General Warranty

OWON warrants that the product will be free from defects in materials and workmanship for a period of 1 year from the date of purchase of the product by the original purchaser from the OWON Company. This warranty only applies to the original purchaser and is not transferable to the third party, and does not apply to fuses, disposable batteries or to any product which has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling.

If the product proves defective during the warranty period, OWON either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product. Parts, modules and replacement products used by OWON for warranty work may be new or reconditioned like new performance. All replaced parts, modules and products become the property of OWON.

In order to obtain service under this warranty, customer must notify OWON of the defect before the expiration of the warranty period. Customer shall be responsible for packaging and shipping the defective product to the service center designated by OWON, and with a copy of customer proof of purchase.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. OWON shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than OWON representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non-OWON supplies; or d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

Please contact the nearest OWON's Sales and Service Offices for services.

Excepting the after-sales services provided in this summary or the applicable warranty statements, OWON will not offer any guarantee for maintenance definitely declared or hinted, including but not limited to the implied guarantee for marketability and special-purpose acceptability. OWON should not take any responsibilities for any indirect, special or consequent damages.

1. Safety Information

Safety Considerations

Before any operations, please read the following safety precautions to avoid any possible bodily injury and prevent damage to this product or any other products connected. To avoid any contingent danger, use this product only as specified.

- Limit operation to the specified measurement category, voltage, or amperage ratings.
- **Do not use the multimeter if it is damaged.** Before you use the multimeter, inspect the case. Look for cracks or missing plastic. Pay particular attention to the insulation surrounding the connectors.
- **Do not use the test leads provided for other products.** Use only the certified test leads specified for this product.
- Inspect the test leads for damaged insulation or exposed metal.
- Before use, verify the multimeter's operation by measuring a known voltage.
- Only the qualified technicians can implement the maintenance.
- **Always use the specified battery type.** The power for the multimeter is supplied with two standard AA 1.5 V batteries. Observe the correct polarity markings before you insert the batteries to ensure proper insertion of the batteries in the multimeter.
- **Check all Terminal Ratings.** To avoid fire or shock hazard, check all ratings and markers of this product. Refer to the user's manual for more information about ratings before connecting to the multimeter.
- Do not operate the multimeter with the cover or portions of the cover removed or loosened.
- **Use Proper Fuse.** Use only the specified type and rating fuse for the multimeter.
- **Do not operate if in any doubt.** If you suspect damage occurs to the multimeter, have it inspected by qualified service personnel before further operations.
- **To avoid electric shock, do not operate this product in wet or damp conditions.**
- **Do not operate in an explosive atmosphere.**
- **Keep product surfaces clean and dry.**
- Do not apply more than the rated voltage (as marked on the multimeter) between terminals, or between terminal and earth ground.

- When measuring current, turn off the circuit power before connecting the multimeter in the circuit. Remember to place the multimeter in series with the circuit.
- When servicing the multimeter, use only the specified replacement parts.
- Use caution when working above 60 V DC, 30 V AC RMS, or 42.4 V peak. Such voltages pose a shock hazard.
- When using the test leads, keep your fingers behind the finger guards on the test leads.
- Remove the test leads from the multimeter before you open the battery cover.
- To avoid false readings, which may lead to possible electric shock or personal injury, replace the battery as soon as the low battery indicator appears and flashes.
- Disconnect circuit power and discharge all high-voltage capacitors before testing resistance, continuity, diodes, or capacitance.
- **Use the proper terminals, function, and range for your measurements.** When the range of the value to be measured is unknown, set the rotary switch position as the highest range, choose the auto ranging mode. To avoid damages to the multimeter, do not exceed the maximum limits of the input values shown in the technical specification tables.
- Connect the common test lead before you connect the live test lead. When you disconnect the leads, disconnect the live test lead first.
- Before changing functions, disconnect the test leads from the circuit under test.

Measurement Category

The multimeter has a safety rating of 1000 V, CAT III.

Safety Terms and Symbols

Safety Terms

Terms in this Manual. The following terms may appear in this manual:

Warning: Warning indicates the conditions or practices that could result in personal injury or death.

Caution: Caution indicates the conditions or practices that could result in damage to this product or other property.

Terms on the Product. The following terms may appear on this product:

Danger: It indicates an injury or hazard may immediately happen.

Warning: It indicates an injury or hazard may be accessible potentially.

Caution: It indicates a potential damage to the instrument or other property might occur.

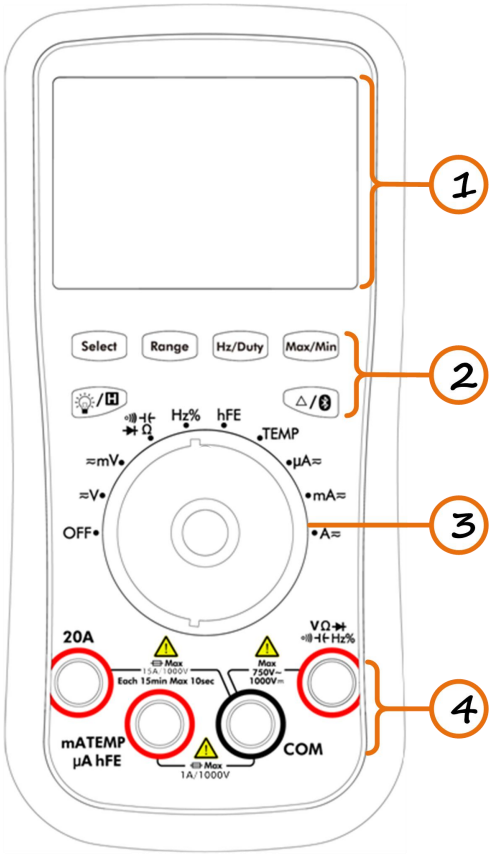
Safety Symbols

Symbols on the Product. The following symbol may appear on the product:

⎓	Direct current (DC)		Fuse
~	Alternating current (AC)		Caution, risk of danger (refer to this manual for specific Warning or Caution information)
⎓ ~	Both direct and alternating current	CAT II	Category II overvoltage protection
⏚	Ground terminal	CAT III	Category III overvoltage protection
CE	Conforms to European Union directives	CAT IV	Category IV overvoltage protection
⧈	Equipment protected throughout by double insulation or reinforced insulation		

2. Multimeter in Brief

Front panel



No.	Description
①	Display screen
②	Keypad
③	Rotary switch
④	Input terminals

Figure 2- 1 Front panel overview (B35 shown)

Rotary switch

Position	Description
OFF	Power off
≂V	DC or AC voltage measurement
≂mV	DC or AC voltage measurement (up to 600 millivolts)
•))) ⊣⊢ →| Ω	Continuity test
	Capacitance measurement
	Diode test

	Resistance measurement
Hz%	Frequency measurement
hFE	Transistor measurement — Not available on B41T(+)
TEMP	Temperature measurement
μA≈	DC or AC current measurement (up to 600 microamperes)
mA≈	DC or AC current measurement (up to 600 milliamperes)
A≈	DC or AC current measurement

Keypad

Key	Description
Select	Select function: • Select DC or AC • Select ℃ or ℉ during temperature measurements • Select Resistance/Diode/Continuity/Capacitance Note: Select Resistance/Diode/Continuity on B41T(+).
Range	Auto/Manual range
Hz/Duty	Select frequency/duty cycle
Max/Min	Capturing Max. and Min. Values
/H	Backlight
	Data Hold
△/	Relative Measurements
	Bluetooth (only for the model with Bluetooth)

Display screen

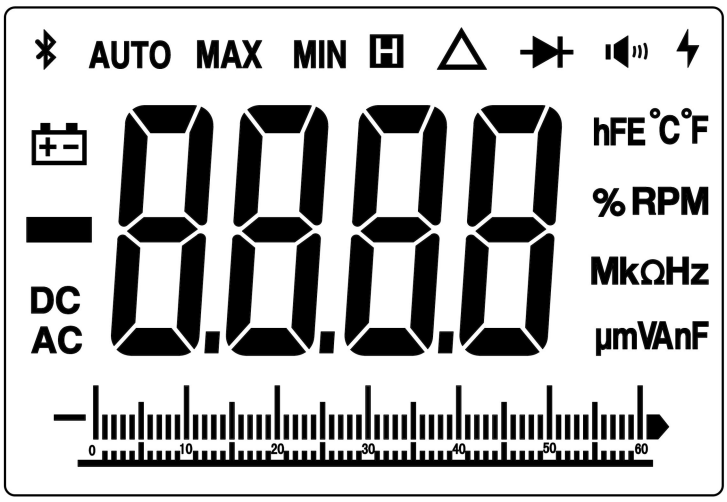


Figure 2- 2 Display screen

Symbol	Description
	Bluetooth enabled
AUTO	Auto range
MAX	Maximum reading
MIN	Minimum reading
	Data hold enabled
	Relative enabled
	Diode test selected
	Continuity test selected
	Battery is low
DC	DC

AC	AC
-8.8.8.8	Measurement display ("OL" is short for overload, indicates the reading exceeds the display range)
hFE °C °F % RPM MkΩHz µmVAnF	Measuring units
	Analog bar graph

Input terminals

The terminal connections for the different measurement functions of the multimeter are described in the table below.

Warning: Before starting any measurement, observe the rotary switch position of the multimeter, and then connect the test leads to the correct terminals.

Caution: To avoid damaging the multimeter, do not exceed the rated input limit.

Input terminals on 35 series multimeter

Rotary switch position	Input terminals		Overload protection
≂V	VΩ→ Hz%	COM	750 VAC/1000 VDC
≂mV	VΩ→ Hz%	COM	250 VDC or Equivalent voltage RMS
•))) ⊣⊢ →| Ω	VΩ→ Hz%	COM	
Hz%	VΩ→ Hz%	COM	250 VAC or Equivalent voltage RMS

hFE	mATEMP μA hFE	COM	1A/250V, fast-acting fuse
TEMP	mATEMP μA hFE	COM	
μA≈	mATEMP μA hFE	COM	
mA≈	mATEMP μA hFE	COM	
A≈	20A	COM	20A/250V, fast-acting fuse

Input terminals on B41T(+)

Rotary switch position	Input terminals		Overload protection
≈V	VΩ⊣◦))) ⊣⊢ Hz%	COM	750 VAC/1000 VDC
≈mV	VΩ⊣◦))) ⊣⊢ Hz%	COM	250 VDC or Equivalent voltage RMS
◦))) ⊣ Ω	VΩ⊣◦))) ⊣⊢ Hz%	COM	
Hz%	VΩ⊣◦))) ⊣⊢ Hz%	COM	250 VAC or Equivalent voltage RMS
⊣⊢	VΩ⊣◦))) ⊣⊢ Hz%	COM	250 VDC or Equivalent voltage RMS
TEMP	mA μA TEMP	COM	1A/250V, fast-acting fuse
μA≈	mA μA TEMP	COM	
mA≈	mA μA TEMP	COM	
A≈	20A	COM	20A/250V, fast-acting fuse

3. Multimeter Features

Sleep Mode

The multimeter automatically enters the sleep mode if the rotary switch is not moved or a key is not pressed in wait time. The wait time is 15 minutes for B35(T)(+)&D35(T), 30 minutes for B41T(+). (When the Bluetooth is activated, this function is disabled.)

Pressing any key (except △/ᛒ) will turn the multimeter back to operation mode from the sleep mode.

One minute before Auto Power-off, the buzzer will beep five times to warn. Before shutoff, the buzzer will emit a long beep, and then the multimeter will shut off.

Only for B41T(+): To disable the Auto Power-off function, hold down Range . Hz/Duty . Max/Min or △/ᛒ while powering on the multimeter, the multimeter will not shut off automatically.

Note: In sleep mode, the multimeter will still consume a little power. If the multimeter is not going to be used for a long period, the power should be turned off.

Backlight Control

To view the display in low-light conditions, you can activate the LCD backlight by pressing 💡/H for more than 2 seconds. The backlight will last for one minute.

Data Hold Mode

(1) Press 💡/H to freeze the display during measurement, H will be shown on the display.

(2) Press 💡/H again to exit this mode.

Note: This function is not available when measuring diodes and transistor.

Capturing Max. and Min. Values

In MAX mode, the measured maximum value will be held; In MIN mode, the measured minimum value will be held.

(1) Press Max/Min to cycle between the MAX mode and MIN mode.

(2) Press Max/Min for more than 2 seconds to exit the mode.

In this mode, the manual range mode will be activated automatically. Analog bar graph is not displayed. Auto power-off function is disabled.

Note: This function is not available when measuring diodes, capacitance, transistor, and frequency.

Making Relative Measurements

When making relative measurements, reading is the difference between a stored reference value and the input signal.

(1) Press △/ to enter the relative mode.

The measurement value when pressing △/ is stored as the reference value.

In this mode, REL△ (current reading) = input value - reference value.

(2) Press it again to exit the mode.

In relative measurement, the manual range mode will be activated automatically. (The relative measurement should be carried out under a certain range, that is, this function is only available under the manual range mode.) Analog bar graph is not displayed.

Note: This function is not available when measuring diodes, transistor, and frequency.

Buzzer Feature

- Press the function key, the buzzer emits a short beep.
- One minute before Auto Power-off, the buzzer will beep five times to

warn. Before shutoff, the buzzer will emit a long beep, and then the multimeter will shut off.

- The buzzer beeps continuously to warn once the measured DC voltage exceeds 1000 V, AC voltage exceeds 750 V, or the voltage in DC/AC mV mode exceeds 600.0 mV.
- The buzzer emits a long beep when the short circuit resistance is less than about 30Ω during the continuity test.
- When the Bluetooth function is idle for 10 minutes, the Bluetooth will be turned off automatically. Before turning off, the buzzer will beep twice.

4. Bluetooth Function –only for the model with Bluetooth

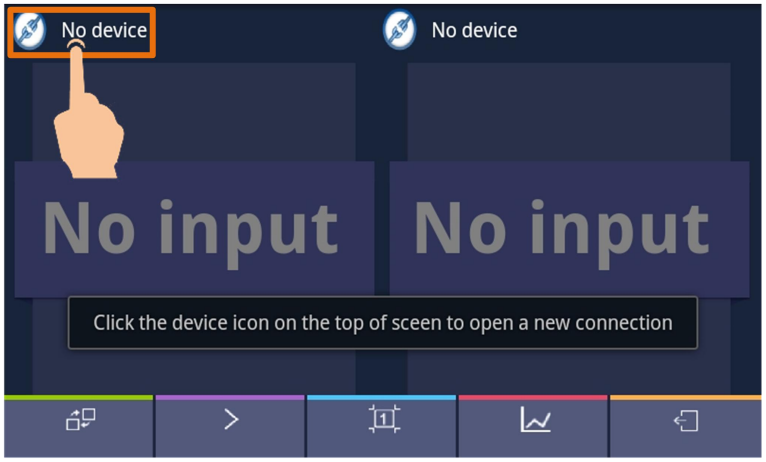
How to Connect with Android Device

(1) Install the free application software for Android on your Android smart device.

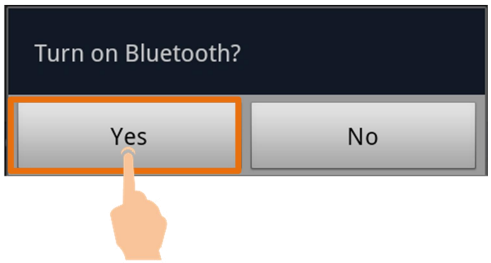
(2) Launch the "Multimeter" application.

(3) Turn on the multimeter, press and hold △/ until appear on the display.

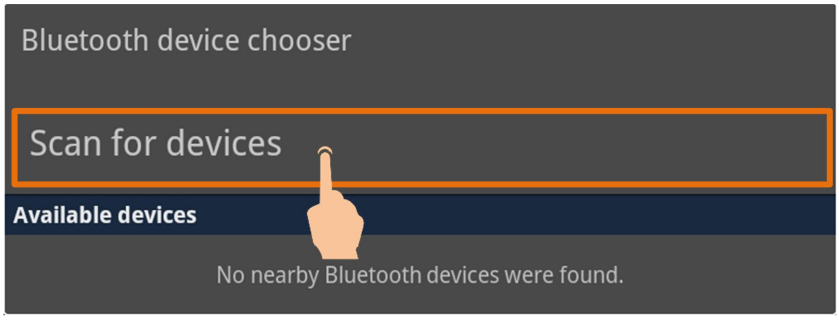
(4) Click the icon on the top left of the screen to launch device connection.



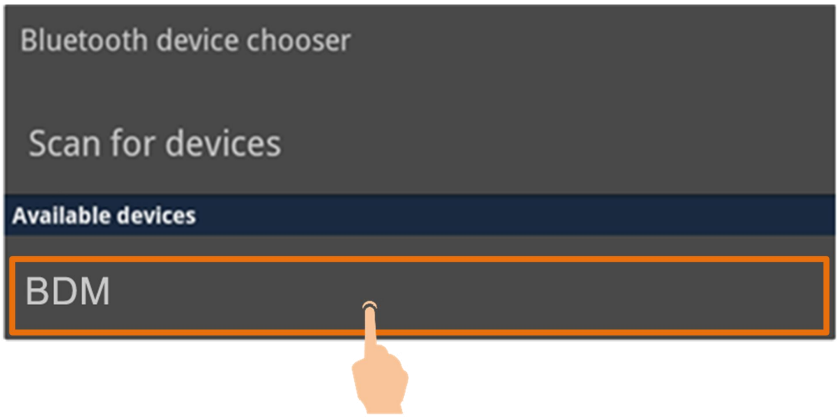
(5) If the Bluetooth function is not activated, a dialog box will ask whether to turn on Bluetooth. Click "Yes".



Click to scan for Bluetooth devices.



(6) Click "BDM" in the device list to pair.

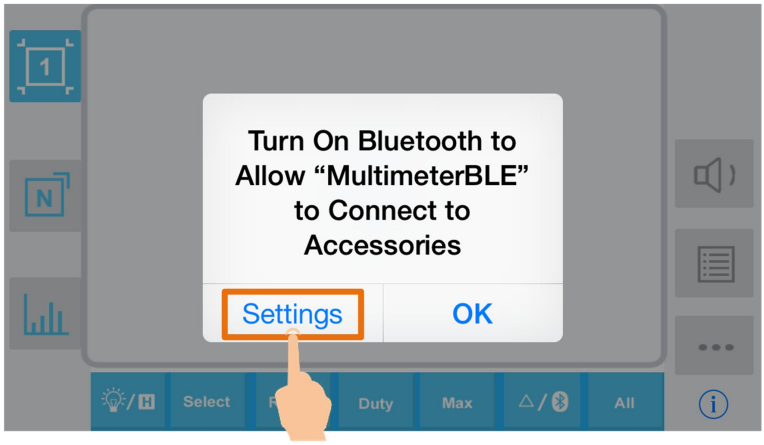


How to Connect with iOS Device

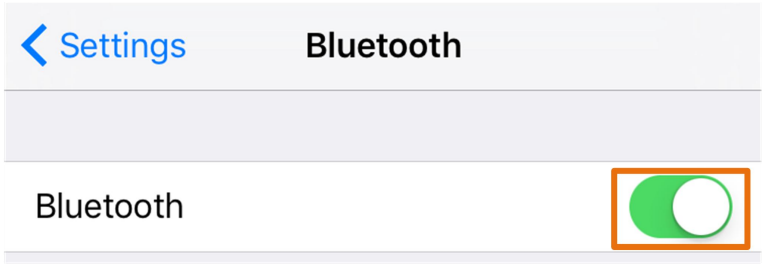
(1) Install the free application software for iOS on your iOS smart device.

(2) Launch the application 

.If the Bluetooth function is not activated, a dialog box will prompt you to turn on Bluetooth. Tap on "Settings".

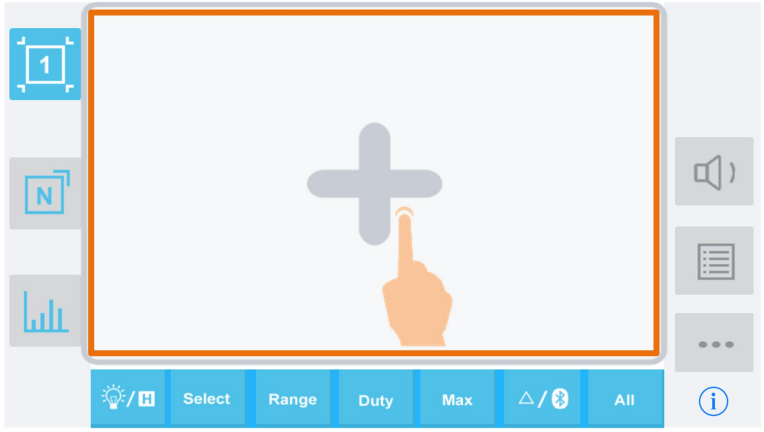


Turn on Bluetooth, and return to the multimeter APP.

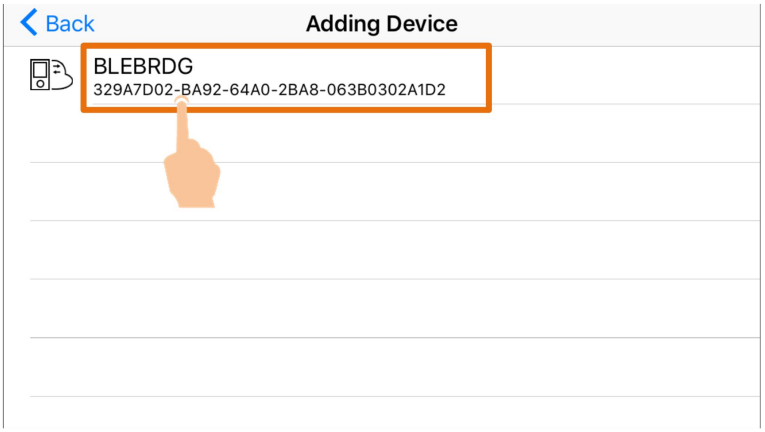


(3) Turn on the multimeter, press and hold △/ until appear on the display.

(4) Tap on the center to launch device connection.



(5) Select the desired multimeter in the device list.



(6) The measurements will be shown if the connection is successful. You can tap on the + softkey on the right to add another multimeter.



How to Connect with Computer – only for B35(T)+ or B41T(+)

To connect the multimeter to a computer, a **Bluetooth USB dongle** should be plugged into the USB port of computer.

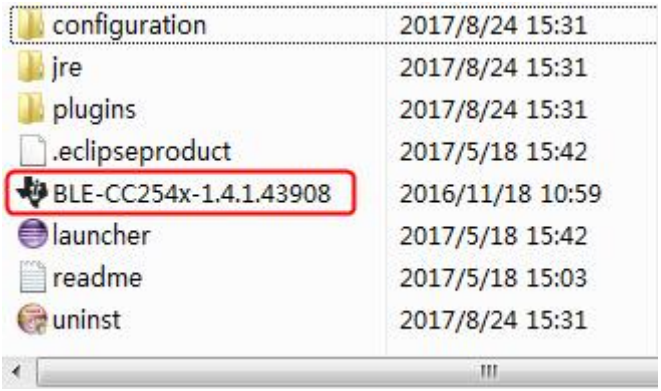
- Use only the Bluetooth USB dongle (optional) supplied with the product.
- The computer must be running the **Windows** operating system (Windows 10, Windows 8, Windows 7, Windows Vista, Windows XP).

Step 1: Install multimeterBLE software

Install the multimeterBLE software on your computer.

Step 2: Install driver of Bluetooth USB dongle

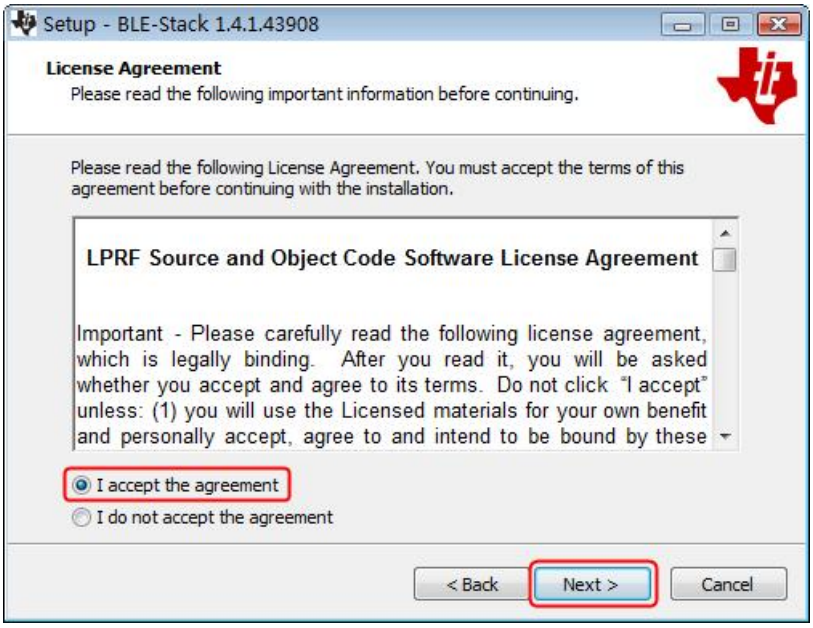
(1) Navigate to the multimeterBLE software installation folder (for example, C:\Program Files\multimeterBLE).
Double-click **BLE-CC254x-1.4.1.43908.exe** in this folder.



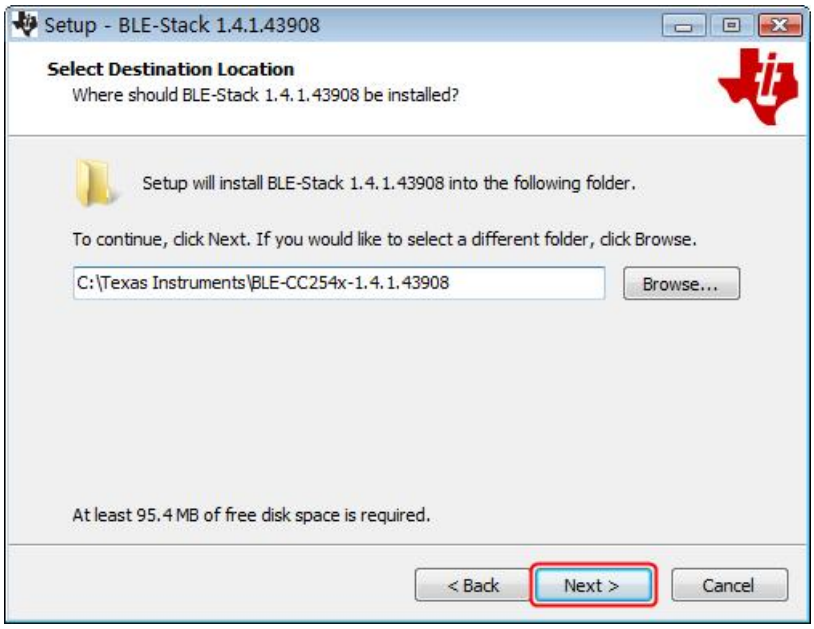
(2) Click "**Next**".



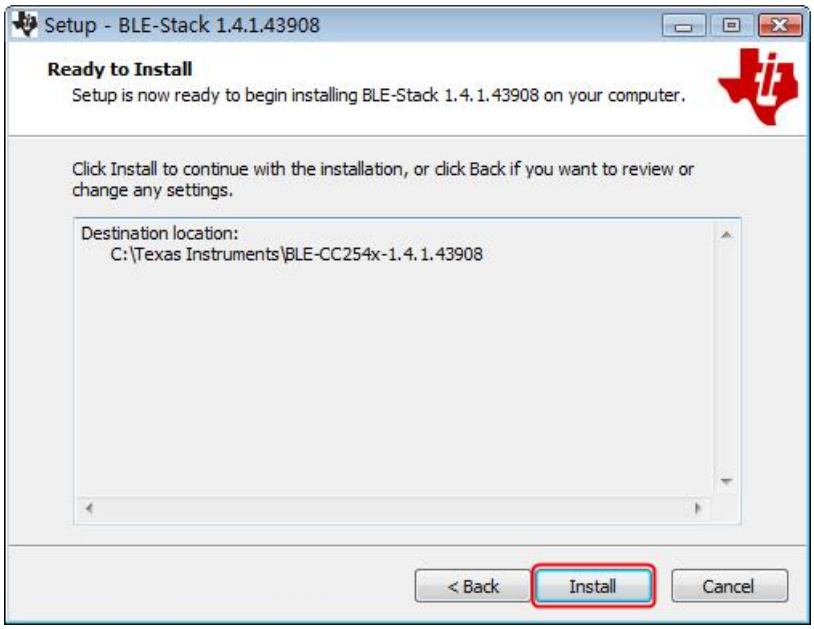
(3) Select "**I accept the agreement**", and then click "**Next**".

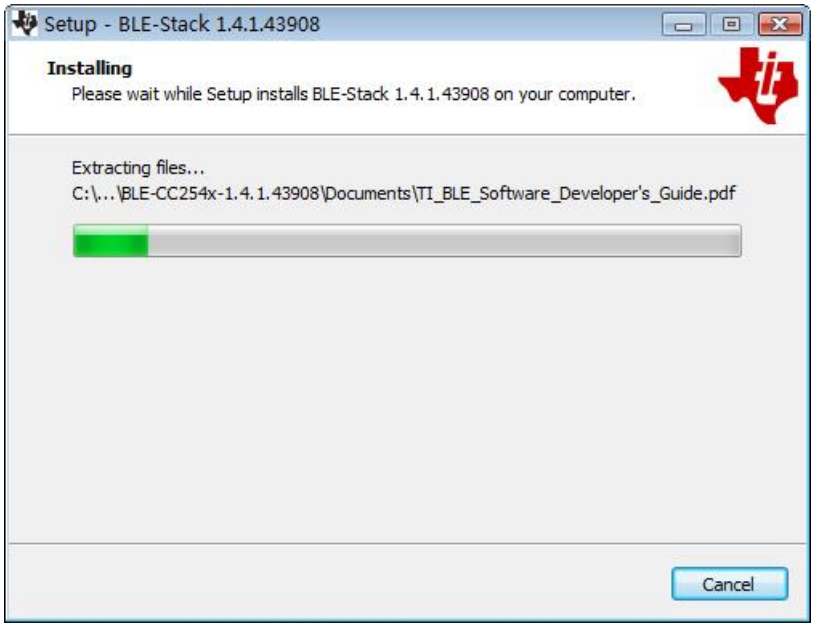


(4) Select the destination folder, and then click "**Next**".



(5) Click "**Install**".



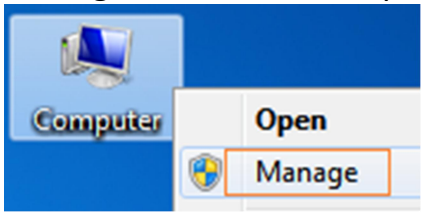


(6) Uncheck "**View the Release Notes**", and click "**Finish**" to exit Setup.



(7) Plug the Bluetooth USB dongle into a USB port on your computer.

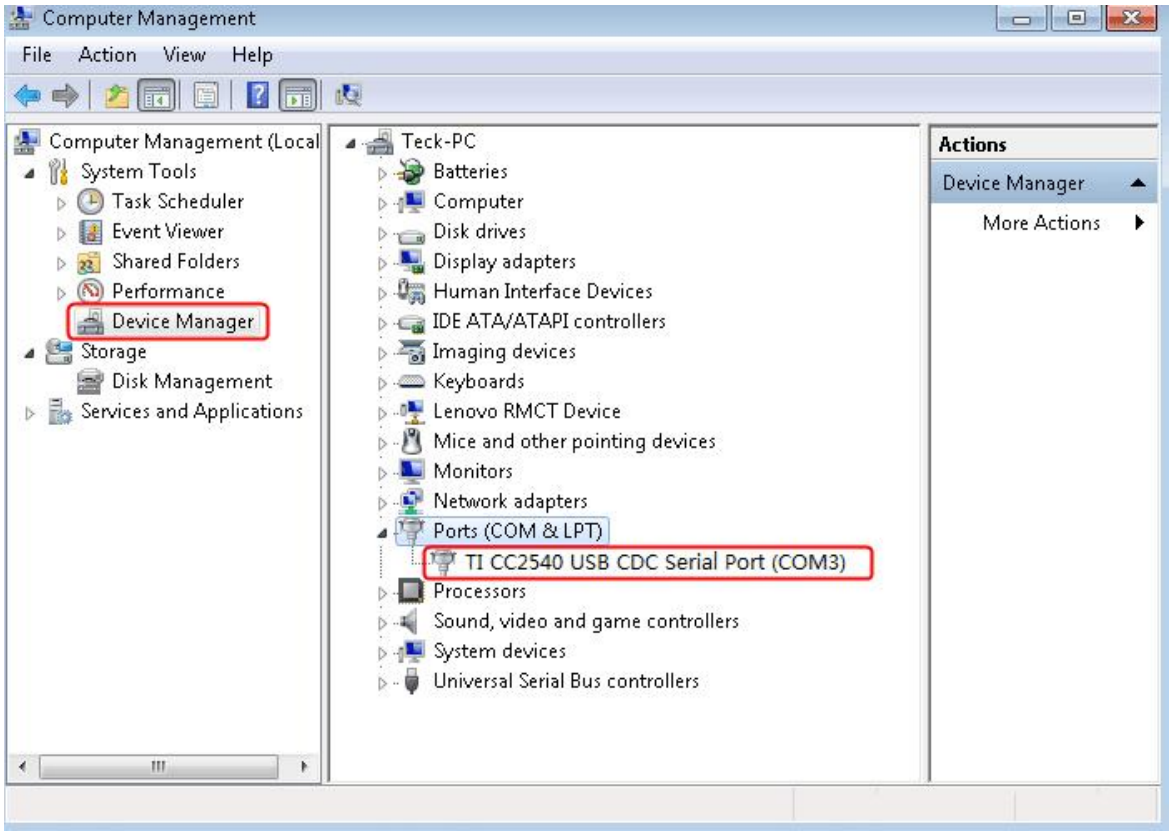
Right click [**Computer**], you can find it on the desktop, or in [**Start**] menu. In the drop down menu, click on [**Manage**], the "Computer Management" window opens.



Click on "**Device Manager**" on the left hand side. On the right hand side, double click on "**Ports (COM & LPT)**".

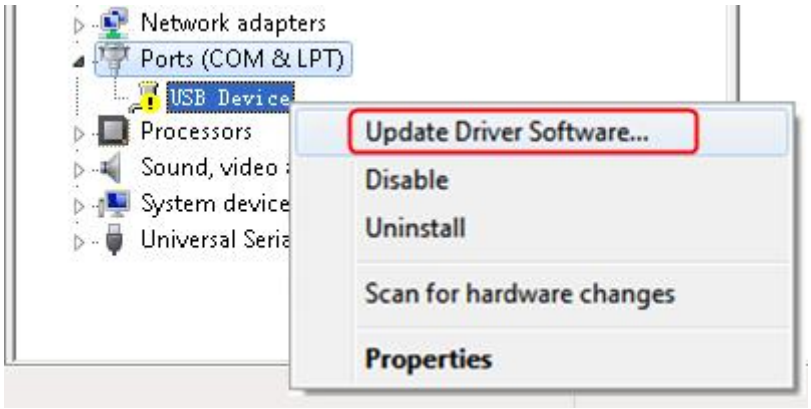
Under ports, if "**TI CC2540 USB CDC Serial Port (COM#)**" is displayed, that means the driver is installed successfully. Remember the “COM #” because you will need to configure the multimeterBLE software.

Note: If an unknown device is displayed, try to install the driver manually following the steps below.

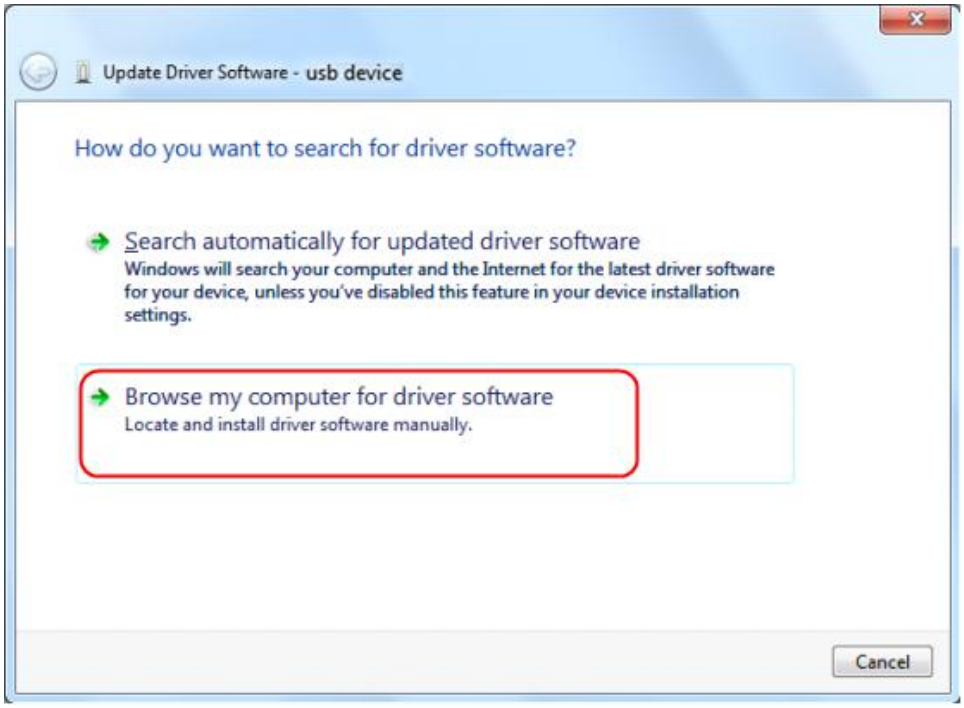


How to install the driver manually

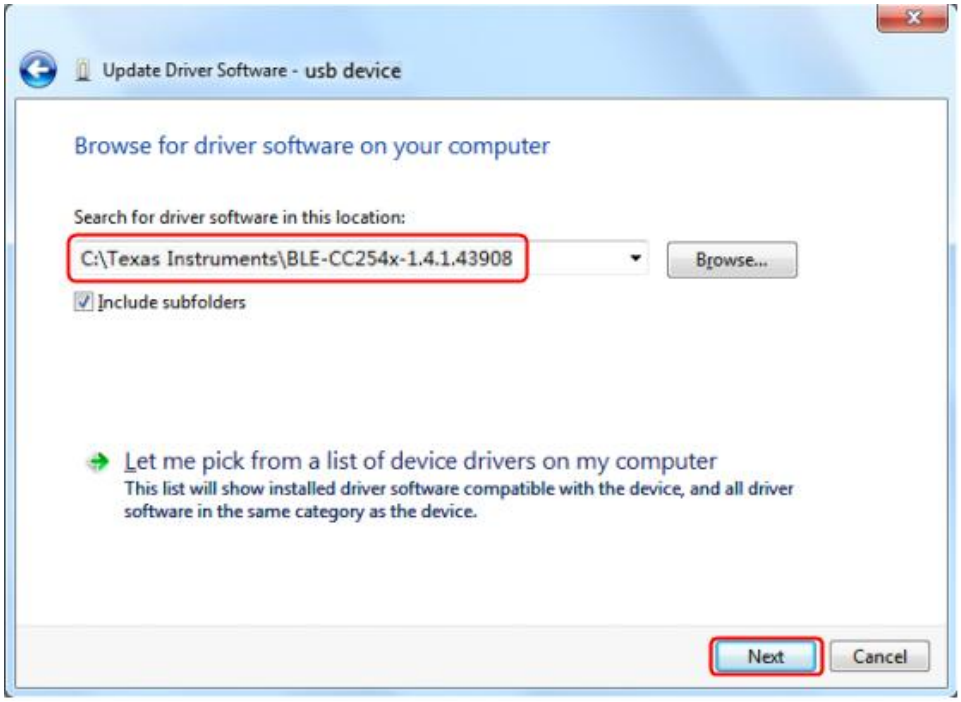
Right click the unknown device icon, in the drop down menu, click "**Update Driver Software...**".



Select "**Browse my computer for driver software**".

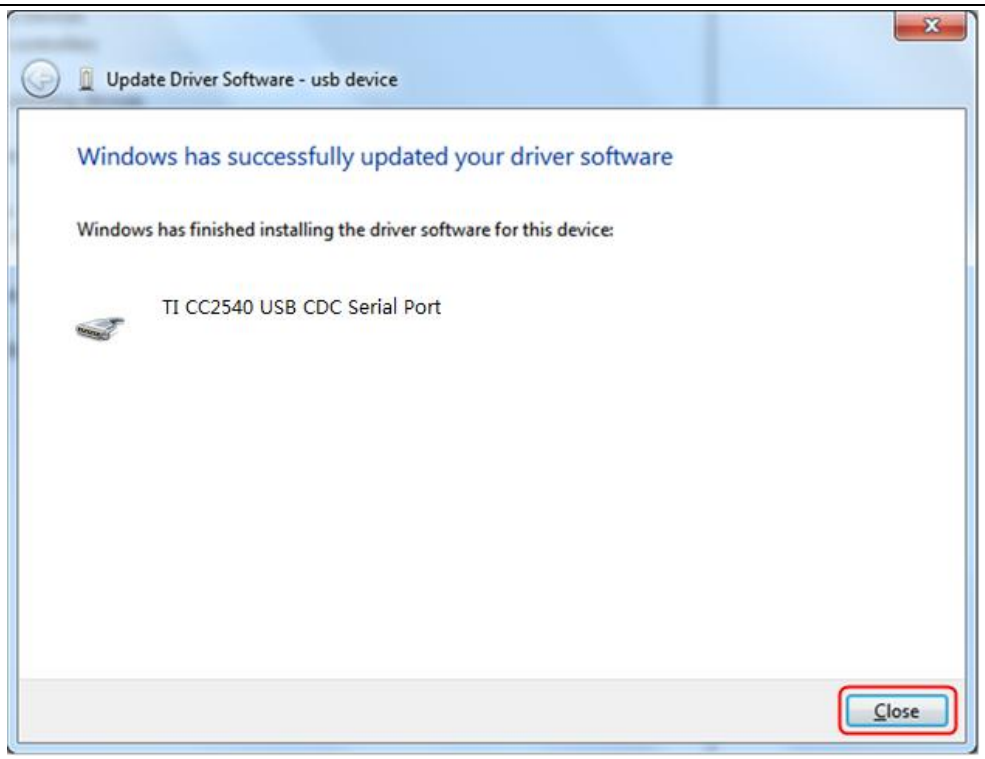


Select a directory path for the driver, and click "**Next**".



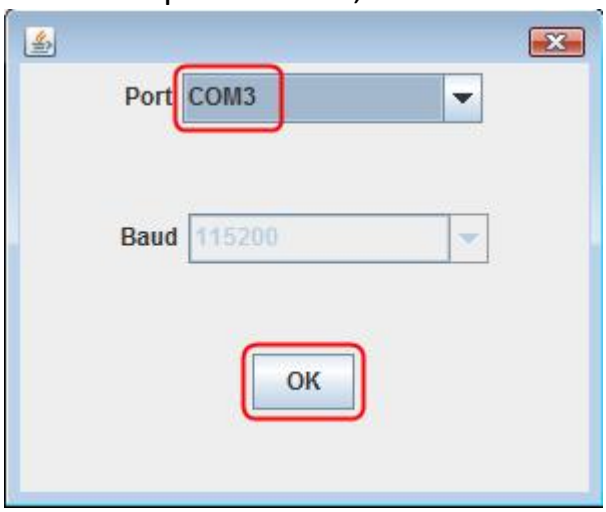
After installing successfully, click "**Close**".

In Device Manager, check if "**TI CC2540 USB CDC Serial Port (COM#)**" is displayed under Ports (COM & LPT).



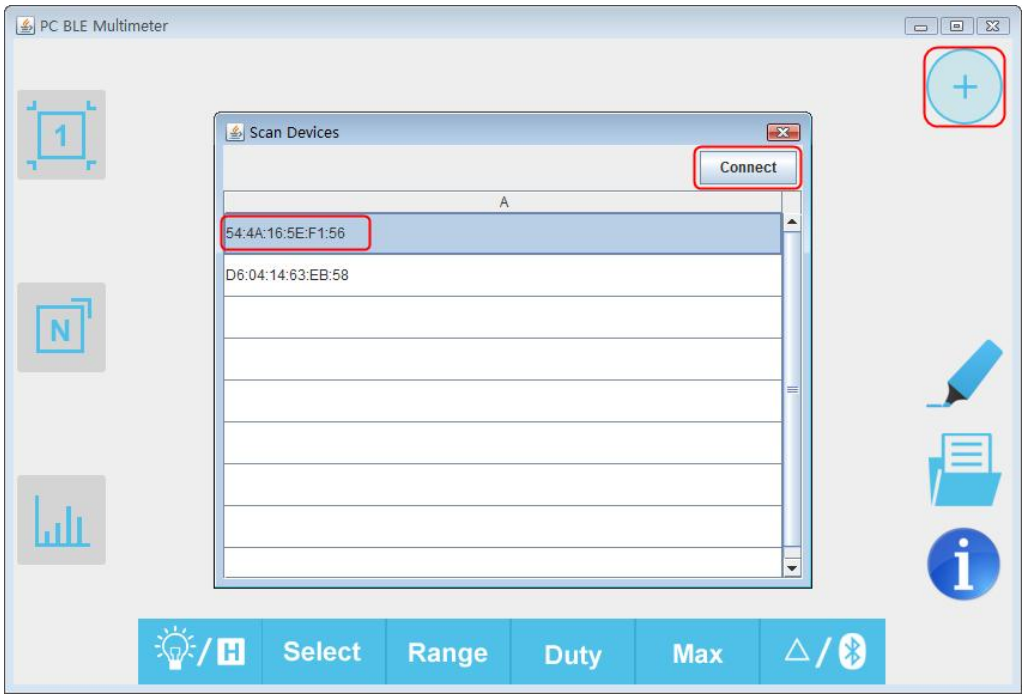
Step 3: Connect to multimeterBLE software

(1) After installing the Bluetooth USB dongle driver successfully, run the multimeterBLE software, the configure dialog box appears.
Make sure that the Bluetooth USB dongle is plugged into the computer.
To find the “Port” (COM #), you will need to look for it under "Ports (COM & LPT)" in Device Manager window.
Select the port number, and click "OK".

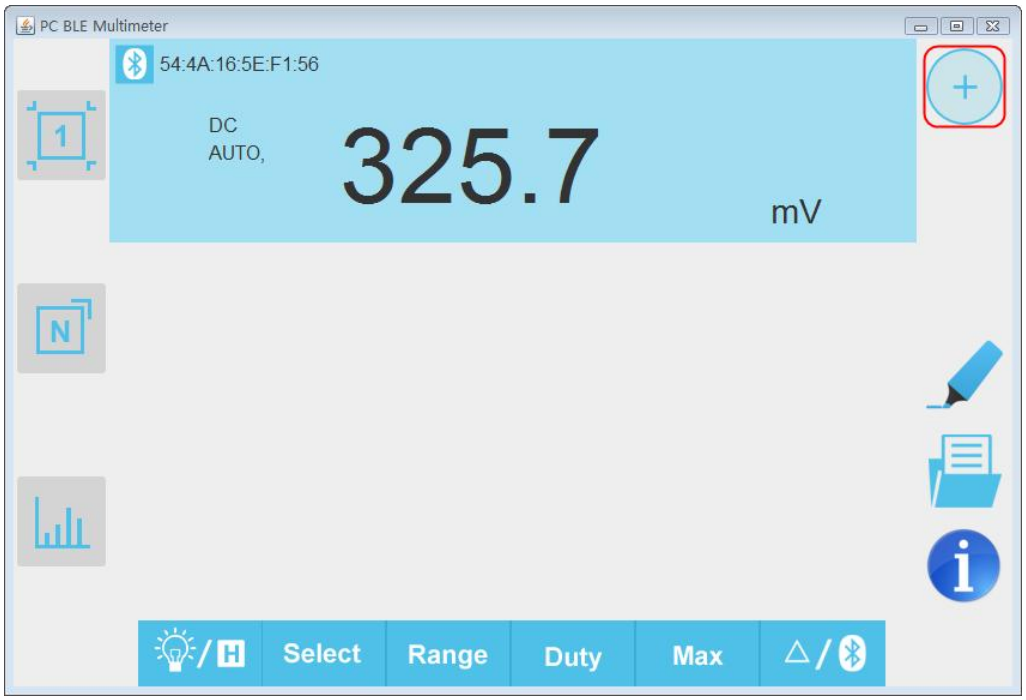


(2) Turn on the multimeter, press and hold △/ until appear on the display.

(3) Click + softkey on the right, a Scan Devices dialog box appears. A progress bar shows the progress of scanning multimeters. It will take a few seconds. When the scan is finished, select the desired multimeter in the device list. Click the "**Connect**" button.



(4) The measurements will be shown if the connection is successful. You can tap on the + softkey on the right to add another multimeter.



5. Multimeter Offline Record – the "+" model only

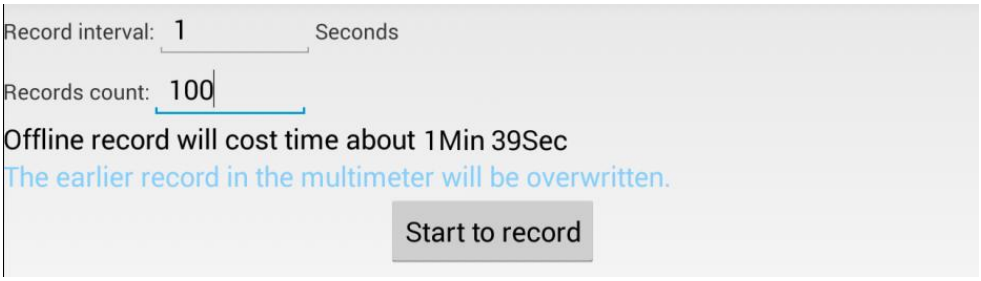
When measuring using the multimeter with offline record function, you can use Android/iOS device APP or PC software to send a command, the multimeter will start recording the measurements. After receiving the command, the connection will be disconnected automatically. The multimeter will record the measuring data in its own memory. After completion of the record, use APP or PC software to reconnect the multimeter, and then you can read the measuring data into the device as a CSV file. You can use this function to record for a long time without staff on duty, while reducing Bluetooth consumption to conserve the battery power of the multimeter.

Note: When the low battery indicator  appears on the meter screen, the offline record function may not work correctly. Please check the batteries of the meter to ensure them in a good state.

Offline Record for Android Device

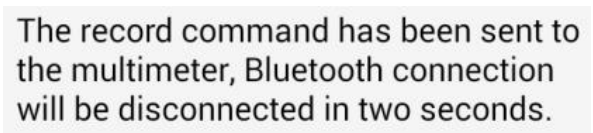
(1) Connect the Android device with the multimeter, see "*How to Connect with Android Device*" on P11.

(2) In APP single view, tap on the  icon on the top right, select Record setting from the pop-up menu.



(3) Set "Record interval" and "Records count" (maximum records count is 10,000). Tap on Start to record. The memory in the multimeter can only store the recording data of one time. When start to record, the earlier offline record stored in the multimeter will be overwritten.

(4) After starting, in two seconds, the APP interface will display



The Android device will disconnect with the multimeter in two seconds. After disconnecting, the Bluetooth of the multimeter is in low-power state. The information will be shown on APP:

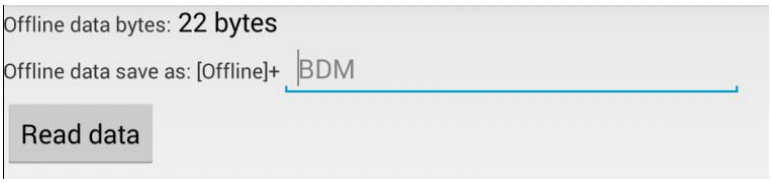
Bluetooth connection has been disconnected. To read the record, enable the Bluetooth and reconnect.The Bluetooth symbol on the meter screen will disappear after completion of the record.

The multimeter will record the current measurements and store in the memory. After completion of the record, the Bluetooth of the multimeter will be disabled automatically, and the Bluetooth symbol on the multimeter screen will disappear.

Note: If the multimeter is in the process of recording data and not finished yet, the APP can not connect with the multimeter. If you want to interrupt the recording process of the multimeter, press and hold △/ until disappear on the display, or turn the multimeter off.

(5) After completion of the record, to read the measuring data, press and hold △/ until appear on the display. Reconnect the Android device and the multimeter.

(6) In APP single view, tap on the icon on the top right, select Record read from the pop-up menu.



The file name start with "Offline", the following part can be customized.

(7) Tap on Read data, APP will read the measuring data and save as a CSV file into the Android device.

After reading, display as below:

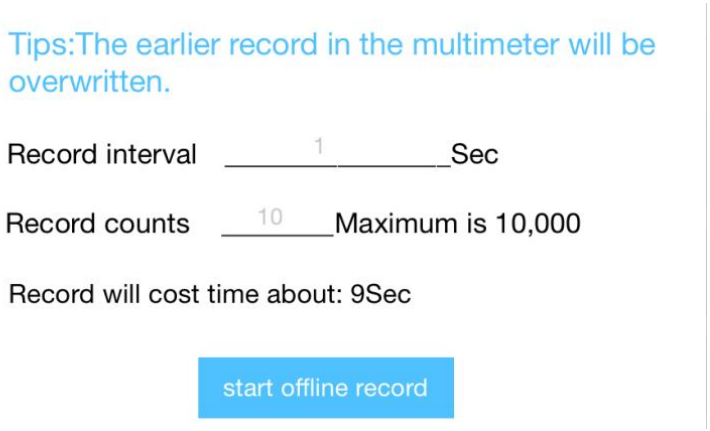


(8) Tap on Display data, the data will be displayed in Data Graph and Table interface.

Offline Record for iOS Device

(1) Connect the iOS device with the multimeter, see "*How to Connect with iOS Device*" on P12.

(2) In APP device view, tap on the softkey on the right, select "**Record setting**" from the pop-up menu.

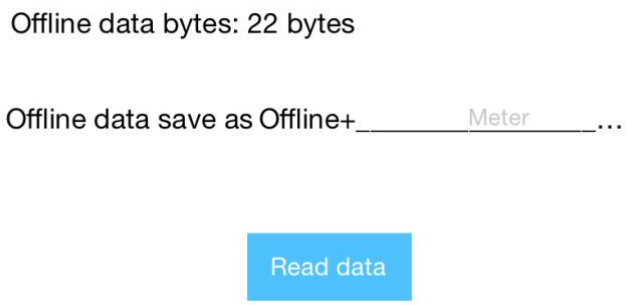


(3) Set "Record interval" and "Records counts" (maximum records count is 10,000). Tap on "**start offline record**". The memory in the multimeter can only store the recording data of one time. When start to record, the earlier offline record stored in the multimeter will be overwritten. After completion of the record, the Bluetooth of the multimeter will be disabled automatically, and the Bluetooth symbol on the multimeter screen will disappear.

Note: If the multimeter is in the process of recording data and not finished yet, the APP can not connect with the multimeter. If you want to interrupt the recording process of the multimeter, press and hold △/ until disappear on the display, or turn the multimeter off.

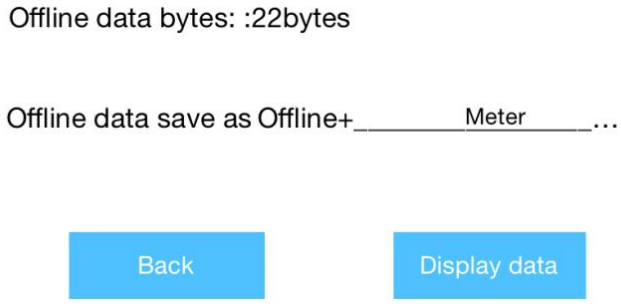
(4) After completion of the record, to read the measuring data, press and hold △/ until appear on the display. Reconnect the iOS device and the multimeter.

(5) In APP device view, tap on the softkey on the right, select "**Record read**" from the pop-up menu.



The file name start with "Offline", the following part can be customized.

(6) Tap on "**Read data**", APP will read the measuring data and save as a CSV file into the iOS device.
After reading, display as below:

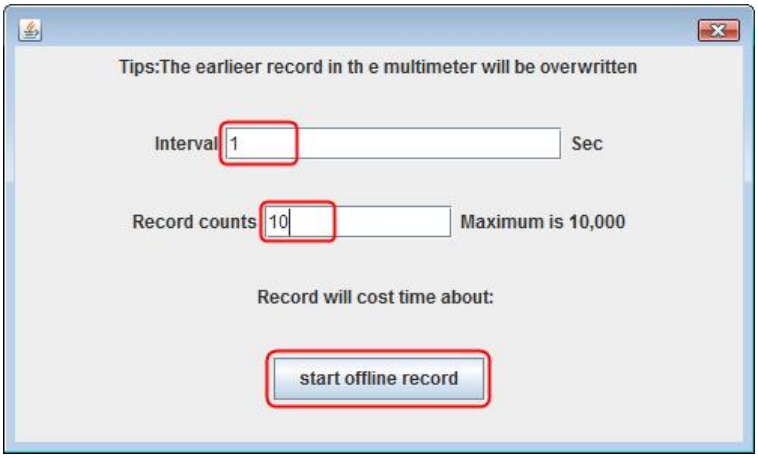


(7) Tap on "**Display data**", the data will be displayed in Data Graph and Table interface.

Offline Record for PC Software

(1) Connect the multimeterBLE software with the multimeter, see "*How to Connect with Computer*" on P14.

(2) On software interface, click the softkey on the right, a dialog will show.



(3) Set "Interval" and "Record counts" (maximum records count is 10,000).

Click "**start offline record**". The memory in the multimeter can only store the recording data of one time. When start to record, the earlier offline record stored in the multimeter will be overwritten. After completion of the record, the Bluetooth of the multimeter will be disabled automatically, and the Bluetooth symbol on the multimeter screen will disappear.

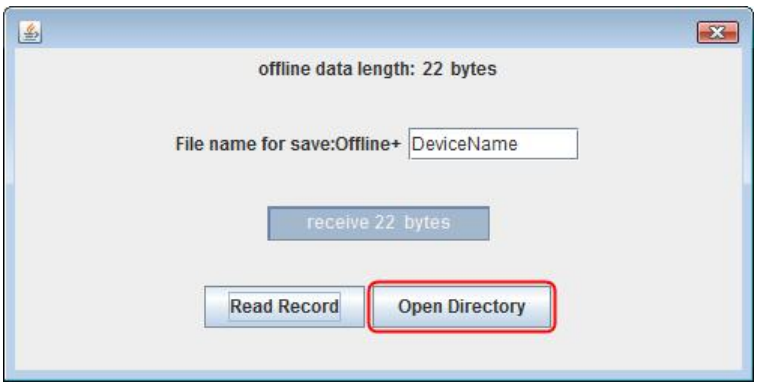
Note: If the multimeter is in the process of recording data and not finished yet, the APP can not connect with the multimeter. If you want to interrupt the recording process of the multimeter, press and hold △/ until disappear on the display, or turn the multimeter off.

(4) After completion of the record, to read the measuring data, press and hold △/ until appear on the display. Reconnect the software and the multimeter.

(5) On software interface, click softkey on the right, a dialog will show. The file name start with "Offline", the following part can be customized.



(6) Click "**Read Record**", the software will read the measuring data and save as a CSV file into computer. After reading, the dialog is as below:



(7) Click "**Open Directory**" to open the directory where the CSV files are saved.

6. Appendix

Appendix A: Enclosure

Standard Accessories:



Test lead



Crocodile clip



Multi-functional test socket
(Not available for B41T(+))



K-type thermocouple



Quick Guide



Soft Bag

Options:



Thin-tipped test lead



Bluetooth USB dongle

Appendix B: General Care and Cleaning

Warning: To avoid electrical shock or damage to the multimeter, ensure that the insides of the casing stay dry at all times.

Cleaning

To clean the instrument exterior, perform the following steps:

Wipe the dust from the instrument surface with a soft cloth. Do not make any scuffing on the screen when clean the LCD. Clean the instrument with a wet soft cloth not dripping water. It is recommended to scrub with soft detergent or fresh water. To avoid damage to the instrument, do not use any corrosive chemical cleaning agent.

Dirt or moisture in the terminals can distort readings. Follow the steps below to clean your multimeter.

1. Turn the multimeter off and remove the test leads.
2. Turn the multimeter over and shake out the dirt in the terminals.
3. Wipe the contacts in each terminal with a clean swab dipped in alcohol.

2021.10 V1.6.5