature saved at the current storage location, and you can use* MIN MAX *to view the minimum, maximum and average temperature values saved.*

Clear Historical Data

To clear all data saved in the Meter, push and hold SAVE *2sec* and RECALL *2sec* WB DP simultaneously for at least 5 seconds until the storage location number is 01.

⚠ Caution

This procedure will erase all the data saved in the Meter and cannot be recovered, so use with care.

Auto-Recording Mode (972B only)

To start the auto-recording mode:

1. Disable the Auto Power-of function. (Simultaneously push and hold and SAVE *2sec* for 5 seconds until the battery level icon flashes, then release the buttons.)
2. Push and hold the backlight button for 3 seconds.

   MEM appears in the upper right corner of the screen. Auto-recording starts with 5 minutes intervals. For each recording, the Storage location number will +1 in the upper right corner of the screen.
3. Push and hold the backlight button for 3 seconds.

   MEM disappears to show the Product is not in auto-recording mode.

To recall the auto-recorded data:

1. In the measurement mode with auto-off disabled, push RECALL *2sec* WB DP

   MEM flashes, and recall mode is activated.

2. Push **HOLD** to view the previous data, with Storage location number -1; push MIN MAX to view the next data, with Storage location number +1.

   If the external sensor icon (**Ext**) shows on screen, the data is recorded from the external sensor. If **Ext** does not show, the data is recorded from the built-in sensor.

3. In the recall mode, push RECALL *2sec* WB DP and SAVE *2sec* to clear the auto-recorded data.

   The storage location number will return to 1, and the measurement data will display "---".

   The data recorded in auto-recording mode and normal mode will not overlap with each other.

Use External Sensor

Users can use an external sensor to extend the temperature measuring range of the Meter.

To connect an external sensor:

1. Remove the protective cover of the external sensor jack.
2. Insert the 3.5 mm plug on the end of the external sensor cable into the jack marked **EXT**.
3. If the Meter is off, refer to *Turn On/Off the Meter* to turn the Meter on.
4. Confirm that the external sensor symbol **Ext** appears on the Meter's screen. See ❸ in *Figure 9.*

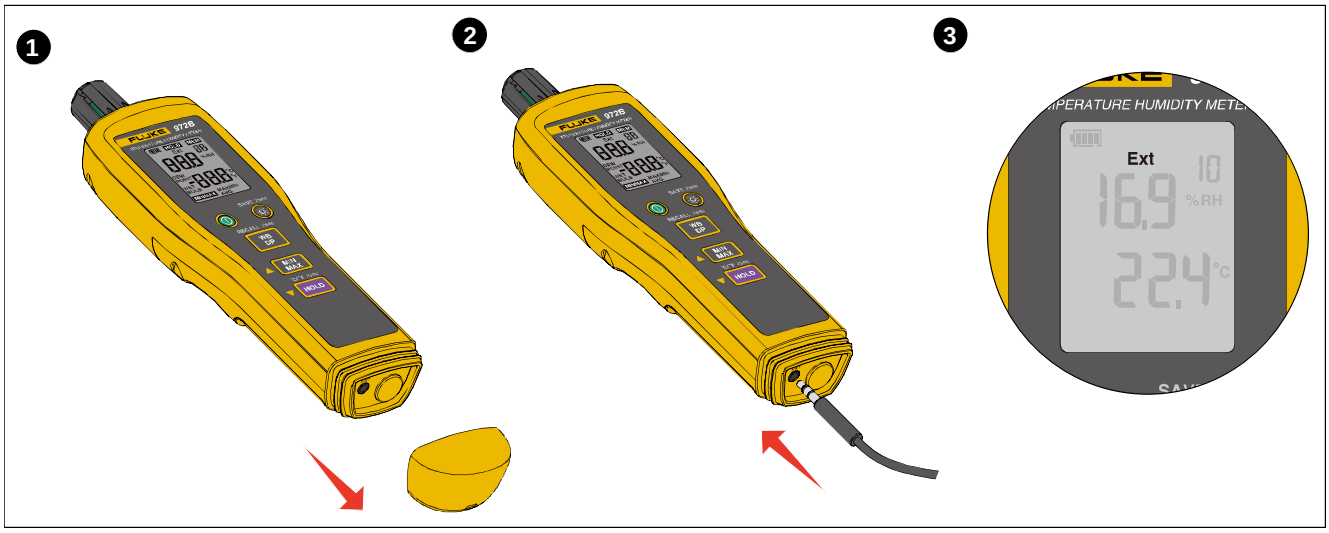

Figure 9. Connect an External Sensor

Maintenance

There are no parts requiring for users to repair and maintain inside the Product, and no special maintenance is needed, only daily cleaning is required.

Clean the Case

Clean the case with a damp cloth and a weak soap solution.

⚠ Caution

Do not use abrasives, isopropyl alcohol, or solvents to clean the case for avoiding damaging the Product.

If the exposed sensor is in direct contact with the abrasives, isopropyl alcohol or solvents, the sensor will be damaged and the Meter cannot be used.

Battery Replacement

When the battery indicator on the screen shows low power, replace the batteries promptly.

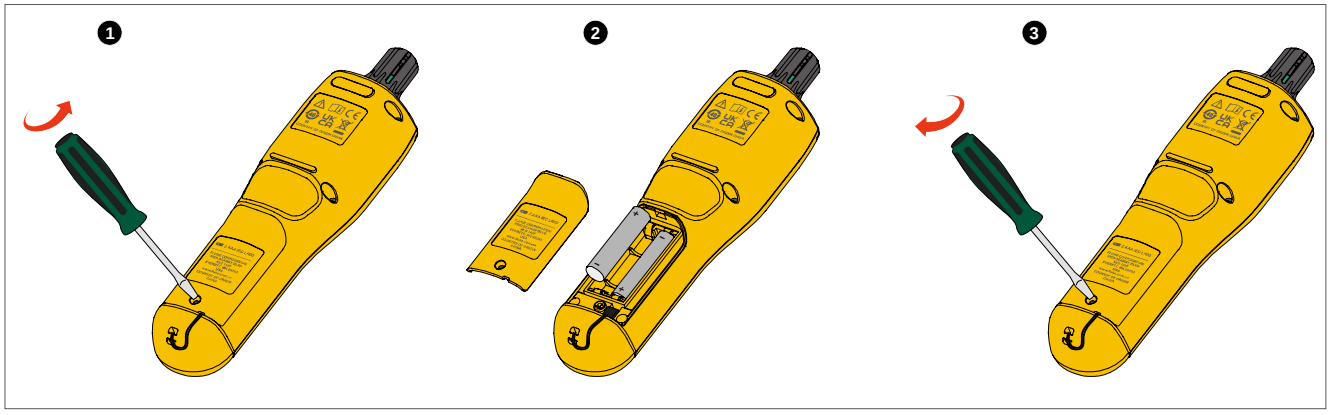

Figure 10. Battery Replacement

To replace batteries:

1. Turn the Meter off and place it face down on a firm, flat table. Use a Phillips screwdriver to loosen the screws securing the battery compartment cover, and then remove the cover.
2. Remove the old batteries and install new batteries. Please note the polarity mark on the bottom of the battery compartment.
3. Reinstall and secure the battery compartment cover in reverse order.

⚠ Caution

Do not incinerate the Product and/or the battery.

Product Disposal

Dispose of the Product in a professional and environmentally appropriate manner:

- Delete personal data on the Product before disposal.
- Remove batteries that are not integrated into the electrical system before disposal and dispose of batteries separately.
- If this Product has an integral battery, put the entire Product in the electrical waste.

Specifications

General Specifications

	972A	972B	972 ES
Temperature			
Operating	-30 °C to 70 °C		-40 °C to 70 °C
Storage	-30 °C to 70 °C, <80 % RH (without battery)		-40 °C to 70 °C, <80 %RH
Altitude			
Operating	2000 m		
Storage	12 000 m		
Relative Humidity			
Operating	0 % RH to 99 % RH		
Storage	<80 % RH		
Power Supply			
Battery Type	2 AAA Batteries		—
Battery Life	1000 hours for continuous operating, backlight off		—
Safety	IEC61010-1, Pollution Degree 2		
Dimensions (H x W x D)	211 mm × 58 mm × 40 mm		264 mm × 33 mm × 28 mm
Weight	172 g (body)		127 g
Electromagnetic Environment (EMC)			
International IEC 61326-1: Portable, Electromagnetic Environment; IEC 61326-2-2; CISPR 11: Group 1；Class A *Group 1: Equipment intentionally generates and/or uses conductive-coupled RF energy, which is necessary for its internal operation.* *Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances.* *Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.* Korea (KCC) Class A Equipment (Industrial Broadcasting & Communication Equipment) *Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and not to be used in homes.*			
IP Rating	IEC 60529: IP30, non-operating		

Detailed Specifications

	972A	**972B**	**972 ES**
Sensor Type	Built-in	Built-in + External	External
Temperature Measurement Range	-30.0 °C to 65.0 °C	-30.0 °C to 65.0 °C (built-in sensor) -40.0 °C to 99.9 °C (external sensor)	-40.0 °C to 99.9 °C
Temperature Accuracy	±0.5 °C (-30 °C to 65 °C)	Built-in Sensor ±0.5 °C (-30 °C to 65 °C) External Sensor: ± 0.5 °C (-30 °C to 65 °C) ±0.7 °C (others)	±0.5 °C (-30 °C to 65 °C) ±0.7 °C (others)
Temperature Resolution	0.1 °C	0.1 °C	0.1 °C
Dew Point Temperature			
Range	N/A	-40.0 °C to 99.9 °C	--
Resolution	N/A	0.1 °C	--
Wet Bulb Temperature			
Range	N/A	-20.0 °C to 60.0 °C	--
Resolution	N/A	0.1 °C	--
Humidity			
Range	0.0 % RH to 99.9 % RH		
Accuracy	±3 % RH (≥20 % RH to ≤80 % RH @ 25 °C) ±5 % RH (≥1 % RH to <20 % RH, >80 % RH to ≤95 %RH @ 25 °C) Unspecified for others		
Resolution	0.1 % RH		
Data Storage	N/A	Yes. Up to 99 sets	--
Display	2-line LCD display, with backlight		None
Auto-off	Automatically turns off after 20 minutes of inactivity		—