FLUKE®

1587/1577
Insulation Multimeters

Technical Data

Two powerful tools in one.

The Fluke 1587 and 1577 Insulation Multimeters combine a digital insulation tester with a full-featured, true-rms digital multimeter in a single compact, handheld unit, which provides maximum versatility for both troubleshooting and preventative maintenance.

Like other tools that you have come to expect from Fluke, the 1587 and 1577 are rugged, reliable and easy to use.

Whether you work on motors, generators, cables or switch-gear, the Fluke 1587/1577 Insulation Multimeters are ideally suited to help you with your tasks.

- Large display with backlight
- Insulation test (1587: 0.01 MΩ to 2 GΩ) (1577: 0.1 MΩ to 600 MΩ)
- Insulation test voltages (1587: 50 V, 100 V, 250 V, 500 V, 1000 V),(1577: 500 V, 1000 V) for many applications
- Live circuit detection prevents insulation test if voltage > 30 V is detected for added user protection
- Auto-discharge of capacitive voltage for added user protection
- AC/DC voltage, DC milliVolts, AC/DC milliamps, Resistance (Ω), Continuity
- Filter for motor drive measurements (1587 only)
- Capacitance, diode test, temperature, Min/Max, frequency (Hz) (1587 only)
- Auto power off to save battery power
- CAT III 1000 V, CAT IV 600 V measurement category
- Included accessories: Remote probe, test leads and probes, alligator clips, (K-type thermocouple, 1587 only)
- Accepts optional Fluke TPAK™ magnetic hanging system to free your hands for other work
- Rugged, utility hard case allows you to bring everything you need for the job
- Three-year warranty

1000 V CAT III 600 V CAT IV

True RMS

Distributed by:
TESTERS AND TOOLS.COM
Trust Experience Reliability
sales@testersandtools.com
Tel: 602-795-4033, Fax: 602-795-4624

FLUKE®

Specifications

AC voltage measurement

1587 accuracy			
Range	**Resolution**	**50 Hz to 60 Hz**	**60 Hz to 5000 Hz**
600.0 mV	0.1 mV	+ (1 % + 3)	+ (2 % + 3)
6.000 V	0.001 V	+ (1 % + 3)	+ (2 % + 3)
60.00 V	0.01 V	+ (1 % + 3)	+ (2 % + 3)
600.0 V	0.1 V	+ (1 % + 3)	+ (2 % + 3)[1]
1000 V	1 V	+ (2 % + 3)	+ (2 % + 3)[1]
[1] 1 kHz bandwidth			
1587 lowpass filter voltage			
Range	**Resolution**	**50 Hz to 60 Hz ± (% of Rdg + Digits)**	**60 Hz to 400 Hz ± (% of Rdg + Digits)**
600.0 mV	0.1 mV	± (1 % + 3)	+ (2 % + 3) – (6 % – 3)
6.000 V	0.001 V	± (1 % + 3)	+ (2 % + 3) – (6 % – 3)
60.00 V	0.01 V	± (1 % + 3)	+ (2 % + 3) – (6 % – 3)
600.0 V	0.1 V	± (1 % + 3)	+ (2 % + 3) – (6 % – 3)
1000 V	1 V	± (2 % + 3)	+ (2 % + 3) – (6 % – 3)
1577 accuracy			
Range	**Resolution**	**50 Hz to 60 Hz**	
600.0 mV	0.1 mV	± (2 % + 3)	
6.000 V	0.001 V	± (2 % + 3)	
60.00 V	0.01 V	± (2 % + 3)	
600.0 V	0.1 V	± (2 % + 3)	
1000 V	1 V	± (2 % + 3)	

AC conversion: Inputs are ac-coupled and calibrated to the rms value of sine wave input. Conversions are true-rms responding and specified from 5 % to 100 % of range. Input signal crest factor can be up to 3 at up to 500 V, decreasing linearly to crest factor <= 1.5 at 1000 V. For non-sinusoidal waveforms add ± (2 % reading + 2 % FS) typical, for a crest factor up to 3.
Input impedance: 10 MΩ (nominal), < 100 pF, ac-coupled
Common mode rejection ratio (1 kΩ unbalanced): > 60 dB at dc, 50 or 60 Hz
Overload protection: 1000 V rms or dc, 10^7 V Hz Max

DC voltage measurement

Range	Resolution	Accuracy 1587[1]	Accuracy 1577[1]
6.000 V dc	0.001 V	± (0.09 % + 2)	± (0.2 % + 2)
60.00 V dc	0.01 V	± (0.09 % + 2)	± (0.2 % + 2)
600.0 V dc	0.1 V	± (0.09 % + 2)	± (0.2 % + 2)
1000 V dc	1 V	± (0.09 % + 2)	± (0.2 % + 2)
[1] Accuracies apply to ± 100 % of range			

Input impedance: 10 MΩ (nominal), < 100 pF
Normal mode rejection ratio: > 60 dB @ 50 Hz or 60 Hz
Common rode rejection ratio: > 120 dB @ dc, 50 Hz or 60 Hz (1 kΩ unbalance)
Overload protection: 1000 V rms or dc

Distributed by:
TESTERS AND TOOLS.COM
Trust Experience Reliability
sales@testersandtools.com
Tel: 602-795-4033, Fax: 602-795-4624

DC millivolts measurement

Range	Resolution	Accuracy 1587	Accuracy 1577
600.0 mV dc	0.1 mV	± (0.1 % + 1)	± (0.2 % + 1)

DC and ac current measurement

Range		Resolution	Accuracy 1587 ± (% of Rdg+Digits)	Accuracy 1577 ± (% of Rdg+Digits)	Burden Voltage (Typical)
AC	400 mA	0.1 mA	± (1.5 % + 2)[1]	± (2 % + 2)[1]	2 mV/mA
45 to 1000 Hz	60 mA	0.01 mA	± (1.5 % + 2)[1]	± (2 % + 2)[1]	
DC	400 mA	0.1 mA	± (0.2 % + 2)	± (1.0 % + 2)	2 mV/mA
	60 mA	0.01 mA	± (0.2 % + 2)	± (1.0 % + 2)	
[1]1 kHz bandwidth					

Overload: 600 mA for 2 minutes maximum
Overload protection: 440 mA, 1000 V, FAST fuse
AC conversion: Inputs are ac-coupled and calibrated to the rms value of sine wave input. Conversions are true-rms responding and specified from 5 % to 100 % of range. Input signal crest factor can be up to 3 at up to 300 mA, decreasing linearly to crest factor < = 1.5 at 600 mA. For non-sinusoidal waveforms add + (2 % reading + 2 % FS) typical, for a crest factor up to 3.

Ohms measurement

Range	Resolution	Accuracy 1587[1] ± (% of Rdg+Digits)	Accuracy 1577[1] ± (% of Rdg+Digits)
600.0 Ω	0.1 Ω	± (0.9 % + 2)	± (1.2 % + 2)
6.000 kΩ	0.001 kΩ		
60.00 kΩ	0.01 kΩ		
600.0 kΩ	0.1 kΩ		
6.000 MΩ	0.001 MΩ		
50.0 MΩ[2]	0.01 MΩ	± (1.5 % + 3)	± (2.0 % + 3)
[1]Accuracies apply from 0 to 100 % of range [2]Up to 80 % relative humidity			

Overload protection: 1000 V rms or dc
Open circuit test voltage: < 8.0 V dc
Short circuit current: < 1.1 mA

Diode test (1587 Only)
Diode test indication: Display voltage drop: 0.6 V at 1.0 mA nominal test current
Accuracy: + (2 % + 3)

Continuity test
Continuity indication: Continuous audible tone for test resistance below 25 Ω and off above 100 Ω. Maximum reading; 1000 Ω
Open circuit voltage: < 8.0 V
Short circuit current: 1.0 mA typical
Overload protection: 1000 V rms
Response time: > 1 m sec

Frequency measurement (1587 only)

Range	Resolution	Accuracy ± (% of Rdg+Digits)
99.99 Hz	0.01 Hz	± (0.1 % + 1)
999.9 Hz	0.1 Hz	± (0.1 % + 1)
9.999 kHz	0.001 kHz	± (0.1 % + 1)
99.99 kHz	0.01 kHz	± (0.1 % + 1)

Distributed by:
TESTERS AND TOOLS.COM
Trust Experience Reliability
sales@testersandtools.com
Tel: 602-795-4033, Fax: 602-795-4624

Frequency counter sensitivity

Input Range	V ac Sensitivity (RMS Sinewave)[1]		DC Trigger Levels to 20 kHz[2]
	5 Hz to 20 kHz	20 kHz to 100 kHz	
600.0 mV ac	100.0 mV	150.0 mV	N/A
6.0 V	1.0 V	1.5 V	-400.0 mV and 2.5 V
60.0 V	10.0 V	36.0 V	1.2 V and 4.0 V
600.0 V	100.0 V	—	12.0 V and 40.0 V
1000.0 V	300.0 V	—	12.0 V and 40.0 V

[1]Maximum input for specified accuracy = 10x range (1000 V max). Noise at low frequencies and amplitudes may affect accuracy.
[2]Usable to 100 kHz with full scale input.

Capacitance (1587 only)

Range	Resolution	± (% of Rdg+Digits)
1000 nF	1 nF	± (1.2 % + 2)
10.00 µF	0.01 µF	
100.0 µF	0.1 µF	
9999 µF	1 µF	± (1.2 % +/- 90 counts)

Temperature measurement (1587 only)

Range	Resolution	Accuracy[1]
-40 °C to 537 °C	0.1 °C	± (1 % + 10 counts)
-40 °F to 998 °F	0.1 °F	± (1 % + 18 counts)

[1]Accuracies apply following 90 minutes settling time after a change in the ambient temperature of the instrument

Insulation specifications

Measurement range	1587: 0.01 MΩ to 2 GΩ , 1577: 0.1 MΩ to 600 MΩ
Test voltages	50, 100, 250, 500, 1000 V model 1587, 500 and 1000 V model 1577
Test voltage accuracy	+ 20 %, - 0 %
Short-circuit test current	1 mA nominal
Auto discharge	Discharge time < 0.5 second for C = 1 µF or less
Live circuit detection	Inhibit test if terminal voltage > 30 V prior to initialization of test
Maximum capacitive load	Operable with up to 1 µF load

Distributed by:
TESTERS AND TOOLS.COM
Trust Experience Reliability
sales@testersandtools.com
Tel: 602-795-4033, Fax: 602-795-4624

Model 1587

Output Voltage	Display Range	Resolution	Test Current	Resistance Accuracy
50 V (0 % to + 20 %)	0.01 to 6.00 MΩ	0.01 MΩ	1 mA @ 50 kΩ	± (3 % + 5 counts)
	6.0 to 50.0 MΩ	0.1 MΩ		
100 V (0 % to + 20 %)	0.01 to 6.00 MΩ	0.01 MΩ	1 mA @ 100 kΩ	± (3 % + 5 counts)
	6.0 to 60.0 MΩ	0.1 MΩ		
	60 to 100 MΩ	1 MΩ		
250 V (0 % to + 20 %)	0.1 to 60.0 MΩ	0.1 MΩ	1 mA @ 250 kΩ	± (1.5 % + 5 counts)
	60 to 250 MΩ	1 MΩ		
500 V (0 % to + 20 %)	0.1 to 60.0 MΩ	0.1 MΩ	1 mA @ 500 kΩ	± (1.5 % + 5 counts)
	60 to 500 MΩ	1 MΩ		
1000 V (0 % to + 20 %)	0.1 to 60.0 MΩ	0.1 MΩ	1 mA @ 1 MΩ	± (1.5 % + 5 counts)
	60 to 600 MΩ	1 MΩ		
	0.6 to 2.0 GΩ	100 MΩ		± (10 % + 3 counts)

Model 1577

Output Voltage	Display Range	Resolution	Test Current	Resistance Accuracy
500 V (0 % to + 20 %)	0.1 to 60.0 MΩ	0.1 MΩ	1 mA @ 500 kΩ	± (2.0 % + 5 counts)
	60 to 500 MΩ	1 MΩ		
1000 V (0 % to + 20 %)	0.1 to 60.0 MΩ	0.1 MΩ	1 mA @ 1 MΩ	± (2.0 % + 5 counts)
	60 to 600 MΩ	1 MΩ		

General specifications

Maximum voltage applied to any terminal	1000 V ac rms or dc
Storage temperature	-40 °C to 60 °C (-40 °F to 140 °F)
Operating temperature	-20 °C to 55 °C (-4 °F to 131 °F)
Temperature coefficient	0.05 x (specified accuracy) per °C for temperatures < 18 °C or > 28 °C (< 64 °F or > 82 °F)
Relative humidity, non-condensing	< °C 0 % to 95 % @ 10 °C to 30 °C (50 °F to 86 °F) 0 % to 75 % @ 30 °C to 40 °C (86 °F to 104 °F) 0 % to 40 % @ 40 °C to 55 °C (104 °F to 131 °F)
Vibration	Random, 2 g, 5-500 Hz per MIL-PRF-28800F, Class 2 instrument
Shock	1 meter drop per IEC 61010-1 2nd Edition (1 meter drop test, six sides, oak floor)
Electromagnetic compatibility	In an RF field of 3 V/M, accuracy = specified accuracy except in temperature: accuracy = specified accuracy ± 5 °C (9 °F). (EN 61326-1:1997)
Safety	Complies with ANSI/ISA 82.02.01 (61010-1) 2004, CAN/CSA-C22.2 NO. 61010-1-04, and IEC/EN 61010-1 2nd Edition for measurement CAT III 1000 V and CAT IV 600 V
Certifications	CSA per standard CSA/CAN C22.2 No. 61010.1-04; TUV per standard EN 61010 Part 1-1002
Batteries	Four AA batteries (NEDA 15A or IEC LR6)
Battery life	Meter use 1000 hours; Insulation test use: Meter can perform at least 1000 insulation tests with fresh alkaline batteries at room temperature. These are standard tests of 1000 V into 1 MΩ with a duty cycle of 5 seconds on and 25 seconds off
Size	5.0 cm H x 10.0 cm W x 20.3 cm L (1.97 in H x 3.94 in W x 8.00 in L)
Weight	550 g (1.2 lb)
IP rating	IP40
Altitude (operating)	2000 m CAT III 1000 V, CAT IV 600 V; 3000 m CAT II 1000 V, CAT III 600 V
Storage	12,000 m
Over-range capability	110 % of range except for capacitance which is 1 %
Compliance to EN 61557	IEC61557-1, IEC61557-2

Distributed by:
TESTERS AND TOOLS.COM
Trust Experience Reliability
sales@testersandtools.com
Tel: 602-795-4033, Fax: 602-795-4624

Comparison chart

	1587	1577
Insulation test voltages 50 V, 100 V, 250 V, 500 V, 1000 V	•	
Insulation test voltages 500 V, 1000 V		•
Insulation test: 0.01 MΩ to 2.0 GΩ	•	
Insulation test: 0.1 MΩ to 600 MΩ		•
Auto-discharge of capacitive voltage	•	•
Insulation test smoothing reading	•	
Frequency	•	
Capacitance	•	
Diode test	•	
Temperature	•	
Min/Max	•	
Low pass filter (for work on VSDs)	•	
AC/DC Voltage	•	•
DC Millivolts	•	•
AC/DC milliAmps	•	•
Resistance (0.1 Ω to 50 MΩ)	•	•
Continuity	•	•
Three-year warranty	•	•
Remote probe, test leads, alligator clips	•	•
K-type thermocouple	•	
Rugged, utility hard case	•	•
Auto power off	•	•

Ordering information

Fluke-1577 Insulation Multimeter
Fluke-1587 Insulation Multimeter

Includes: Remote probe, test leads, alligator clips, K-type thermocouple (1587 only), hard case, user documentation.

Optional accessories

TPAK Magnetic Tool Hanger
i400 Clamp with Adapter
C25 Soft Case

Fluke. *Keeping your world up and running.®*

Fluke Corporation
PO Box 9090, Everett, WA 98206 U.S.A.

Fluke Europe B.V.
PO Box 1186, 5602 BD
Eindhoven, The Netherlands

For more information call:
In the U.S.A. (800) 443-5853 or
Fax (425) 446-5116
In Europe/M-East/Africa +31 (0) 40 2675 200 or
Fax +31 (0) 40 2675 222
In Canada (800)-36-FLUKE or
Fax (905) 890-6866
From other countries +1 (425) 446-5500 or
Fax +1 (425) 446-5116
Web access: http://www.fluke.com

©2002-2014 Fluke Corporation.
Specifications subject to change without notice.
Printed in U.S.A. 9/2014 2434792D_EN

Modification of this document is not permitted without written permission from Fluke Corporation.

Distributed by:
TESTERS AND TOOLS.COM
Trust Experience Reliability
sales@testersandtools.com
Tel: 602-795-4033, Fax: 602-795-4624