ABN 43 064 478 842

231 osborne avenue clayton south, vic 3169
PO box 1548, clayton south, vic 3169
t 03 9265 7400 f 03 9558 0875
freecall 1800 680 680
www.tmgtestequipment.com.au

Test & Measurement

- sales
- rentals
- calibration
- repair
- disposal

Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

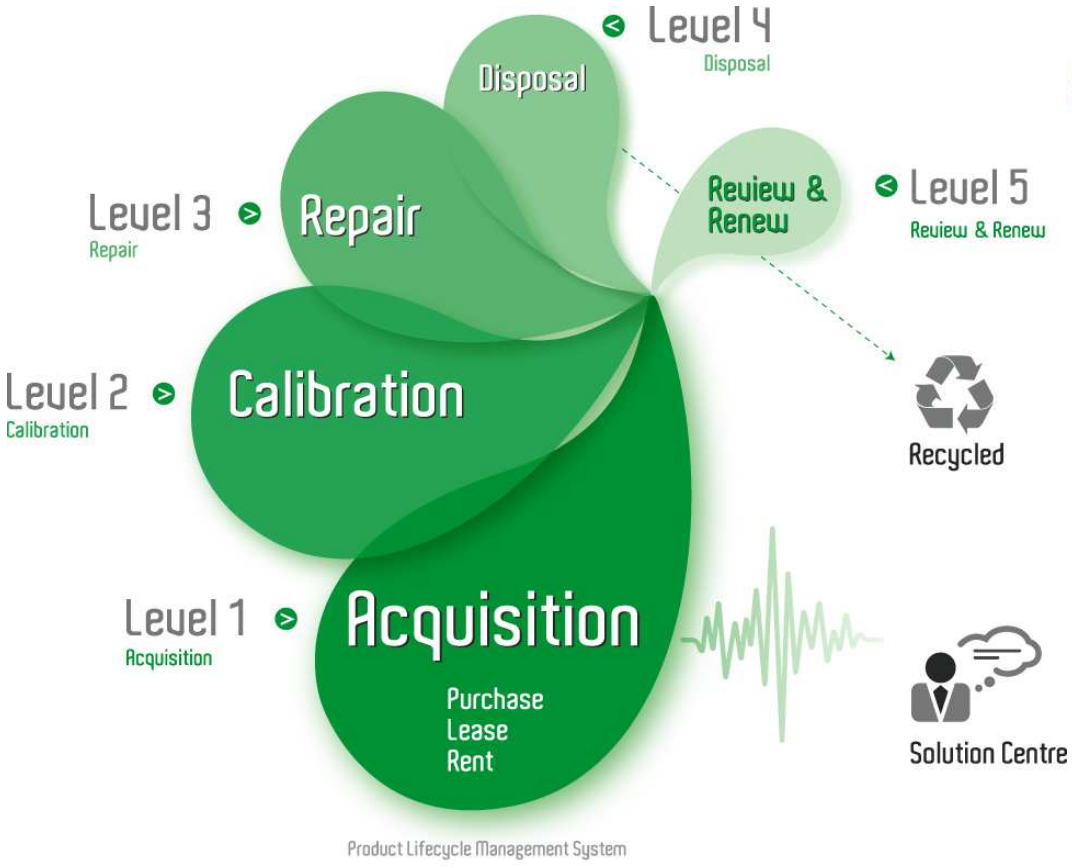
TMG will assist if you are unsure whether this model will suit your requirements.

Call TMG if you need to organise repair and/or calibrate your unit.

If you click on the "Click-to-Call" logo below, you can all us for FREE!

TMG Corporate Website **TMG Products Website**

Click-to-Call
TMG Now



FLUKE®

77/75/23/21

Series III Multimeter

Instruction Sheet

⚠ Read First: Safety Information

- Never use the meter if the meter or test leads look damaged.
- Be sure the test leads and switch are in the correct position for the desired measurement.
- Never measure resistance in a circuit when power is applied.
- Never touch the probes to a voltage source when the test leads are plugged into the 10 A or 300 mA input jack.
- Never apply more than the rated voltage between any input jack and earth ground.
- Be careful when working with voltages above 60 V dc or 30 V ac rms. Such voltages pose a shock hazard.
- Keep your fingers behind the finger guards on the test probes when making measurements.

⚠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.

Symbols

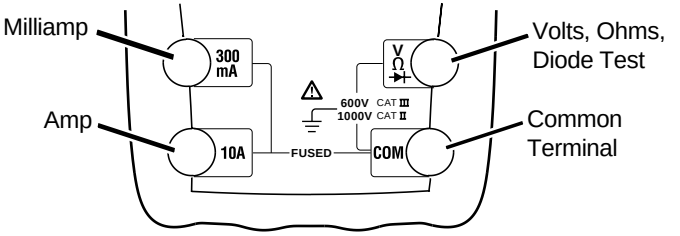
⚠	Read First: Safety Information
ϟ	Dangerous Voltage May Be Present
⧈	Double Insulation

Overvoltage Installation Category per IEC 1010:

CAT II	Typical locations include; main wall outlets, local appliances, and portable equipment.
CAT III	Typical locations include switches in the fixed installation and equipment for industrial use permanently connected to the fixed installation.

PN 650512 August 1997 Rev.2, 7/98

Input Jacks



hc1f.eps

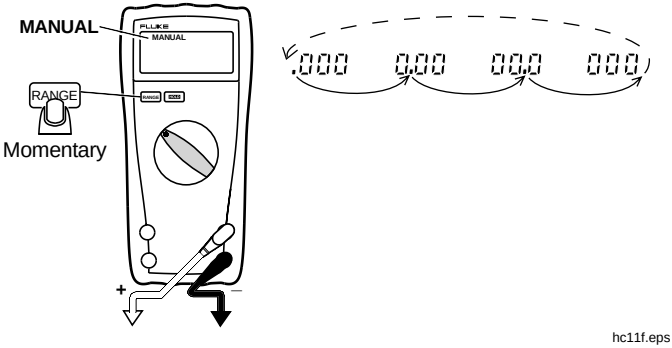
See Specifications for overload protection.

Autorange

The meter defaults to autorange when you turn on the meter.

Manual Range

Manual ranging is available in V ac, V dc, ohms, A ac, and A dc.



hc11f.eps

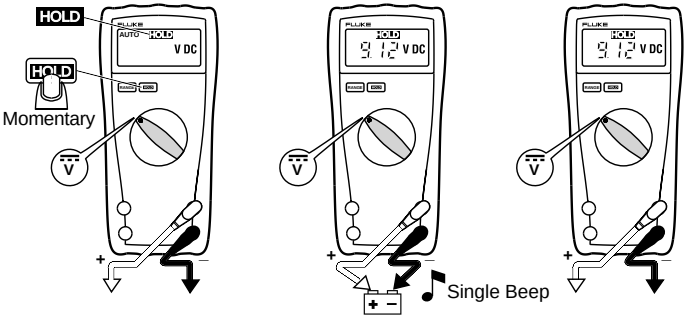
To return to autorange, press RANGE for 1 second or turn the rotary switch.

Automatic Touch Hold® Mode

⚠ Warning

To avoid electric shock, do not use the Touch Hold® mode to determine if a circuit with high voltage is dead. The Touch Hold® mode will not capture unstable or noisy readings.

The Touch Hold® mode automatically captures and displays stable readings for all functions.



hc4f.eps

When the meter captures new input, it beeps and a new reading is displayed.

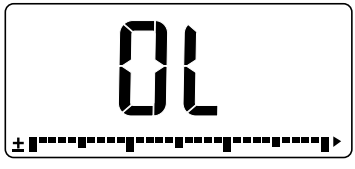
Note

Stray voltages can produce a new reading.

To exit the Touch Hold® mode, press HOLD momentarily or turn the rotary switch.

Bar Graph

The bar graph shows readings relative to the full scale value of the displayed measurement range and indicates polarity.

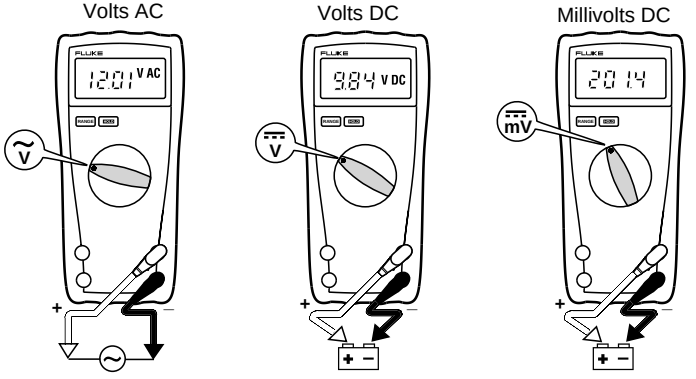


hc15f.eps

Standby

If the meter is on but is inactive for an hour (20 minutes in diode test), the display goes blank and displays four bar graph segments. To resume operation, turn the rotary switch or press a button.

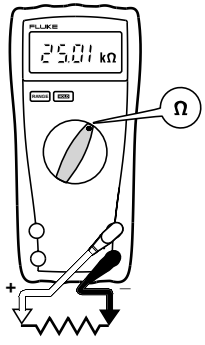
AC and DC Voltage (Ṽ V̿ mV̿)



hc3f.eps

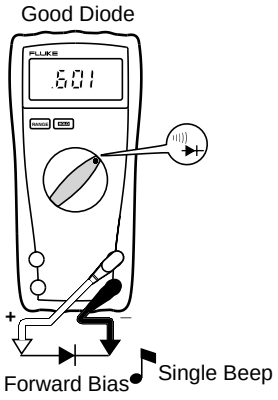
Resistance (Ω)

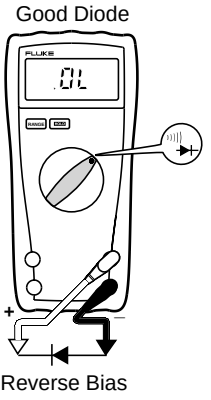
Turn off the power and discharge all capacitors. An external voltage across a component will give invalid resistance readings.

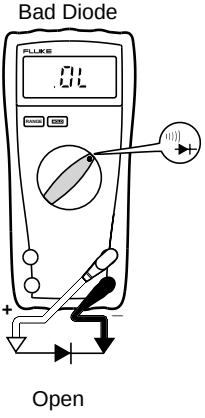


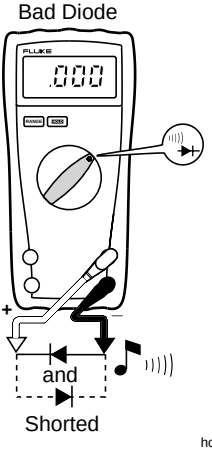
hc7f.eps

Diode Test (⇥)



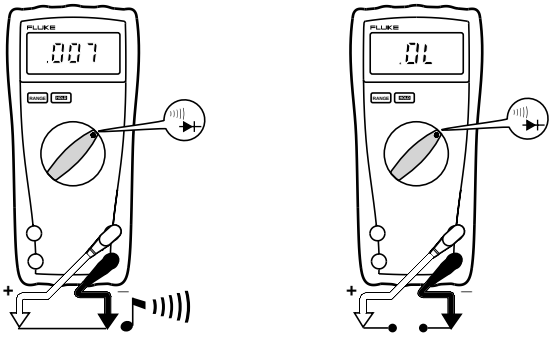






hc5f.eps

Continuity Test ( ))))



hc8f.eps

If continuity exists (resistance < 210 Ω for Models 21/75 and <270 Ω for Models 23/77), the beeper sounds continuously. The meter beeps twice if it is in Touch Hold® mode.

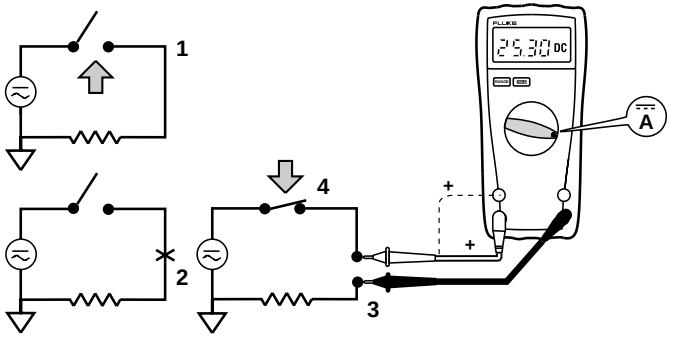
Current ($\tilde{A}$ $\overline{\tilde{A}}$)

⚠ Warning

To avoid injury, do not attempt a current measurement if the open circuit voltage exceeds the rated voltage of the meter.

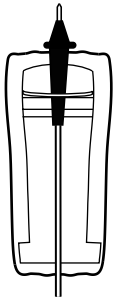
To avoid blowing an input fuse, use the 10 A jack until you are sure that the current is less than 300 mA.

Turn off power to the circuit. Break the circuit. (For circuits of more than 10 amps, use a current clamp.) Put the meter in series with the circuit as shown and turn power on.



hc10f.eps

Probe Holder



hc14f.eps

Maintenance

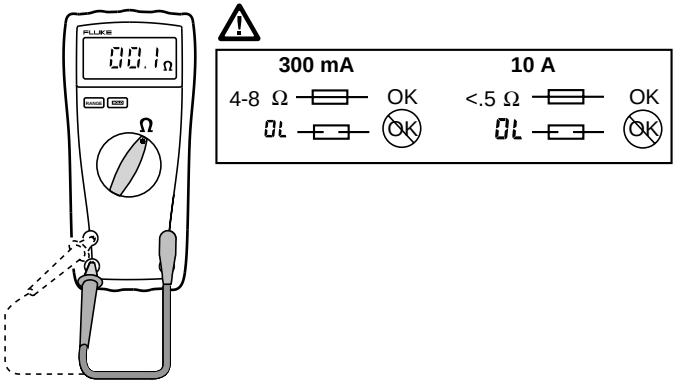
⚠ Warning

To avoid electric shock, remove the test leads before opening the case, and close the case before using the meter. To prevent fire and possible arc-flash, use fuses with ratings shown on the back of the meter.

Caution

To avoid contamination or static damage, do not touch the circuit board without proper static protection.

Internal Fuse Test

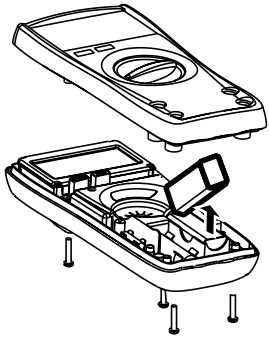


hc9f.eps

Battery Replacement

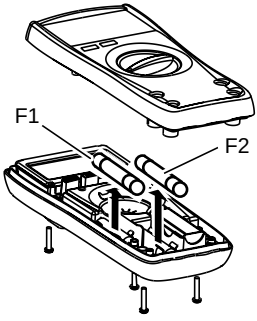
Note

Before opening the case, make sure the test leads are removed and the rotary switch is turned to OFF.

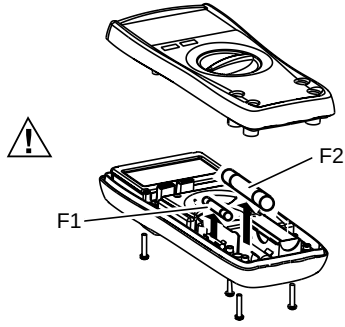


hc12f.eps

Fuse Replacement



23/77



21/75

hc13f.eps

Cleaning

To clean the meter, use a damp cloth and mild detergent; do not use abrasives or solvents on the meter.

Service and Parts

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-*-276-6196
Anywhere in the world: +1-425-356-5500

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

Item	Description	Fluke PN	Quan.
BT1	Battery, 9 V, NEDA 1604/IEC 6F22, or NEDA 1604A/IEC 6LR61	696534 614487	1
	Models 21/75:		
F1*	Fuse, F630 mA, 250 V, Min Interrupt Rating 1500 A or IEC 127-1	740670	1
F2*	Fuse, F11 A, 1000 VAC/DC, Min Interrupt Rating 17 kA	943118	1
	Models 23/77:		
F1*	Fuse, F44/100 A, 1000 VAC/DC, Min Interrupt Rating 10 kA	943121	1
F2*	Fuse, F11 A, 1000 VAC/DC, Min Interrupt Rating 17 kA	943118	1
*** For safety, use exact replacement**			

Specifications

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:

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

Maximum Voltage Between any Terminal and Earth Ground	Rated voltage
Display	Digital: 3,200 counts, updates 2.5/sec Analog: 31 segments, updates 25/sec
Response Time of Digital Display	V ac < 2 s V dc < 1 s Ω < 1s to 320 kΩ, < 2s to 3.2 MΩ, < 10 s to 32 MΩ
Operating Temperature	0°C to 50°C
Storage Temperature	-40°C to 60°C
Temperature Coefficient	0.1 x (specified accuracy)/°C (<18°C or >28°C)

Electromagnetic Compatibility In RF field of 3 V/m on all functions.	Total accuracy = Specified accuracy + 0.1% of range.
Relative Humidity	
except 32 MΩ range	0% to 90% (0°C to 35°C) 0% to 70% (35°C to 50°C)
32 MΩ range only	0% to 80% (0°C to 35°C) 0% to 70% (35°C to 50°C)
Altitude	Operating: 2000 meters Storage: 12,000 meters
Battery Type	9 V NEDA 1604 or 6F22 or 006P, or NEDA 1604A or 6LR61
Battery Life	2000 hrs typical with alkaline 1600 hrs typical with carbon zinc
Continuity Beeper	4096 Hz
Shock, Vibration	per MIL-T-PRF 28800F Class III, Sinusoidal, Non Operating
Size (H x W x L)	3.7 cm x 8.9 - 7.8 cm x 19 cm (1.5 in x 3.5 - 3.1 in x 7.49 in)
Weight	365 g (12.9 oz)
Safety	Models 21/75 Series III: 600 V CAT III, Models 23/77 Series III: 600 V CAT III and 1000 V CAT II per ANSI/ISA S82.01-1994, EN 61010-1: 1993, CSA C22.2 No 1010.1-92, UL 3111-1.
EMC Regulations	EN 61326-1 1997.
Certifications/Listings	

Function		Range	Accuracy
V (DC)		3.200 V, 32.00 V, 320.0 V 600 V (21/75), 1000 V (23/77)	±(0.3%+1) ±(0.4%+1)
mV (DC)		320.0 mV	±(0.3%+1)
V (AC) (45 to 500 Hz, 3.2 V range. Other ranges 45 to 1 kHz)		3.200 V, 32.00 V, 320.0 V 600 V (21/75), 1000 V (23/77)	±(2%+2) ±(2%+2)
Ω	21/75:	320.0 Ω 3200 Ω, 32.00 kΩ, 320.0 kΩ 3.200 MΩ 32.00 MΩ	±(0.5%+2) ±(0.5%+1) ±(0.5%+1) ±(2%+1)
	23/77:	320.0 Ω 3200 Ω, 32.00 kΩ, 320.0 kΩ 3.200 MΩ 32.00 MΩ	±(0.5%+3) ±(0.5%+1) ±(0.5%+1) ±(2%+1)
Diode / continuity		2.0 V	±(1% typical)

Function	Range	Accuracy	Burden Voltage (typical)
A (AC) (45 Hz to 1 kHz)	32.00 mA, 320.0 mA 10.00 A *	±(2.5%+2) ±(2.5%+2)	6 mV/mA 50 mV/A
A (DC)	32.00 mA, 320.0 mA 10.00 A *	±(1.5%+2) ±(1.5%+2)	6 mV/mA 50 mV/A
* 10 A continuous, 20 A for 30 seconds maximum.			

Overload protection for all functions and ranges: Rated voltage.

Function	**Input Impedance (Nominal)**		
$\overline{\overline{V}}$, m$\overline{\overline{V}}$, $\tilde{V}$	>10 MΩ, <50 pF		
	Common Mode Rejection Ratio (1 kΩ Unbalanced)	**Normal Mode Rejection**	
$\overline{\overline{V}}$, m$\overline{\overline{V}}$	>120 dB at dc, 50 Hz, or 60 Hz	>60 dB at 50 Hz or 60 Hz	
$\tilde{V}$	>60 dB dc to 60 Hz		
	Open Circuit Test Voltage	**Full Scale Voltage** **To 3.2 MΩ**	**32 MΩ**
Ω	<3.1 V dc <2.8 V dc (typical)	<440 mV dc <420 mV dc (typical)	<1.4 V dc <1.3 V dc (typical)
	Open Circuit Test Voltage	**Full Scale Voltage**	
➔⊢ ·)))	<3.1 V dc	2.0 V dc	
	Short Circuit Current (typical)		
	21/75:	**23/77:**	
Ω	400 µA	300 µA	
➔⊢ ·)))	500 µA	400 µA	
➔⊢	**V_F**	**Current (typical)**	
		21/75:	23/77:
	0.0 V	0.5 mA	0.4 mA
	0.6 V	0.4 mA	0.3 mA
	1.2 V	0.3 mA	0.2 mA
	2.0 V	0.1 mA	0.1 mA