

FLUKE 8060A Operator's Guide

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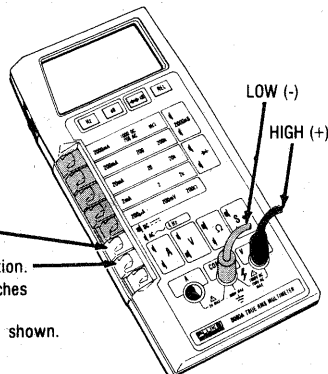
P/N 632679
February 1982



REMOVE INPUT SIGNAL AND TEST LEADS FROM 8060A INPUT TERMINALS BEFORE OPENING THE BATTERY COMPARTMENT OR OTHERWISE ACCESSING OR TOUCHING THE FUSE AND/OR BATTERY. DO NOT OPERATE THE INSTRUMENT UNLESS BATTERY COVER IS IN PLACE AND FULLY CLOSED.

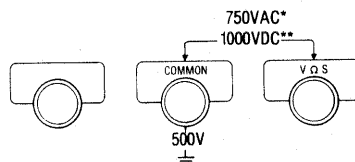
VOLTAGE (V)

1. Select range.
2. Set AC/DC switch out for DC, in for AC.
3. Push switch in to select VOLTAGE function.
4. Ensure all other switches are out.
5. Connect test leads as shown.



WARNING

TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING VOLTAGE:



*Protection on 200 mV range allows 20 sec max for overload above 300V.

**Protection on 200 mV and 2V ranges allow 20 sec max for overload above 300V.

6. Connect the test probes to the circuit being measured and read the measured value on the display.

HIGH IMPEDANCE DC VOLTAGE ($Z_{in} > 1000 M\Omega$)

1. Select the 200 mV or 2V range.
2. Set the AC/DC switch out for DC.
3. Ensure all other switches are out (including both function switches).
4. Follow steps 5 and 6 as listed above.

FREQUENCY (Hz)

1. Push the AC/DC switch in to select AC.
2. Refer to the VOLTAGE function information and comply with the instructions (frequency measurements are made in the AC VOLTAGE function). Select a voltage range so there is adequate input voltage for a stable reading (>10% of range).

3. Press **[Hz]** to enable frequency: Hz or kHz indicates the unit.

Hz

- To cancel frequency press **[Hz]**: (Hz or kHz disappears).

DECIBEL (dB)

1. Refer to the VOLTAGE function information and comply with the instructions (dB measurements may be made with AC or DC VOLTAGE).

2. Press **[dB]**. The dB indicator appears and subsequent measurements are displayed in dBm referenced to a 600Ω impedance.*

dB

- To cancel dB, press **[dB]**.

*The reference impedance may be changed by applying the equivalent 0 dBm voltage for another reference impedance and pressing REL. Refer to the instruction manual for more information.

RELATIVE (REL)

(May be used with V, A, Ω, S, dB, or Hz functions)

1. Take desired measurement (example shows a 3.01 dB measurement has been taken and displayed).

dB
3.01

2. Press **[REL]** to store the next measured value as relative reference (display becomes zero and the REL indicator is displayed). The stored reference is subtracted from subsequent measurements.

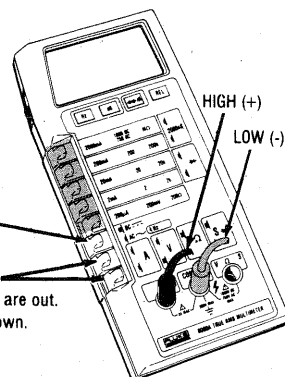
dB REL
0.00

- To cancel the relative reference, again press **[REL]**. The REL indicator disappears and the original measurement value is reestablished.

dB
3.01

- Only one relative reference may be stored at a time. Storage of a reference removes any references previously stored.

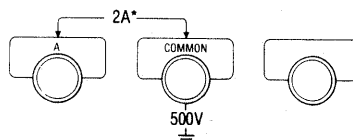
CURRENT (A)



1. Select range.
2. Set AC/DC switch out for DC, in for AC.
3. Push both switches AT THE SAME TIME to select CURRENT function.
4. Ensure all other switches are out.
5. Connect test leads as shown.

WARNING

TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING CURRENT:



*Protected by 2A/250V fuse and 3A/600V backup fuse.

6. Connect the test probes to the circuit being measured and read the measured value on the display.

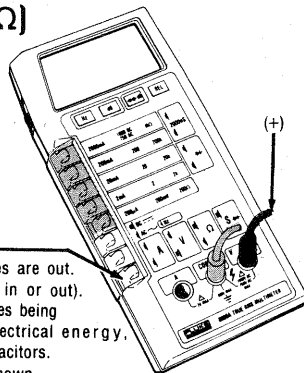
OVERRANGE DISPLAY

OL



If the value of the parameter being measured exceeds the range selected, OL appears as an overrange indicator. Select the next higher range until an in-range reading is displayed.

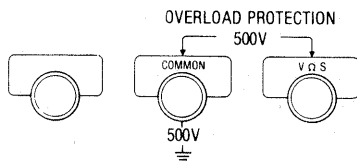
RESISTANCE (Ω)



1. Select range.*
2. Push switch in for RESISTANCE function.
3. Ensure all other switches are out. (AC/DC switch can be in or out).
4. Ensure that the devices being measured contain no electrical energy, including charged capacitors.
5. Connect test leads as shown.

WARNING

TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING RESISTANCE:



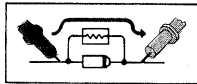
6. Connect the test leads to the circuit being measured and read the measured value on the display.

*To select autoranging $k\Omega$, push in both the $M\Omega$ and 200Ω switches AT THE SAME TIME.

IN-CIRCUIT RESISTANCE MEASUREMENTS

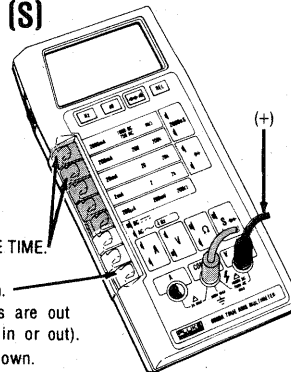
The 200Ω , $2k\Omega$ and $200k\Omega$ ranges are low power ohms ranges that can be used to measure resistance values connected in parallel with silicon junctions (autoranging $M\Omega$ and autoranging $k\Omega$ will turn on silicon junctions).

On these ranges the test voltage is less than the voltage required to turn on a normal silicon junction.



CONDUCTANCE (S)

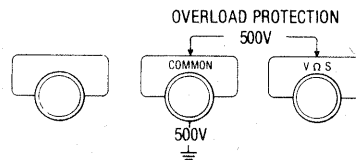
(Use for measuring resistance above $300M\Omega$)



1. Push in the top two range switches marked $2000nS$ AT THE SAME TIME.
2. Push switch in for CONDUCTANCE function.
3. Ensure all other switches are out (AC/DC switch can be in or out).
4. Connect test leads as shown.

WARNING

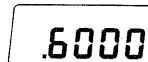
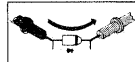
TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING CONDUCTANCE:



5. Connect the test leads to the circuit being measured and read the measured value on the display. Value is displayed in nanosiemens (nanosiemens= nS , $1nS=10^{-9}S$, $S=1/\Omega$). Reciprocate displayed value to obtain equivalent resistance.

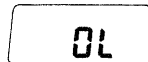
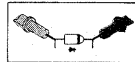
DIODE TEST (\rightarrow)

1. Push switch in for DIODE TEST (same switch as for RESISTANCE function).
2. Push in the two range switches marked with the diode symbol \rightarrow AT THE SAME TIME.
3. Connect the test probes as shown above for the RESISTANCE function.
4. Connect the test probes to forward bias the diode as shown below:



Typical reading for forward biased silicon diode.

Reverse the test probes to back bias the diode as shown below:



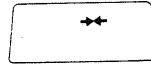
Overrange will be displayed provided parallel resistors are $>2k\Omega$.

- Displayed value is the forward voltage (2V range).

CONTINUITY (→← |||)

1. Select the RESISTANCE function and desired range (detection threshold is <10% of range for fixed ranges, <20 kΩ for MΩ range, <20Ω for autoranging kΩ).

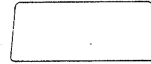
2. If visual continuity indication is desired, press :



If audible continuity indication is desired, press again:



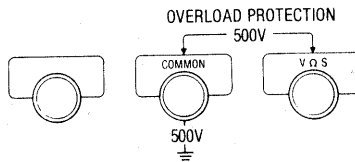
(Press again to disable both):



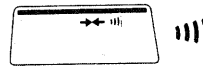
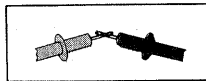
3. Connect the test leads as shown for the RESISTANCE function.
4. Ensure that the device being measured contains no electrical energy, including charged capacitors.

WARNING

TO AVOID ELECTRICAL SHOCK AND/OR INSTRUMENT DAMAGE, OBSERVE THE FOLLOWING MAXIMUM LIMITS WHEN MEASURING CONTINUITY:



5. Connect the test probes to the circuit being measured. Continuity between the test leads will cause the bar to appear on the display and the audible tone to sound (if enabled).



FUSE CHECK (The A input contains two fuses.)

1. Select the RESISTANCE function and the 2 kΩ range.
2. Touch the red test probe to the A input jack so that the VΩS input and the A input are shorted together.
 - If the display reads $.1000 \pm .0100$ kΩ, both fuses are good. If the display reads OL, one or both need replacement.

BATTERY/FUSE TYPES

MAIN FUSE: 2A/250V Type AGX2 (inside battery compartment).
 BACKUP FUSE: 3A/600V Type BBS-3 (inside instrument case).

Caution

Replacement of backup fuse by qualified personnel only. See instruction manual.

BATTERY: 9V carbon-zinc or alkaline NEDA Type #1604.

- BT appears on display when approximately 20% of battery life remains.