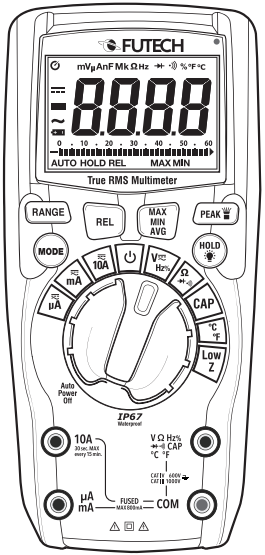
USER MANUAL

400.46 MULTIPOWER 4.6



EN ENGLISH

Manual
in your language?

Check the back cover

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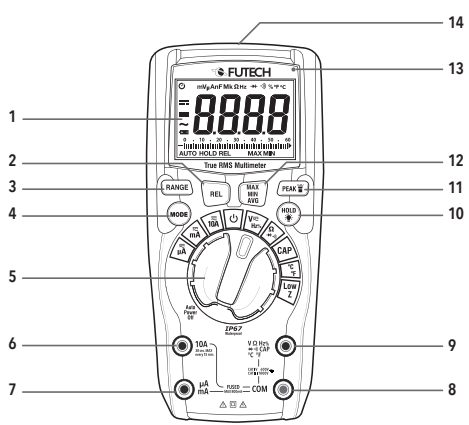
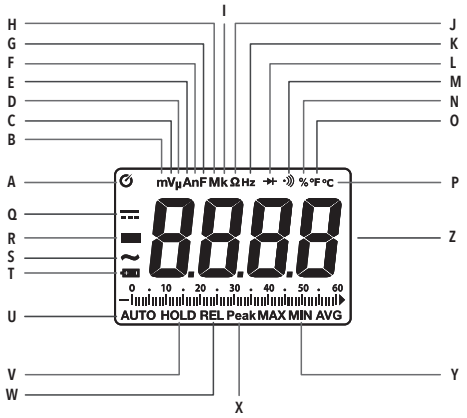
OVERVIEW



FRONT

01 Display
02 Relative button
03 RANGE button
04 MODE button
05 Rotary function switch
06 10A input jack
07 μA, mA input jack
08 COM input jack
09 V/Ω/◁)/⊣⊢/CAP/Hz%/°C/°F input jack
10 Backlight/HOLD button
11 PEAK/Flashlight button
12 MAX/MIN/AVG button
13 Auto backlight sensor
14 Flashlight



■ DISPLAY

A Auto power off
B milli (10-3)
C Volt (tension)
D micro (10-6)
E Ampere (current)
F nano (10-9)
G Farad (capacitance)
H mega (106)
I kilo (103)
J Ohm (resistance)
K Hertz (frequency)
L Diode test
M Continuity
N Percent (duty ratio)
O Degrees Fahrenheit
P Degrees Celcius
Q Direct current
R Minus sign
S Alternating current
T Low battery
U Autoranging
V Display hold
W Relative
X Peak hold
Y Maximum/Minimum/Average
Z Overload (replaces main visual)

SAFETY

Please read the safety instructions provided in the separate booklet provided with the device.

Risk of electrocution. High voltage circuits, both AC and DC, are very dangerous and should be measured with great care.

Turn function switch OFF when meter is not in use. “OL” appears when a measurement exceeds the selected range.

BATTERY

To avoid electric shock, remove test leads from the meter before removing battery/fuse cover.

This appliance should only be used with the supplied 4x AAA alkaline batteries or similar AAA batteries.

FIRST TIME USAGE

Remove all protection foils.

Open the battery compartment and insert the 4x AAA alkaline batteries. Please take care to respect indicated polarities.

USE

▪ RANGE-BUTTON

The autorange mode automatically selects the proper range for the measurement being made and is generally best for most applications.

For measurement situatons requiring that a range be manually selected, perform the following:

- Press the RANGE-button **[03]**. The “AUTO” indicator **[U]** will no longer be shown on the display.
- Press the RANGE-button **[03]** to step through the available ranges until the desired range is selected.
- To exit the Manual Ranging mode, press and hold the RANGE-button **[03]** until the “AUTO” indicator **[U]** reappears.

NOTE

The RANGE-button **[03]** does not work on Frequency Duty Cycle, Capacitance or Temperature.

▪ MODE-BUTTON

Press the MODE-Button **[04]** to select AC or DC, Frequency or Duty Cycle, Resistance, Continuity or Diode test and °C or °F.

▪ REL-BUTTON

The RELATIVE function zeros out the reading on the display and stores it as a reference. Subsequent readings will be displayed as the relative difference between the actual measurement and the stored reference value.

- To activate, press the REL-button **[02]**. The "REL" indicator **[W]** will appear on the display along with the relative reading.
- Press the REL button **[02]** again to return to normal operation.

NOTE

The meter does not AUTO-range when the relative mode is active. The display will show "OL"(Overload) **[Z]** if the diffirence exceeds the range. REL does not work on frequency, Duty Cycle, Temperature or Low Z.

▪ MAX/MIN/AVG-BUTTON

Press the MAX/MIN/AVG-button **[12]** to activate the MAX/MIN mode. The "MAX" **[Y]** indicator will appear on the LCD display. The meter will display and hold the maximum reading and will update when a higher "MAX" occurs.

- Press the MAX/MIN/AVG-button **[12]** again to view the lowest reading. The "MIN" **[Y]** will appear on the LCD display. The meter will display and hold the minimum reading and will update when a lower "MIN" occurs.
- Press the MAX/MIN/AVG-button **[12]** again to view the average reading. The "AVG" **[Y]** symbol will appear on the LCD display. The meter will display the running average and will update

when the average value changes.

· Press and hold the MAX/MIN/AVG-button [12] to end MAX/MIN/AVG and return to normal operations.

NOTE

MAX/MIN does not work on Frequency, Duty Cycle, Capacitance or Temperature.

▪ BACKLIGHT/HOLD-BUTTON

To freeze the reading on the LCD display, press the HOLD-button [10]. The "HOLD" indicator [V] will be displayed while the reading is being held. Press the HOLD-button [10] again to exit HOLD and return to normal operation.

· To turn the backlight in the display on, press and hold the HOLD button until the backlight turns on. To turn the backlight off, press and hold the HOLD buttton until the backlight turns off.

AUTO BACKLIGHT

When the meter is in the darkness, the backlight can be automatically opened, not controlled by the button.

▪ FLASHLIGHT/PEAK-BUTTON

Press the PEAK-button [11] to turn the flashlight on or off. The PEAK function is accessible when measuring AC voltage or Current. It captures and displays the highest positive peak and the highest negative peak of the AC waveform.

· Press and hold the PEAK-button [11] untill "Peak MAX" [X] appears on the display. The meter will display the highest reading and will update the reading when a higher positive peak occurs.

· To view highest negative peak, press and hold the PEAK-button [11] until "Peak MIN" [X] apears on the display. The meter will display and hold the largest negative reading. The meter will update the reading when a larger negative peak occurs.

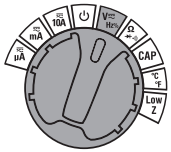
· Press the PEAK-button [11] for approximately one second to switch between Peak MAX and Peak MIN readings.

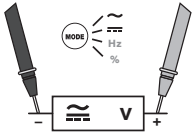
· Press and hold the PEAK-button **[11]** to exit PEAK and return to normal operation.

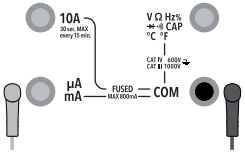
NOTE

The meter does not Autorange when the Peak mode is active. The display will read "OL" (overload) **[Z]** if the range is exceeded. When this occurs, exit Peak and use the RANGE-button **[3]** to select a higher range. Peak does not work on DCV, DCA, Frequency, Duty Cycle, Capacitanceor Low Z.

AC/DV VOLTAGE MEASUREMENT







NOTE

Observe all safety precautions when working on live voltages!

· Set the rotary function switch **[05]** to the V⎓ ~Hz% position.

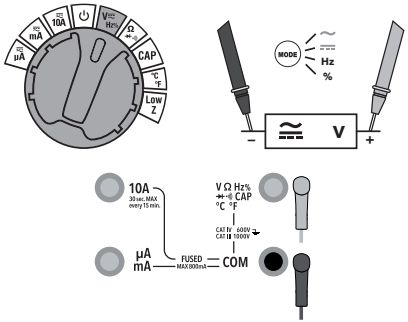
· Press the MODE-button **[04]** to select AC or DC voltage. The AC "~" **[S]** or DC "⎓" **[Q]** symbol will appear on the display.

· Insert the black test lead into the COM input jack **[08]** and the red test lead into the V input jack **[09]**.

· Touch the test lead probes to the circuit under test. If measuring DC voltage, touch the red test lead to the positive side of the circuit and the black test lead to the negative side of the circuit.

· Read the voltage on the display.

▪ FREQUENCY AND % DUTY CYCLE MEASUREMENTS



NOTE

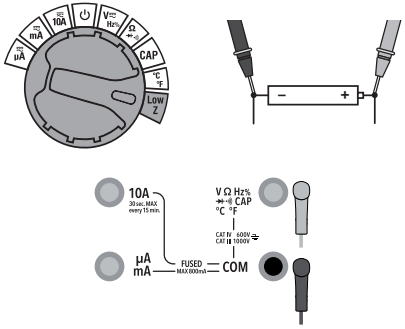
Observe all safety precautions when working on live voltages!

- Set the rotary function switch **[05]** to the V⎓ ~Hz% position.
- To select Frequency, press and hold the MODE-button **[04]** until the "Hz" symbol **[K]** appears on the display. To select % Duty Cycle, press and hold the MODE-button **[04]** again until the "%" **[N]** appears on the display.
- Insert the black test lead into the COM input jack **[08]** and the red test lead into the V input jack **[09]**.
- Touch the test lead probes to the circuit under test.
- Read the frequency or % duty cycle on the display.
- To return to AC voltage, press and hold the MODE-button **[04]** again until the "~" symbol **[S]** appears on the display.

NOTE

The Frequency function can only be accessed when the meter is set to AC voltage.

▪ LOW Z VOLTAGE



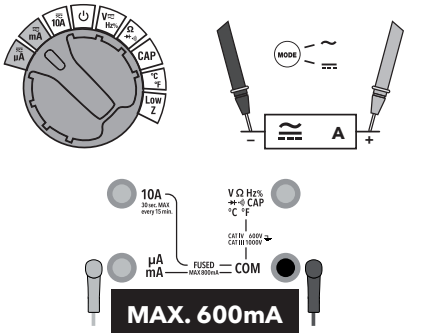
NOTE

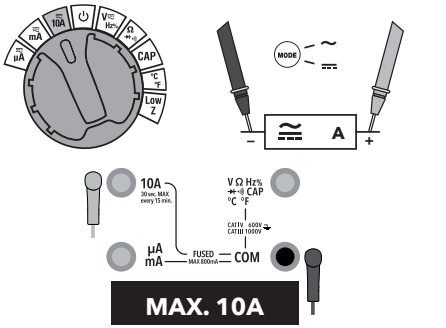
Observe all safety precautions when working on live voltages!
Do not connect to circuits that exceed 600V AC/DC when the meter is set to Low Z!

Low Z is used when there is a suspicion of a "ghost" voltage. Ghost voltages are present when non-powered wires are in close proximity to wires powered by AC voltages. Capacitive coupling between wires make it appear that non-powered wires are in close proximity to a real source of voltage. The low Z setting places a load on the circuit, which dissipates and greatly reduces ghost voltage.

- Set the rotary function switch **[05]** to the Low Z position.
- Press the MODE-button **[04]** to select AC or DC voltage. The AC "~" **[S]** or DC "⎓" **[Q]** symbol will appear on the display.
- Insert the black test lead into the COM input jack **[08]** and the red test lead into the V input jack **[09]**. If measuring DC voltage, touch the red test lead to the positive side of the circuit and the black test lead to the negative side of the circuit.
- Read the voltage on the display.

▪ AC/DC CURRENT MEASUREMENTS



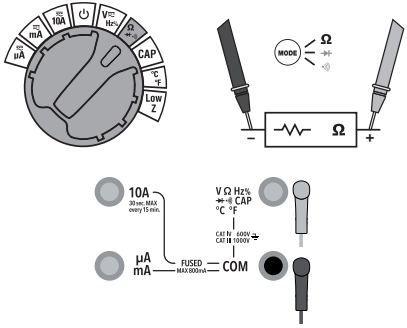


NOTE

Observe all safety precautions when working on live circuits.
Do not measure current on circuits that exceed 1000V. Measurements in the 10A range should be limited to 30 seconds maximum every 15 minutes.

- Insert the black test lead into the negative COM input jack **[08]**
- For current measurements up to 600mA, set the rotary function switch **[05]** to the mA position and insert the red test lead into the µA/mA input jack **[07]**.
- For current measurements up to 6000µA, set the rotary function switch **[05]** to the µA position and insert the red test lead into the µA/mA input jack **[07]**.
- For current measurements up to 10A, set the rotary fucntion switch **[05]** to the 10A position and insert the red test lead into the 10A input jack **[06]**.
- Press the MODE-button **[04]** to select AC or DC current. The AC "~" **[S]** or DC "⎓" **[Ω]** symbol will appear on the display.
- Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
- Touch the test lead probes in series with the circuit being measured. For DC current, touch the red probe to the positive side of the circuit and touch the black probe to the negative side of the circuit.
- Apply power to the circuit.
- Read the current on the display.

RESISTANCE MEASUREMENT

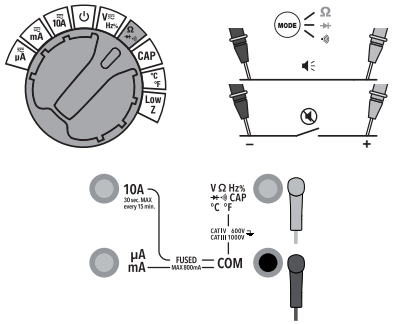


NOTE

Never test resistance on a live circuit.

- Set the rotary function switch **[05]** to the Ω/ position.
- Press the MODE-button **[04]** until the "Ω" symbol **[J]** appears on the display.
- Insert the black test lead into the COM input jack **[08]** and the red test lead into the Ω input jack **[09]**.
- Touch the test lead probes to the component under test. If the component is installed in a circuit, it is best to disconnect one side before testing to eliminatie interferences with other devices.
- Read the resistance on the display.

CONTINUITY TEST

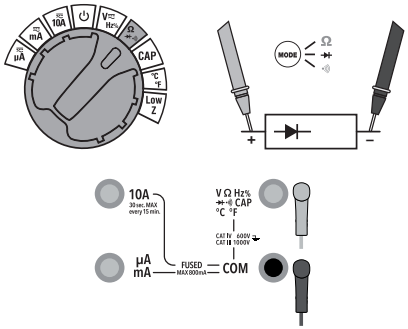


NOTE

Never test continuity on a live circuit.

- Set the rotary function switch **[05]** to the Ω/ position.
- Press the MODE-button [04]until the "" symbol **[M]** appears on the display.
- Insert the black test lead into the COM input jack **[08]** and the red test lead into the Ω input jack **[09]**.
- Touch the test lead probes to the component under test
- A beeper will sound if the resistance is approximately 50Ω or less and the resistance value will be shown on the display.

▪ DIODE TEST

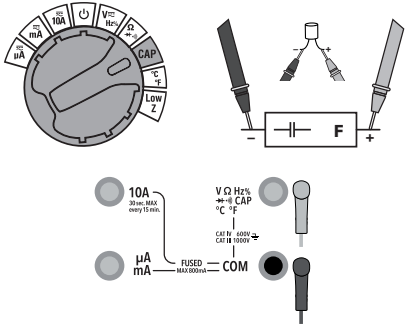


NOTE

Never test diodes on a live circuit.

- Set the rotary function switch **[05]** to the ⇥ position.
- Press the MODE-button [04]until the "•))" symbol **[M]** appears on the display.
- Insert the black test lead into the COM input jack **[08]** and the red test lead into the ⇥ input jack **[09]**.
- Touch the test lead probes to the diodes under test
- Forward voltage will indicate 0.4 to 0.7 on the display. Reverse voltage will indicate "OL" (overload) **[Z]**. Shorted devices will indicate near 0 and an open device will indicate "OL" in both polarities.

▪ CAPACITANCE MEASUREMENTS



NOTE

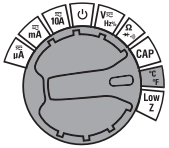
Safely discharge capacitors before taking capacitance measurements.

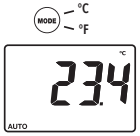
- Set the rotary function switch **[05]** to the CAP position.
- Insert the black test lead into the COM input jack **[08]** and the red test lead into

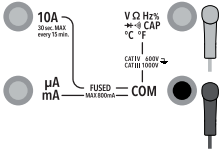
the CAP input jack **[09]**.

- Touch the test lead probes to the capacitor under test
- Read the capacitance value on the display. It may take up to a minute to get a stable reading on large capacitors.

▪ TEMPERATURE MEASUREMENTS





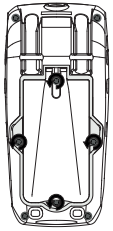


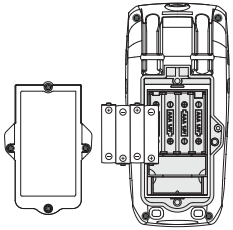
NOTE

Never touch the temperature probe to a live circuit.

- Set the rotary function switch **[05]** to the °F/°C position.
- Press the MODE-button **[04]** to select readings in °C or °F
- Connect the Temperature Probe to the banana Plug adapter. Note the - and + markings on the adapter. Connect the adapter to the meter, making sure the - side goes into the COM input jack **[08]** and the + side goes into the °C °F input jack **[09]**.
- Touch the tip of the Temperature probe to the object being measured. Hold the probe touching the object until the reading stabilizes (about 30 seconds).
- Read the temperature on the display.

▪ BATTERY REPLACEMENT





NOTE

To avoid electric shock, remove the test leads from the meter before removing the battery/ fuse cover.

- Lift up the stand on the back of the device.
- Loosen the screws on the battery/fuse cover.
- Remove battery/fuse cover
- Replace the batteries with four AAA batteries.
- Observe polarity as shown inside battery compartment
- Reinstall the battery/fuse cover and tighten the screws.

NOTE

To avoid electric shock, do not operate the meter untill the battery/fuse cover is securely fastened to the meter.

▪ FUSE REPLACEMENT

NOTE

To avoid electric shock, remove the test leads from the meter before removing the battery/ fuse cover.

- Loosen the screws on the batter/fuse cover.
- Remove the battery/fuse cover
- Gently remove fuse and install new fuse into the holder.
- Always use a UL recognized fuse of the proper size and value: 800mA/1000V (6.3 x 32mm) fast blow for the µA/mA ranges and 10A/1000V (10x38mm) fast blow for the 10A range.
- Reinstall the back cover and tighten the screws.

NOTE

To avoid electric shock, do not operate the meter untill the battery/fuse cover is securely fastened to the meter.

SAFETY CATEGORY RATINGS

Per iec1010 overvoltage installation category

Overvoltage category I

Equipment of overvoltage category I is equipment for connection to circuits in which measures are taken to limit the transient overvoltages to an appropriate low level.

Note: Examples include protected electronic circuits.

Overvoltage category II

Equipment of overvoltage category II is energy-consuming equipment to be supplied from the fixes installation.

Note: Examples include household, office, and laboratory appliances.

Overvoltage category III

Equipment of Overvoltage category III is equipment in fixed installations.

Note: Examples include switches in the fixed installation and some equipment for industrial use with permanent connection to the fixed installation.

Overvoltage category IV

Equipment of overvoltage category IV is for use at the origin of the installation.

Note: Examples include electricity meters and primary over-current protection equipment.

INPUT LIMITATIONS

Voltage AC or DC	1000V AC RMS/1000V DC
Low Z	600V AC RMS/600V DC
µA, mA current or AC/DC	800mA 1000V fast acting fuse
10A Current AC or DC	10A 1000V fast acting fuse (10A for 30 seconds max. every 15 minutes)
Resistance, Continuity, Diode Test, Capacitance, Frequency, Duty Cycle	600V AC RMS/600V DC
Temperature	600V AC RMS/600V DC

CE

DECLARATION OF CONFORMITY

Futech (Belgium) declares under its own responsibility that this device:

- 400.46 Multipower 4.6

is in conformity with the standards

EN 61326-1:2013

EN 61326-2-2:2013

following the provisions of Directive(s)
Electromagnetic Compatibility Directive 2014/30/EU

Lier, Belgium,
March 30, 2023
Patrick Waûters

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