FLUKE®

12B/18
MultiMeter
Instruction Sheet

⚠ Read First: Safety Information

To ensure that the meter is used safely, follow these instructions:

- Do not use the meter if the meter or test leads appear damaged, or if you suspect that the meter is not operating properly.
- Disconnect the live test lead before disconnecting the common test lead.
- When using the probes, keep your fingers behind the finger guards on the probes.
- Do not use the Model 12B's Automatic Selection mode to measure voltages in circuits that could be damaged by this mode's low input impedance (≅2 kΩ).
- Turn off power to the circuit under test before cutting, desoldering, or breaking the circuit. Small amounts of current can be dangerous.
- Do not apply more than 600V rms between a meter terminal and earth ground.
- Use caution when working with voltages above 60V dc or 30V ac rms. Such voltages pose a shock hazard.

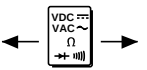
⚠Warning

To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator (⊟+) appears.

PN 602000 June 1996 Rev.3, 1/99

Symbols

Press button.



Press button to switch between modes.

Double insulation.

Not applicable to identified model.

Manual ranging mode.

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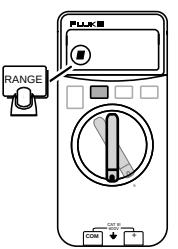
Automatic Range Selection

The meter defaults to autoranging when you turn it on.

Manual Range Selection



To return to autoranging, press RANGE for 2 seconds, or change the measurement mode.

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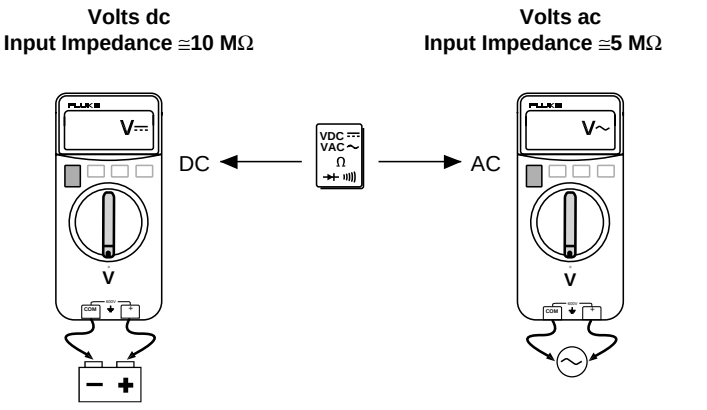
Standby Mode

If the meter is ON but inactive and not connected to voltage for more than 45 minutes, the display goes blank to preserve battery life. To resume operation, press any button or turn the rotary switch.

DC and AC Voltage

For Model 12B, refer also to Automatic Selection.



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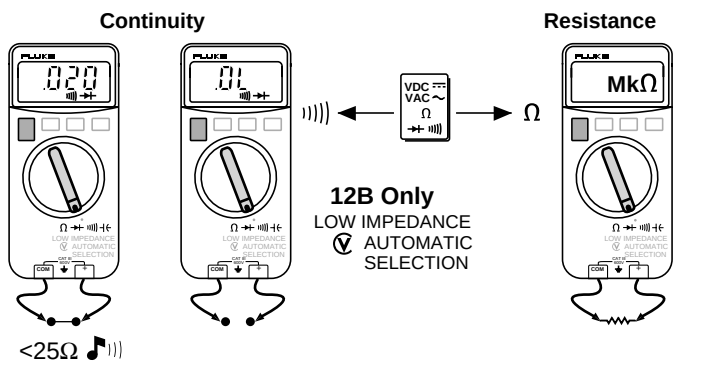
Continuity and Resistance

For Model 12B, refer also to Automatic Selection.



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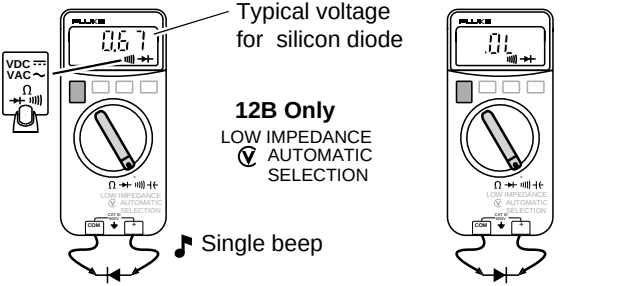
Detects shorts and opens ≥250 µS.

Diode Test

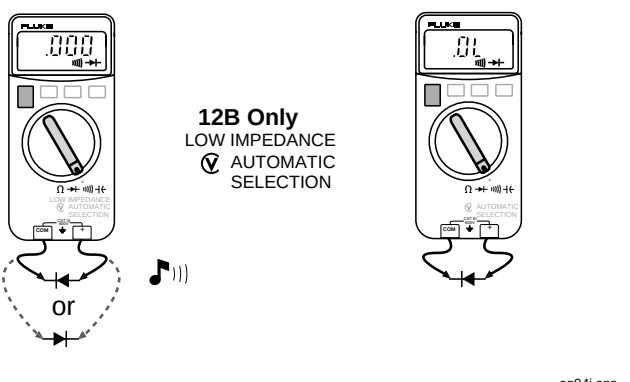
Good Diode



Forward Bias

Reverse Bias

Bad Diode



Shorted

Open

LIMITED WARRANTY & LIMITATION OF LIABILITY

Each Fluke product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is two years for Model 12B and three years for Model 18 and begins on the date of shipment. Parts, product repairs and services are warranted for 90 days. This warranty extends only to the original buyer or end-user customer of a Fluke authorized reseller, and does not apply to fuses, disposable batteries or to any product which, in Fluke's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling. Fluke warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke does not warrant that software will be error free or operate without interruption.

Fluke authorized resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Fluke. Warranty support is available if product is purchased through a Fluke authorized sales outlet or Buyer has paid the applicable international price. Fluke reserves the right to invoice Buyer for importation costs of repair/replacement parts when product purchased in one country is submitted for repair in another country.

Fluke's warranty obligation is limited, at Fluke's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke authorized service center within the warranty period.

To obtain warranty service, contact your nearest Fluke authorized service center or send the product, with a description of the difficulty, postage and insurance prepaid (FOB Destination), to the nearest Fluke authorized service center. Fluke assumes no risk for damage in transit. Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB Destination). If Fluke determines that the failure was caused by misuse, alteration, accident or abnormal condition of operation or handling, Fluke will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer transportation prepaid and the Buyer will be billed for the repair and return transportation charges (FOB Shipping Point).

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. FLUKE SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, WHETHER ARISING FROM BREACH OF WARRANTY OR BASED ON CONTRACT, TORT, RELIANCE OR ANY OTHER THEORY.

Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this Warranty is held invalid or unenforceable by a court of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

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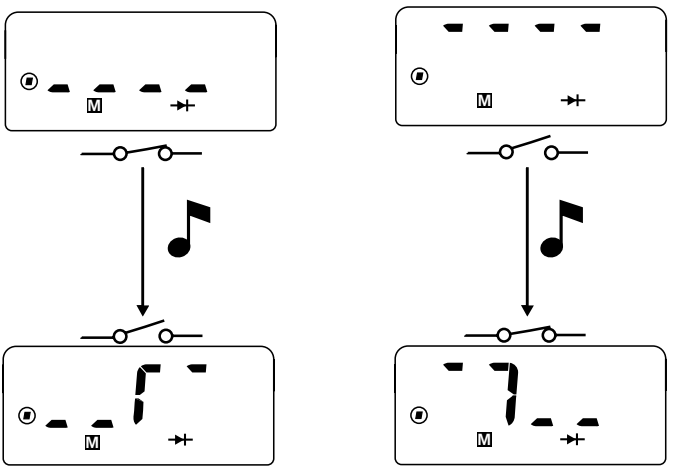
Continuity Capture™
(Open/Short Capture on Model 18)

To set up the meter to capture intermittent shorts and opens, turn the switch to Ω, connect the leads to the circuit; then press [MIN MAX].



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Captures transitions longer than 250 µS.

Transitions after the first transition cause the meter to beep, but the display does not change.

To reset the display to the current condition, press [MIN MAX].

To exit, press [MIN MAX] for 2 seconds, or change the measurement mode.

Disabling the Beeper

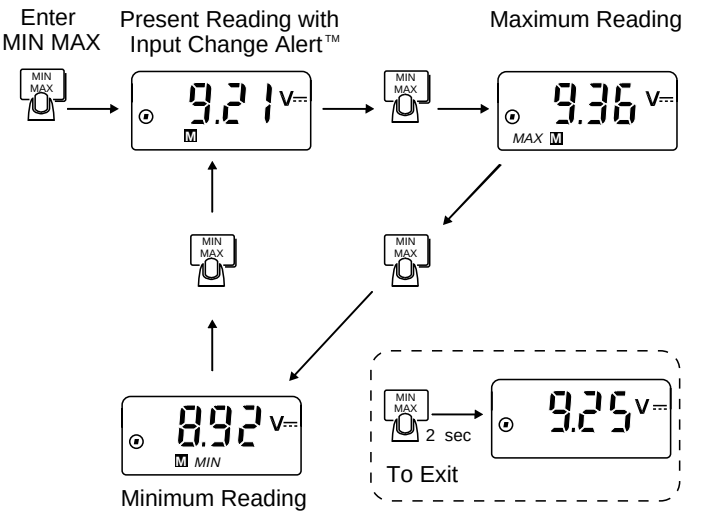
To disable the beeper for all modes, hold down [RANGE] for 2 seconds while turning the meter on.

MIN MAX (μF)

(Records the lowest and highest measurements)

Automatic Selection (12B only), autoranging, and standby are disabled. Put the meter in the proper range before entering MIN MAX.

When the reading changes more than about 50 digits, the meter gives a short beep. When a new minimum or maximum is recorded, the meter gives a long beep.



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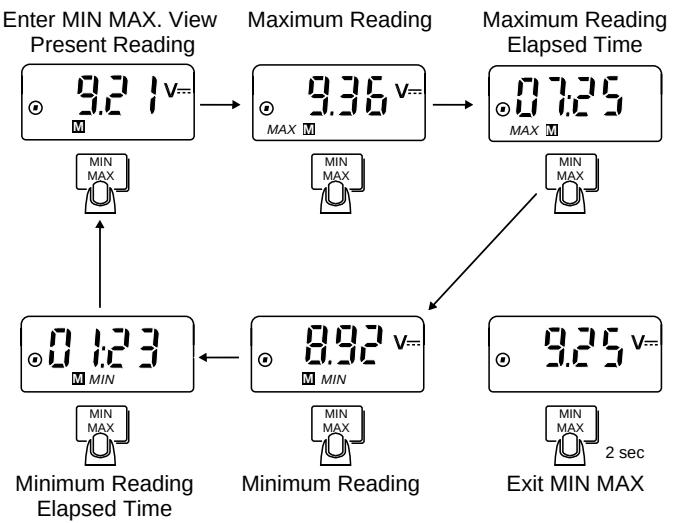
MIN MAX with Elapsed Time

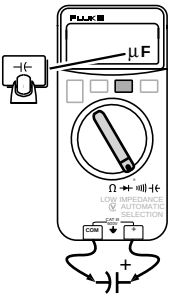
Records the hours and minutes between when MIN MAX was entered and the last high and low was recorded. OL is displayed for times longer than 99:59.

To enable the MIN MAX timer, hold down MIN MAX while turning the rotary switch from OFF to either measurement mode.



Capacitance

Turn off circuit power; then disconnect and discharge the capacitor before measuring capacitance.



If the capacitor requires more discharging, **diSC** is displayed while the capacitor discharges**.**

12B Only

LOW IMPEDANCE
AUTOMATIC
SELECTION

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Note correct probe polarity for polarized capacitors.

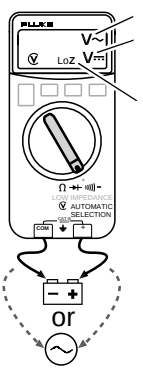
Automatic Selection (12B only)

If a dc or ac voltage greater than about 4.5V is present across the inputs when you are attempting to measure continuity or resistance, the meter switches to dc or ac voltage mode.

⚠ Warning

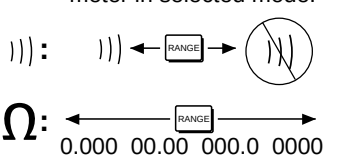
Repetitive transients on a dc bus will cause *CHEK* to select ac volts, even though a hazardous dc voltage may be present. To avoid a misleading display and possible electric shock, manually select the proper volts function for measurements on these circuits.

When dc or ac voltage is automatically selected, the meter has low input impedance (≅2 kΩ). This low impedance, which places a moderate load on the circuit under test, is appropriate only for measuring power supply voltages under load. Do not use Automatic Selection to measure voltage in circuits that could be damaged by a 2 kΩ load.



Locked-Mode Functions

RANGE Disables Automatic Selection and locks meter in selected mode.



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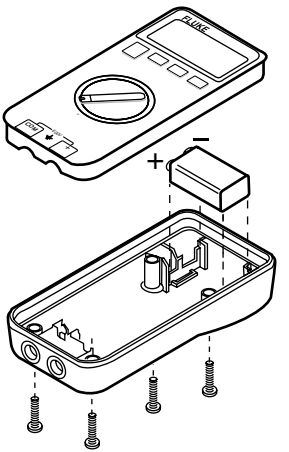
Maintenance

Clean the case with a damp cloth and detergent. Do not use abrasives or solvents.

Battery Replacement

Remove the test leads before disassembling the case.



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Test Lead Replacement 

Replace the test leads with Fluke TL-75 PN 855705 double-insulated leads.

Service and Parts

This meter should be serviced only by a qualified service technician. To contact Fluke, call one of the following telephone numbers:

USA and Canada: 1-888-99-FLUKE (1-888-993-5853)
Europe: +31 402-678-200
Japan: +81-3-3434-0181
Singapore: +65-738-5655
Anywhere in the world: +1-425-356-5500

Or, visit Fluke's Web site at www.fluke.com.

Specifications

Maximum Voltage Between any Terminal and Earth Ground	600V rms
Display	3 3/4-digits, 4000 counts, updates 4/sec
Operating Temperature	-10°C to 50°C (14°F to 122°F)
Storage Temperature	-30°C to 60°C (-22°F to 140°F) indefinitely (to -40°C (-40°F) for 100 hrs)
Temperature Coefficient	0.1 x (specified accuracy)/°C (<18°C or >28°C; <64°F or > 82°F)
Relative Humidity	0% to 90% (-10°C to 35°C; 14°F to 95°F) 0% to 70% (35°C to 50°C; 95°F to 122°F)
Battery Type	9V, NEDA 1604 or IEC 6F22
Battey Life	650 continuous hours with alkaline 450 continuous hours with carbon-zinc
Shock, Vibration	1 meter shock. Per MIL-T-28800D for a Class 3 instrument
Size (HxWxL)	3.46 cm x 7.05 cm x 14.23 cm (1.35 in x 2.75 in x 5.55 in)
Weight	286g (10 oz)
Safety	Designed to Protection Class II requirement of UL3111, ANSI/ISA-S82, CSA C22.2 No 231, and VDE 0411, and IEC 1010 overvoltage Category III (CAT III).
EMI Regulations	Complies with FCC Part 15,Class B, and VDE 0871B.
TÜV PRODUCT SERVICE GS geprüfte Sicherheit	Trademark of TÜV Product Services. Complies with EN 61010-1: 1993.

Accuracy is specified for a period of one year after calibration, at 18°C to 28°C (64°F to 82°F) with relative humidity to 90%. AC conversions are ac-coupled, average responding, and calibrated to the rms value of a sine wave input. Accuracy specifications are given as follows:

±([% of reading] + [number of least significant digits])

Function	Range	Resolution	Accuracy (50 to 400 hz)
V~	4000 mV[1]	1 mV	±(1.9% + 3)
	4.000V	0.001V	±(1.9% + 3)
	40.00V	00.01V	±(1.9% + 3)
	400.00V	000.1V	±(1.9% + 3)
	0600V	0001V	±(1.9% + 3)
V⎓	4000 mV[1]	1 mV	±(0.9% + 2)
	4.000V	0.001V	±(0.9% + 2)
	40.00V	00.01V	±(0.9% + 1)
	400.00V	000.1V	±(0.9% + 1)
	0600V	0001V	±(0.9% + 1)
Ω	400.0Ω	0.1Ω	±(0.9% + 2)
	4.000 kΩ	0.001 kΩ	±(0.9% + 1)
	40.00 kΩ	0.01 kΩ	±(0.9% + 1)
	400.0 kΩ	0.1 kΩ	±(0.9% + 1)
	4.000 MΩ	0.001 MΩ	±(0.9% + 1)
	40.00 MΩ	0.01 MΩ	±(1.5% + 3)
⊣⊢	1.000 µF	0.001 µF	±(1.9% + 2)
	10.00 µF	0.01 µF	±(1.9% + 2)
	100.0 µF	0.1 µF	±(1.9% + 2)
	10000 µF	1 µF	≤1000 µF ±(1.9% + 2) >1000 µF ±(10% + 90) typical
))|—▶|⊢	2.000V	0.001V	±(0.9% + 2)[2]

1. The 4000 mV range can be entered only in manual range mode. Use the 4000 mV range with accessories.

2. The beeper is guaranteed to come on at <25Ω and turn off at >250Ω. The meter detects opens or shorts ≥250 µs.

Function	Overload Protection[1]	Input Impedance (Nominal)		
V~	600V rms	>5 MΩ <100 pF Automatic Selection and LoZ = >2 kΩ <200 pF (ac coupled)[2]		
V⎓	600V rms	>10MΩ <100 pF Automatic Selection and LoZ = >2 kΩ <200 pF[2]		
		Common Mode Rejection Ratio (1 kΩ Unbalanced)	**Normal Mode Rejection**	
V~	600V rms	>60 dB at dc 50 or 60 Hz		
V⎓	600V rms	>100 dB at dc, 50 or 60 Hz	>50 dB at 50 Hz or 60 Hz	
		Open Circuit Test Voltage	**Full Scale Voltage** **To 4.0 MΩ**	**40 MΩ**
Ω	600V rms	<1.5V dc	<450 mV dc	<1.5V dc
→|←	600V rms	2.4-3.0V dc	2.400V dc	
		Short Circuit Current		
Ω	600V rms	<500 µA		
→|←	600V rms	0.95 mA (typical)		

1. 3×10^6 V Hz maximum

2. ≅2 kΩ input impedance up to 50V. Impedance increases with input voltage to >300 kΩ at 600V.

MIN MAX Recording Accuracy and Response Time

Specified accuracy of the measurement function ±12 digits for changes >200 ms in duration (±40 digits in ac). Typical 100 ms response to 80%.

MIN MAX Recording with Elapsed Time

Elapsed Time	Resolution	Accuracy
0 to 100 hours (99:59)	1 minute	0.3% typical