Hurtigguide for ELIT 836BT
Quick Guide page 15



ELIT 836BT er ett 6000 siffers Sann RMS multimeter med blåtannkommunikasjon(BLE) og internt minne for 10 000 målinger. Instrumentet måler bl.a. AC/DC spenning, strøm, resistans, frekvens og temperatur. Dette kombinert med APP for iOS og Android samt internt minne gir unike datalogger egenskaper. Flere enheter kan kobles til samme telefon for hurtig sammenligning av data. Fra telefonen er det mulig å aktivisere logging til internt minne for siden å komme tilbake å samle inn data, dette kan enkelt deles i CSV format via E-post.

Vennligst last ned og les den komplette manualen før instrumentet tas i bruk.

Sikkerhetskategori:

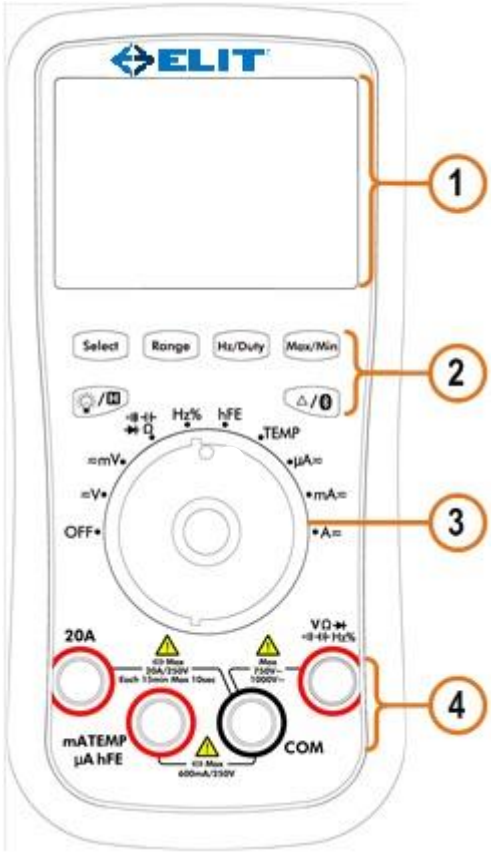
CAT III 1000V

Følgende symboler er å finne I forbindelse med instrumentet og dets bruk:

⎓	DC strøm eller spenning		Sikring
~	AC strøm eller spenning	⚠	Advarsel, se komplett manual
≂	Både AC og DC	CAT II	Sikkerhetskategori II
⏚	Felles terminal(COM) eller jord	CAT III	Sikkerhetskategori III
CE	Ihht gjeldene europeiske krav		
⧈	Utstyret er sikret med dobbelisolering		

1. Multimeterets oppbygning

Frontside



Nr.	Beskrivelse
①	Display med lys
②	Valgknapper
③	Rotasjonsbryter
④	Inngangsterminal

Rotasjonsbryter

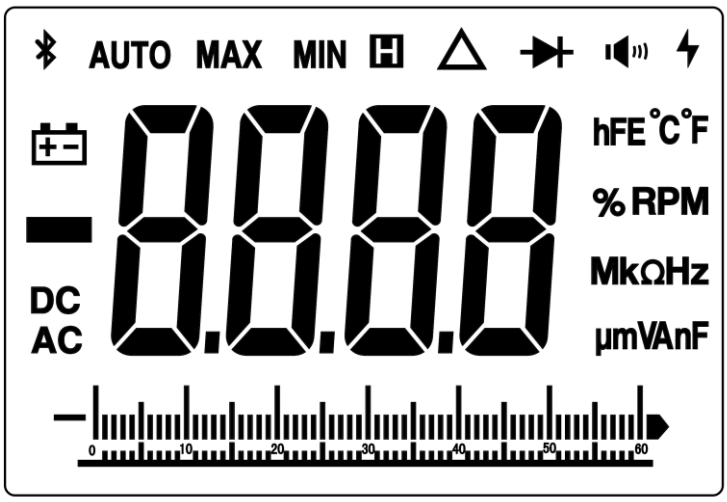
Posisjon	Beskrivelse
AV	Instrumentet er avskrudd
≈V	DC eller AC spenningsmåling, HZ og % som underfunksjon
≈mV	DC eller AC spenningsmåling opp til 600 millivolt

	Gjennomgangstest/summer
	Diodetest
	Kapasitansmåling
	Resistansmåling
Hz%	Måling av signalfrekvens og pulsbredde (maks 40V)
hFE	Transistormåling
TEMP	Temperaturmåling
µA≈	DC eller AC strømmåling opp til 600 mikroampere
mA≈	DC eller AC strømmåling opp til 600 milliampere
A≈	DC eller AC strømmåling opp til 20 ampere

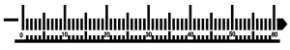
Valgknapper

Knapp	Beskrivelse
	Funksjon til VELG knappen: • Ved spenning og strømmåling: Velg DC eller AC • Velg °Celler °Fpå temperaturområdet • Velg Resistans/Diode/Summer/Kapasitans
	Automatisk eller manuelt områdevalg
	Aktiviserer frekvensmåling på Volt området. Frekvens eller pulsbredde på måling av signalfrekvens
	Fangst av maksimum og minimum verdier
	Lys i display (hold 2 sekunder)
	Hold målt verdi i display
	Relativ måling
	Blåtann aktiviseres (hold 2 sekunder)

Display



Symbol	Beskrivelse
	Blåtann er aktivisert (auto av deaktivert)
AUTO	Automatisk områdevalg
MAX	Maksimumsverdi vises
MIN	Minimumsverdi vises
	Data hold er aktivisert
	Relativ måling er aktivisert
	Diodetest er valgt
	Summer er valgt
	Batterinivå er lavt, skift batteri
DC	DC

AC	AC
	Segmentdisplay ("OL" er forkortelse for OverLoad, det betyr at maksimal måleverdi er overskredet)
hFE °C °F % RPM MkΩHz µmVAnF	Måleenheter
	Analog bargraf

Inngangsterminaler

Rotasjonsbryter	Inngangsterminal		Beskyttelse
≂V	VΩ⊣◁ Hz%	COM	750 VAC/1000 VDC
≂mV	VΩ⊣◁ Hz%	COM	250 VDC eller tilsvarende RMS spenning
•))) ⊣⊢ ⊣◁ Ω	VΩ⊣◁ Hz%	COM	
Hz%	VΩ⊣◁ Hz%	COM	250 VAC eller tilsvarende RMS spenning
hFE	mATEMP µA hFE	COM	1A/250V, Rask sikring
TEMP	mATEMP µA hFE	COM	

μA≈	mATEMP μA hFE	COM	1A/250V, Rask sikring
mA≈	mATEMP μA hFE	COM	
A≈	20A	COM	20A/250V, Rask sikring

2. Multimeterfunksjoner

Data Hold modus

(1) Trykk på  for å fryse verdien under måling, **H** vil vises I display.

(2) Trykk  igjen for å gå tilbake til normal måling.

Merk: Funksjonen er ikke tilgjengelig ved diode og transistormåling.

Fangst av maks og min verdier

I MAX modus vil maksimumsverdier vises
I MIN modus vil minimumsverdier vises

(1) Trykk  for å velge mellom maksimum og minimum

(2) Trykk  i mer enn 2 sekunder for å gå tilbake til normal måling

I denne modusen vil automatisk manuelt områdevalg bli aktivisert. Analog bargraf og auto-av funksjonen vil bli deaktivert.

Merk: Denne modusen er ikke tilgjengelig ved måling av resistans, frekvens, diode eller transistorforsterkning.

Relativ måling

Ved relativ måling vil displayet vise avviket fra en lagret referanse.

(1) Trykk  for å aktivisere relativ måling.

Målt verdi i det øyeblikket  ble trykket blir lagret som referanseverdi.

REL△/avlest verdi = målt verdi - referanseverdi

(2) Trykk knappen igjen for å gå tilbake til normal måling.

I relativmodus vil manuelt områdevalg automatisk bli aktivert. Analog bargraf vil ikke bli vist.

Merk: Denne modusen er ikke tilgjengelig ved måling av frekvens, diode eller transistorforsterkning.

3. Blåtannfunksjon

Hvordan tilknytte en Android enhet:

(1) Installer den gratis tilgjengelig applikasjonene fra www.elit.no

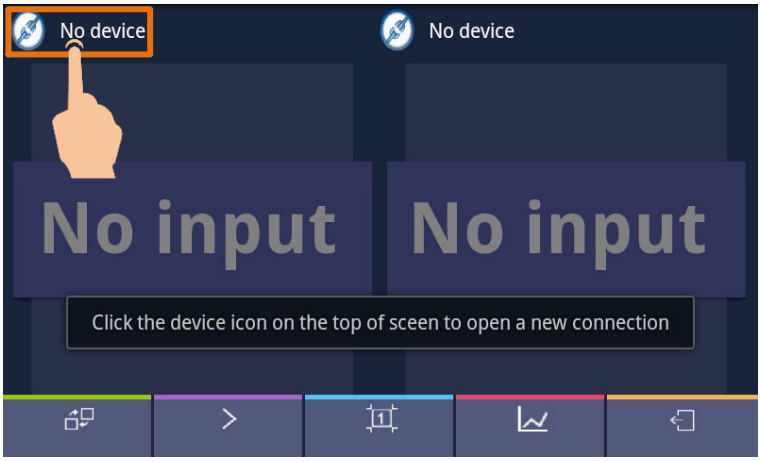
(2) Start "Multimeter" 

applikasjonen

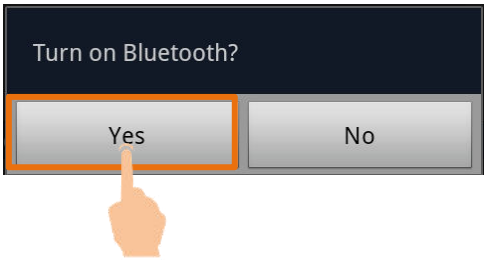
(3) Skru på multimeteret, trykk og hold 

til  vises i display.

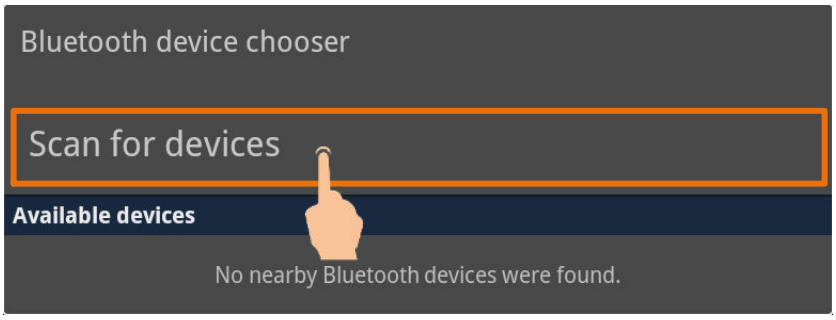
(4) Trykk på symbolet oppe i venstre hjørne på applikasjonen



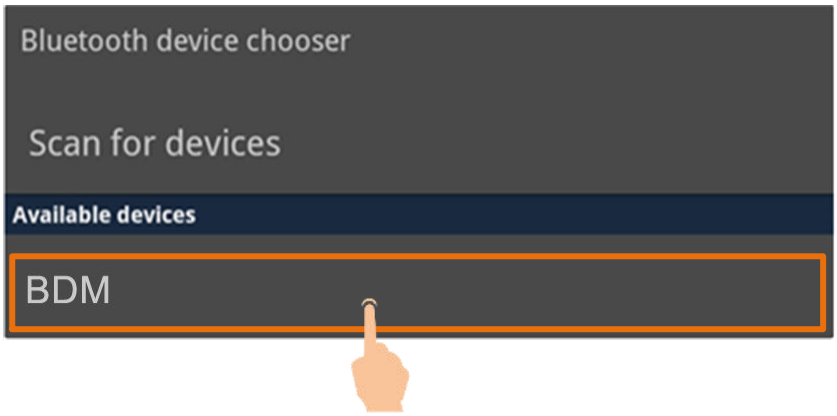
(5) Hvis blåtann ikke er aktivisert på Android enhet vil en valgboks dukke opp, trykk på «yes» for å aktivisere blåtann.



Trykk «scan for devices» for å søke etter enheter



(6) Trykk på ELIT 846BT i enhetslisten (BDM i eksempel).

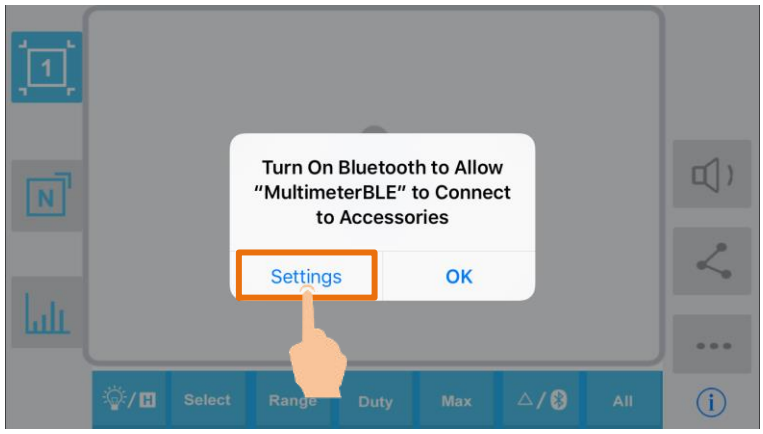


Hvordan tilkoble med en iOS enhet:

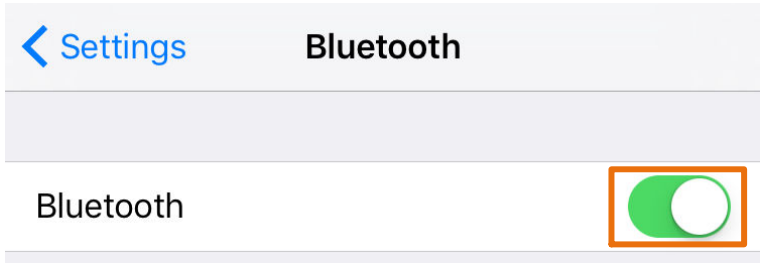
(1) Installer applikasjonen på din iOS enhet.

(2) Start applikasjonen 

.Hvis blåtann ikke er aktivisert en boks vil duke opp og be deg skru den på. Trykk på "Settings".

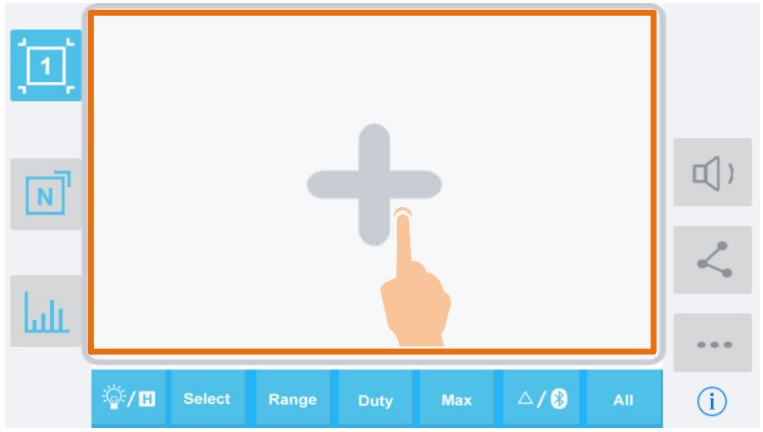


Skru på blåtann og gå tilbake til multimeter applikasjonen.

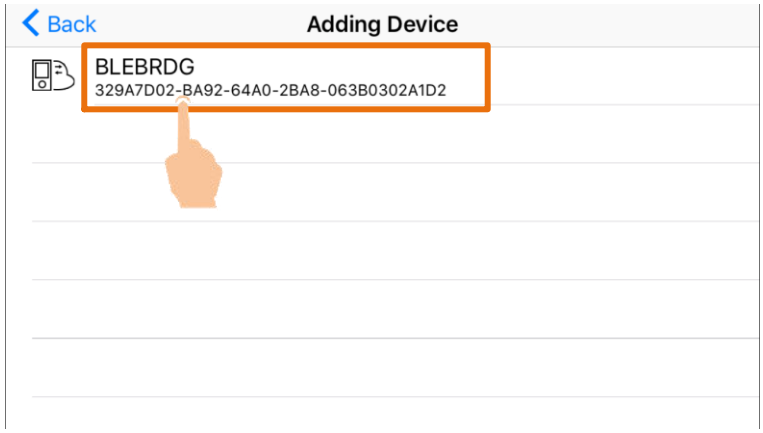


(3) Skru på multimeteret, trykk og hold △/ til vises i displayet.

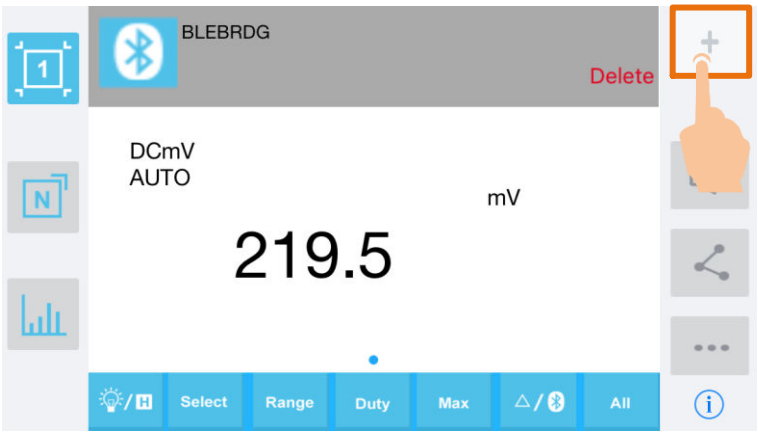
(4) Trykk på sentrum i applikasjonen for å åpne tilkoblingslisten.



(5) Velg ønsket multimeter i listen, ELIT 836BT som standard (BLEBRDG)



(6) Målt verdi vil vises i display hvis tilkobling var vellykket. Det kan legges til flere multimeter ved å trykke på [+] på høyre side i applikasjonen.

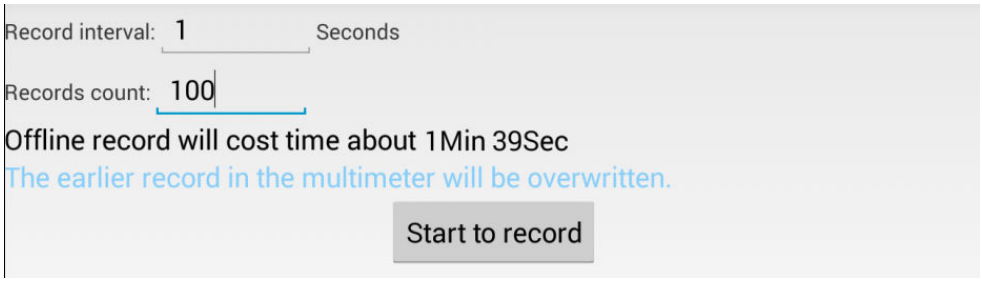


4. Lagring i internt minne

Når du måler med ELIT 836BT du kan brukte Android (iOS under utvikling) applikasjonen til å aktivisere lagring til internt mine på multimeteret, opp til 10 000 lagringer. Når kommandoen for å aktivisere lagring er sendt vil blåtannkommunikasjonen bli brutt for å spare batteri.
Etter fullført logging start blåtannfunksjonene igjen for å hente ut de lagrede verdiene via Android applikasjonen. Data kan hentes ut i CSV format for analysering eller for å videresendes til andre. Dette muliggjør langtids logging uten å ha personell eller Android-enhet tilstede under måling.

Merk: Når [+-] er det ikke sikkert lagring til minne eller blåtannkommunikasjon virker skikkelig, kontroller batteristatus før logging.

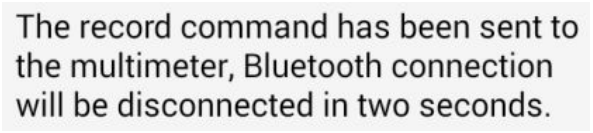
(1) Tilknytt multimeteret til Android enheten som beskrevet tidligere.
(2) I applikasjonens “display modus” (hvor kun måleverdi og valg-knapper vises) trykk [≡] oppe til høyre.
(3) Velg så Record setting I vinduet som dukker opp.



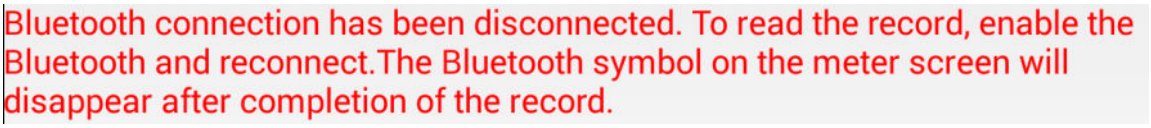
(4) Sett "Record interval"(tid mellom hver lagring) og "Records count" (antall lagringer maks 10,000). Trykk Start to record for å starte loggingen.

(5) Minnet I instrumentet kan kun lagre en serie med malinger. Når en ny logging starts vil tidligere verdier bli slettet!

(6) Etter att loggingen er startet vil applikasjonen vise:



Android-enheten vil koble seg fra multimeteret, etter dette vil multimeteret være i lav-effektmodus(BLE) Følgende vises i applikasjon:

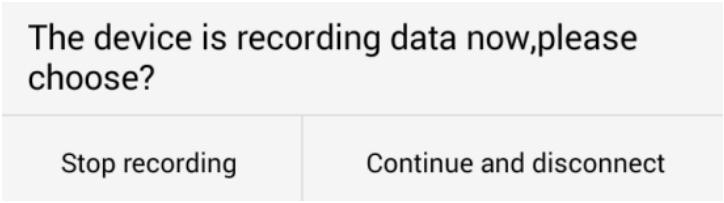


Multimeteret vil logge til minnet ihht valgene, når antall målepunkter er utført vil blåtann skru seg av og multimeteret vil skru seg av når auto-av tiden er utløpt.

(7) For å hente ut data skru på multimetret, hvis det er av, trykk og hold 

til  vises i displayet. Tilknytt Android-enheten.

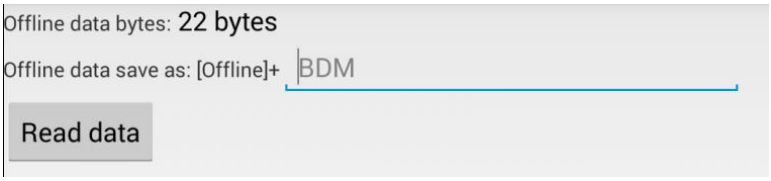
Merk: Hvis multimeteret fortsatt logger vil følgende boks vises:



Velg Stop recording , da vil loggingen stoppe og applikasjon kan hente ut data.

Velg Continue and disconnect , hvis du ønsker å fortsette loggingen.

(8) I applikasjonens “display-modus” trykk  oppe til høyre og velg: Record read i boksen som dukker opp.



Filnavnet starter med "Offline", utover dette kan man legge til etter eget ønske.

(9) Trykk Read data , applikasjonen vil lese ut data I CSV format og lagre til telefonens minne.

Følgende vil da vises:



(10) Trykk Display data, data vil bli vist i "Data Graf" og tabellformat.

(11) Trykk ikonet nede til høyre for å dele filen med andre.

5. Drift og vedlikehold

Standard tilbehør:

Testledninger rød og sort – krokodilleklemmer rød og sort

overgang flatstift til 4mm – temperaturprobe – hurtigguide - bæreveske

Rengjøring

Skru av instrumenter og fjern måleledninger.

Bruk en lett fuktet klut og eventuell mild husholdningssåpe.

Skifte av sikring

Skru av instrumentet og fjern testledninger.

Løft opp støtten bak instrumentet.

Skru løs skruen og fjern batteridekselet.

Plukk løs sikringsholder og erstatt defekt sikring 1A/250V

Monter tilbake i motsatt rekkefølge.

Ved spørsmål, service og kalibrering, kontakt:

ELIT AS

Hellenvegen 9

202 GJERDRUM

www.elit.no

firmapost@elit.no

+47 63938880

Innhold i denne manualen kan endres uten forvarsel.

General Warranty

ELIT 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 ELIT 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, ELIT 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 ELIT for warranty work may be new or reconditioned like new performance. All replaced parts, modules and products become the property of ELIT.

In order to obtain service under this warranty, Customer must notify ELIT 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 ELIT, 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. ELIT shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than ELIT 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-ELIT 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 ELIT's Sales and Service Offices for services or a complete copy of the warranty statement.

For better after-sales service, please visit www.ELIT.no and register the purchased product online.

Excepting the after-sales services provided in this summary or the applicable warranty statements, ELIT 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. ELIT 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.

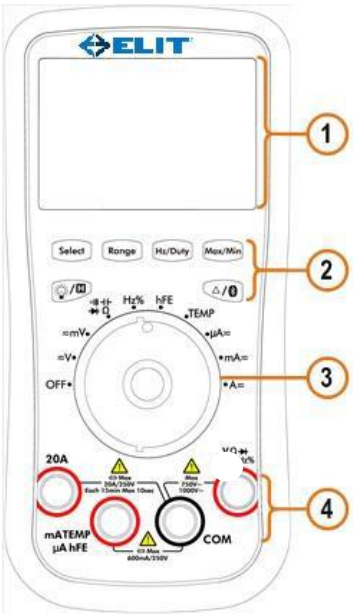
Safety Symbols

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

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
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
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

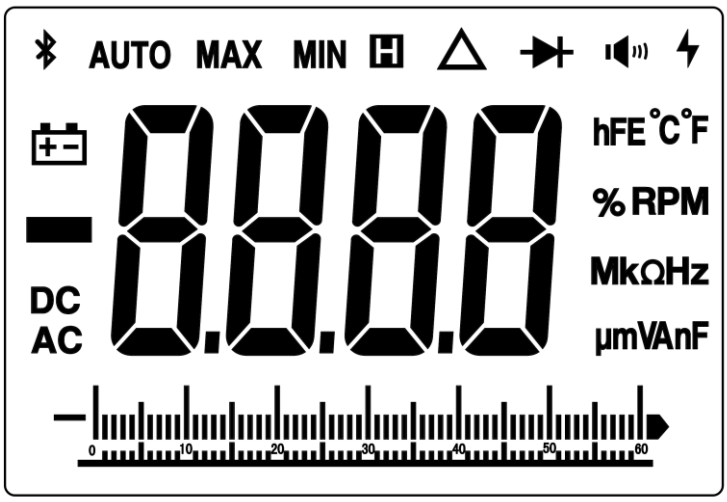
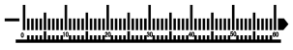


Figure 2-2 Display screen

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.

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

3. Multimeter Features

Data Hold Mode

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

(2) Press  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  to cycle between the MAX mode and MIN mode.

(2) Press  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 will sound “Be…” in short.
- One minute before Auto Power-off the buzzer will sound “BeBeBeBeBe” five times to warn. Before it is shut off, the buzzer will sound a long ”Beee” then shut off.
- The buzzer will sound “BeBe…” continuously to warn when the measured DC voltage is higher than 1000 V, AC voltage is higher than 750 V, or the measured DC/AC mV mode is higher than 600.0 mV.
- The buzzer will sound long when the short circuit resistance is less than about 30Ω during the continuity test.
- When the Bluetooth function is time out, the buzzer will sound “BeBe” two times.

4. Bluetooth Function –only for the model with Bluetooth

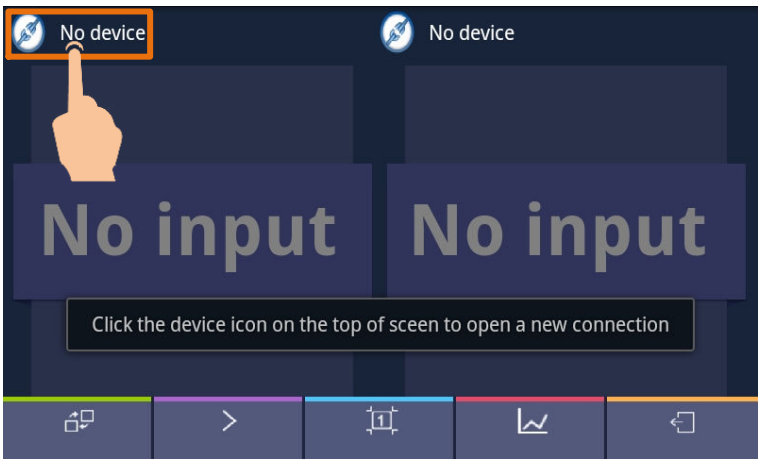
How to Connect with Android Device

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

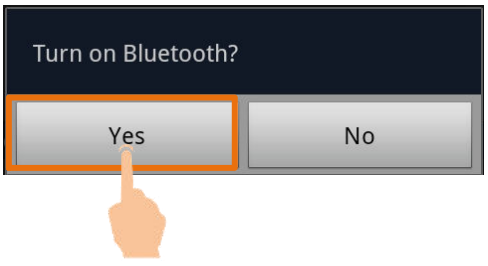
(2) Launch the "Multimeter" application.

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

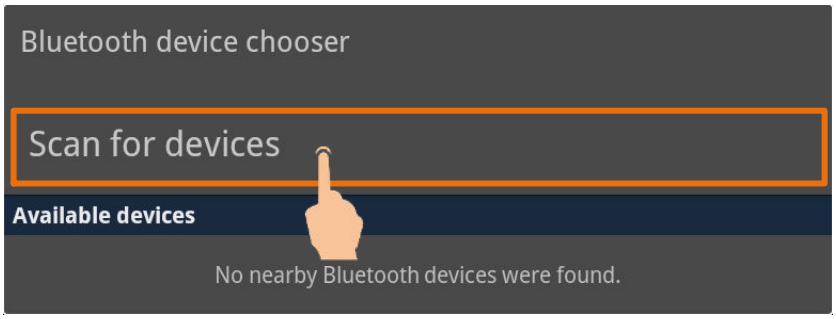
(4) Click the icon on the top left of the screen to launch device connection.



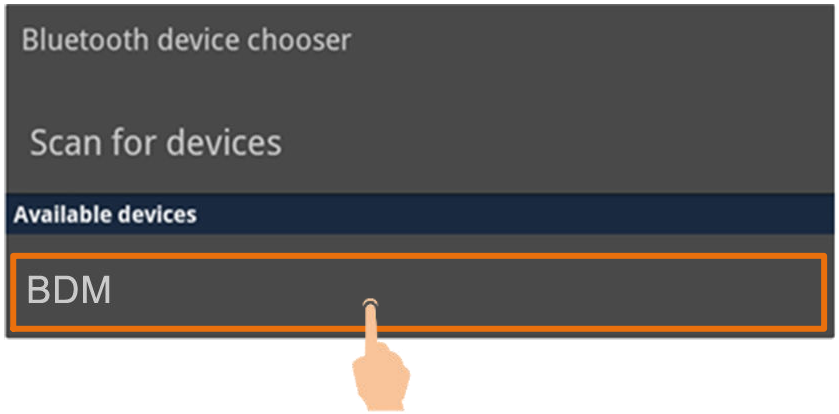
(5) If the Bluetooth function is not activated, a dialog box will ask whether to turn on Bluetooth. Click "Yes".



Click to scan for Bluetooth devices.



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

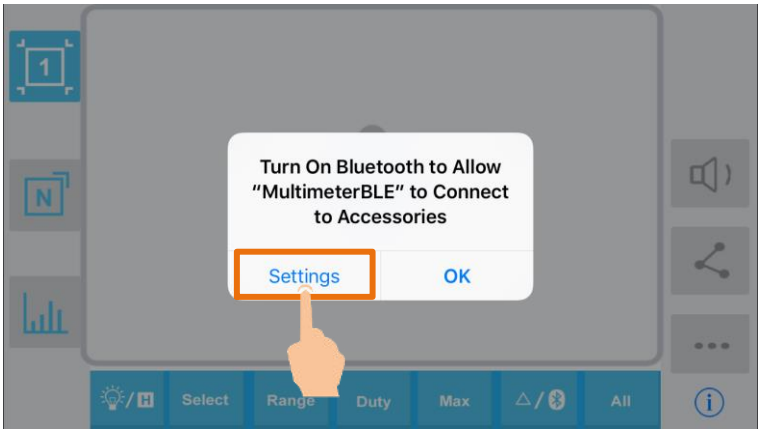


How to Connect with iOS Device

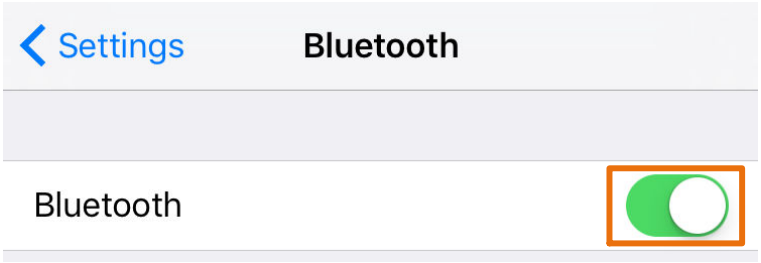
(1) Install the free application software for iOS on your iOS smart device.

(2) Launch the application 

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

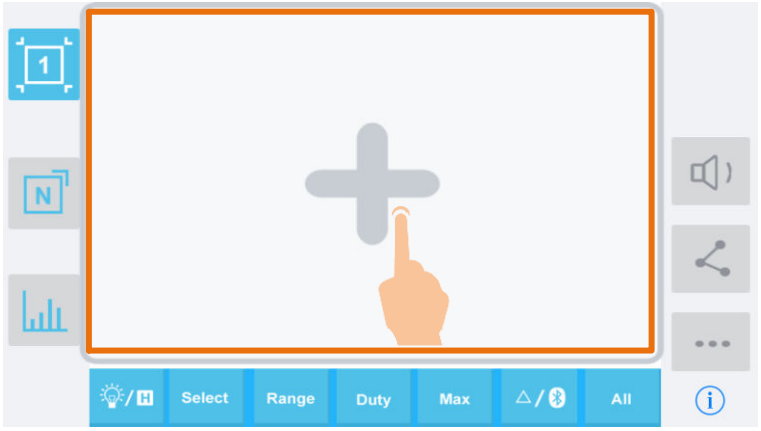


Turn on Bluetooth, and return to the multimeter APP.

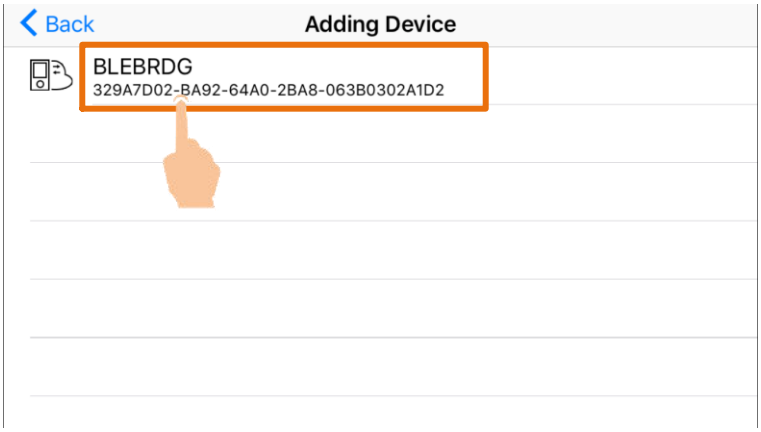


(3) Turn on the multimeter, press and hold △/ until appear on the display.

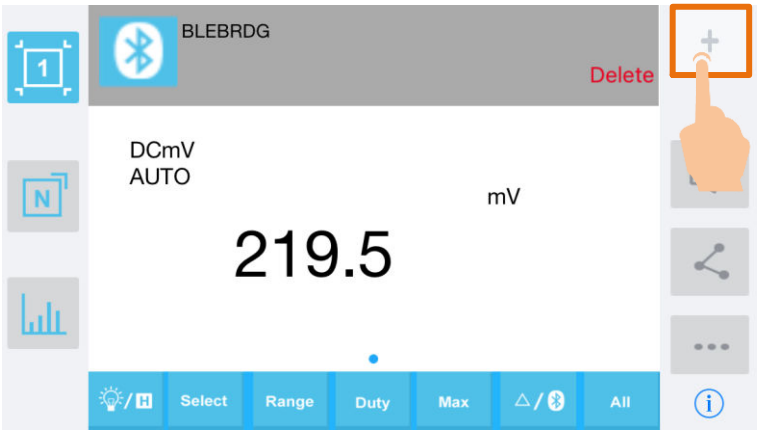
(4) Tap on the center to launch device connection.



(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.



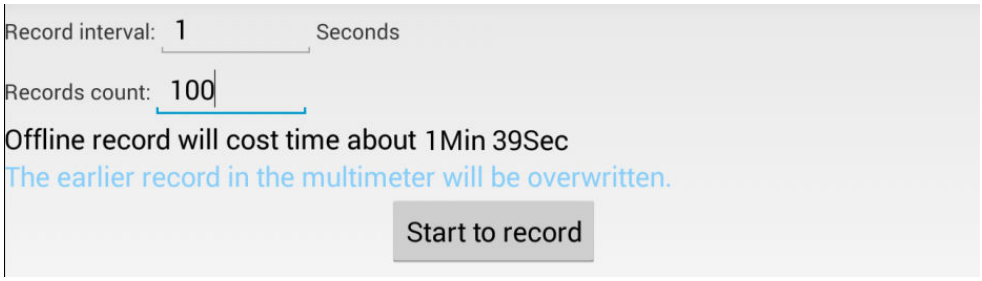
5. Multimeter Offline Record –

When measuring with 836BT you can use Android device APP 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 Android APP to reconnect the multimeter, and then you can read the measuring data into the Android 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.

(1) Connect the Android device with the multimeter, see "*How to Connect with Android Device*" on P10.

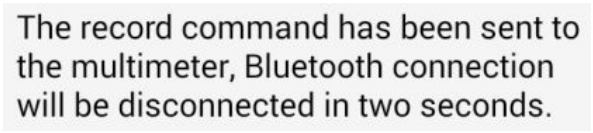
(2) In APP single view, tap on the icon on the top right, select Record setting from the pop-up menu.



(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 record 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:

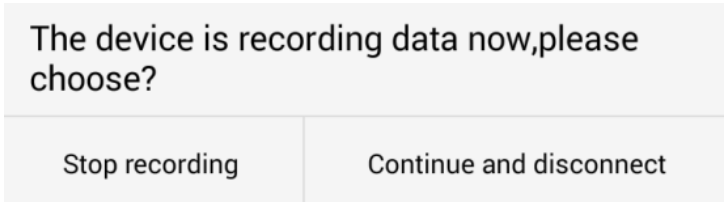
Bluetooth connection has been disconnected. To read the record, enable the Bluetooth and reconnect.The Bluetooth symbol on the meter screen will disappear after completion of the record.

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.

(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.

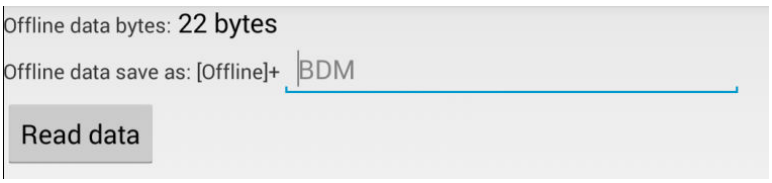
Note: If the multimeter is in the process of recording data and not finished yet, connect the Android device and the multimeter, a dialog box will pop up:



Select Stop recording, the recording process will be interrupted. The Android device will connect with the multimeter to read data.

Select Continue and disconnect, the multimeter will continue recording, the connection will be aborted.

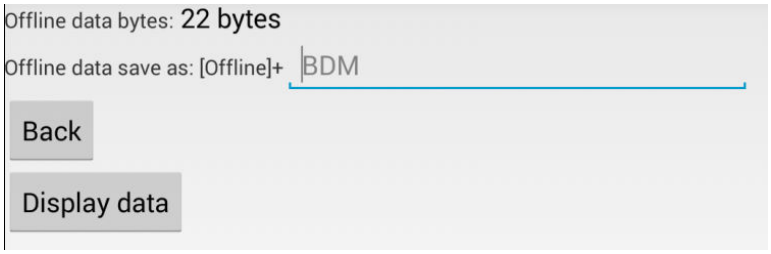
(6) In APP single view, tap on the  icon on the top right, select Record read from the pop-up menu.



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.

6. Appendix

Appendix A: Enclosure

Standard Accessories:



Test lead



Alligator clip



Multi-functional test socket



K-type thermocouple



Quick Guide

Soft Bag

Options:



Thin-tipped test lead

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.

Appendix C: Fuse Replacement

Use the following procedure to replace the fuse.

1. Ensure that the rotary switch is at the OFF position. Remove test leads and any connectors from the input terminals.
2. Lift the tilt stand and loosen the screws with a suitable Phillips screwdriver and remove the battery cover.
3. Pry the fuse cover open using a straight screwdriver, replace the fuse. Use only the fuse of the specified rating (1 A / 250 V).
4. Place the battery cover back in its original position and tighten the screws.

2016.03 V1.2.1