TECHNICAL DATA

Fluke 1587 FC/1577 Insulation Multimeters



The High-Performance 2-in-1 Insulation DMM

The Fluke 1587 FC 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.

The Fluke 1587 FC Insulation Multimeter adds four powerful new diagnostic functions through the Fluke Connect® Measurements app:

- PI/DAR timed ratio tests with TrendIt™ graphs identifies moisture and contaminated insulation problems faster
- Memory storage through Fluke Connect eliminates writing down results, reduces errors and saves data for historical tracking over time
- Temperature Compensation through app for establishing accurate baselines and relevant historical comparisons
- Historical tracking and trending of assets identifies degradation over time, allows real-time decisions to be made in the field with Fluke Connect® Assets (sold separately)

FLUKE CONNECT®

FLUKE CONNECT COMPATIBLE (1587 FC ONLY)
Download the free Fluke Connect® app from Apple Store or Google Play to enable graphs within the Pi/DAR function, memory storage, and temperature compensation

DISPLAY
Large, 6000-count back-lit display

VFD
Low-pass filter for accurate motor drive measurements (1587 FC only)

INSULATION TEST
1587 FC: 0.01 MΩ to 2 GΩ
1577: 0.1 MΩ to 600 MΩ

INSULATION TEST VOLTAGES
1587 FC: 50 V, 100 V, 250 V, 500 V, 1000 V
1577: 500 V, 1000 V

WARRANTY
Three-year standard warranty; extendable to five-years through product registration within 45 days of purchase*



Store and share data using the Fluke 1587 FC with Fluke Connect Measurements App.

* Two-year additional warranty offer may be discontinued without notice

Product Highlights

- PI/DAR timed ratio tests (1587 FC only)
- Live circuit detection prevents insulation test if voltage > 30 V is detected for added user protection
- VFD low-pass filter for accurate motor drive measurements (1587 FC only)
- Auto-discharge of capacitive voltage for added user protection
- Insulation test (1587 FC: 0.01 MΩ to 2 GΩ) (1577: 0.1 MΩ to 600 MΩ)
- Insulation test voltages (1587 FC: 50 V, 100 V, 250 V, 500 V, 1000 V),(1577: 500 V, 1000 V) for many applications
- AC/DC voltage, DC millivolts, AC/DC milliamps, Resistance (Ω), Continuity
- Capacitance, diode test, temperature, Min/Max, frequency (Hz) (1587 FC only)
- Auto power off to save battery power
- CAT III 1000 V, CAT IV 600 V measurement category
- Large display with backlight
- Rugged, utility hard case allows you to bring everything you need for the job
- Included accessories: Remote probe, test leads and probes, alligator clips, (K-type thermocouple, 1587 FC only)
- Accepts optional Fluke TPAK Magnetic Meter Hanger for convenient hands free operation
- Three-year standard warranty; extendable to five-years through product registration within 45 days of purchase*



General specifications

Maximum voltage applied to any terminal and common	1000 V	
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	Noncondensing	
	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	
Radio frequency communication	2.4 GHz ISM Band	
Radio frequency certification	FCC: T68-FBLE, IC: 6627A-FBLE	
Electromagnetic compatibility		
International IEC 61326-1: Portable Electromagnetic Environment; IEC 61326-2-2 CISPR 11: Group 1, Class A	Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself.	
	Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances.	
	Emissions that exceed the levels required by CISPR 11 can occur when the equipment is connected to a test object. The equipment may not meet the immunity requirements of this standard when test leads and/or test probes are connected.	

General specifications cont.		
Korea (KCC)	Class A Equipment (Industrial Broadcasting & Communication Equipment)	
	Class A: Equipment meets requirements for industrial electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and not to be used in homes.	
USA (FCC)	47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103.	
Enclosure protection	IEC 60529: IP40 (non-operating)	
Safety	IEC 61010-1	Pollution Degree 2
	IEC 61010-2-033	CAT IV 600 V/CAT III 1000 V
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)	
Altitude	Operating	2000 m
	Storage	12,000 m
Over-Range capability	110 % of range except for capacitance which is 100 %	
Frequency overload protection	$<10^7$ V-Hz	
Fuse Protection for mA input	0.44A, 1000 V, IR 10 kA	

Electrical specifications

AC voltage measurement			
Accuracy (1587 FC only)			
Range	**Resolution**	**50 Hz to 60 Hz ± (% of Rdg + counts)**	**60 Hz to 5000 Hz ± (% of Rdg + counts)**
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

Low-Pass Filter Voltage (1587 FC only)			
Range	**Resolution**	**50 Hz to 60 Hz ± (% of Rdg + Counts)**	**60 Hz to 400 Hz ± (% of Rdg + Counts)**
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** ± (% of Rdg + Counts)
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 true-rms responding and specified from 5 % to 100 % of range. Input signal crest factor can be up to 3 up to 500 V, decreasing linearly to a 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

DC voltage measurement			
Range	**Resolution**	**Accuracy 1587 FC** [1] ± (% of Rdg + Counts)	**Accuracy 1577** [1] ± (% of Rdg + Counts)
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 mode rejection ratio: >120 dB @ dc, 50 Hz or 60 Hz (1 k unbalanced)

DC millivolts measurement			
Range	**Resolution**	**Accuracy 1587 FC** ± (% of Rdg + Counts)	**Accuracy 1577** ± (% of Rdg + Counts)
600.0 mV dc	0.1 mV	± (0.1 % + 1)	± (0.2 % + 1)

DC and AC current measurement					
Range		**Resolution**	**Accuracy 1587 FC** ± (% of Rdg+Counts)	**Accuracy 1577** ± (% of Rdg+Counts)	**Burden voltage** (Typical)
AC 45 Hz to 1000 Hz	400 mA	0.1 mA	± (1.5 % + 2)[1]	± (2 % + 2)[1]	2 mV/mA
	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
Fuse protection for mA Input: 0.44 mA, 1000 V, IR 10 kA
AC conversion: Inputs are ac coupled true-rms responding and specified from 5 % to 100 % of range. Input signal crest factor can be up to 3 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 FC[1] + (% of Rdg+Counts)**	**Accuracy 1577[1] + (% of Rdg+Counts)**
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 FC 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 FC only)		
Range	**Resolution**	**Accuracy ± (% of Rdg+Counts)**
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)
99.99kHz	0.01 kHz	± (0.1 % + 1)

Frequency counter sensitivity			
Input range	V ac Sensitivity (RMS Sine Wave)[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	NA
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 FC only)		
Range	**Resolution**	**Accuracy ± (% of Rdg+Counts)**
1000 nF	1 nF	± (1.2 % + 2)
10.00 µF	0.01 µF	
100.0 µF	0.1 µF	± (1.2 % + 90 counts)
9999 µF	1 µF	

Temperature measurement (1587 FC only)		
Range	**Resolution**	**Accuracy[1] ± (% of Rdg+Counts)**
–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	Model 1587 FC: 0.01 MΩ to 2 GΩ Model 1577: 0.1 MΩ to 600 MΩ
Test voltages	Model 1587 FC: 50, 100, 250, 500, 1000 V Model 1577: 500, 1000 V
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

Model 1587 FC				
Output voltage	**Display range**	**Resolution**	**Test current**	**Resistance accuracy** ± (% of Rdg + Counts)
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				
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		



Comparison chart

	1587 FC	1577
PI/DAR timed ratio measurements with TrendIt™ graphs through Fluke Connect Measurements app	•	
Memory storage through Fluke Connect Measurements app	•	
Temperature Compensation through Fluke Connect Measurements app	•	
VFD low-pass filter for accurate motor drive measurements	•	
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	•	
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 carrying case	•	•
Auto power off	•	•

Ordering information

Fluke-1577 Insulation Multimeter

Fluke-1587 FC Insulation Multimeter

Fluke-1587/MDT FC 2-IN-1 ADV Motor & Drive Kit w/9040, i400

1587KIT/62MAX+ FC 2-IN-1 ADV Elec Kit w/62MAX+ i400

Included

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

Optional accessories

TPAK Magnetic Tool Hanger

i400 AC Current Clamp

C25 Soft Case





Preventive maintenance simplified. Rework eliminated.

Save time and improve the reliability of your maintenance data by wirelessly syncing measurements using the Fluke Connect system.

- Eliminate data-entry errors by saving measurements directly from the tool and associating them with the work order, report or asset record.
- Maximize uptime and make confident maintenance decisions with data you can trust and trace.
- Move away from clipboards, notebooks and multiple spreadsheets with a wireless one-step measurement transfer.
- Access baseline, historical and current measurements by asset.
- Share your measurement data using ShareLive™ video calls and emails.
- The Fluke 1587 FC Insulation Multimeter is part of a growing system of connected test tools and equipment maintenance software. Visit the Fluke website to learn more about the Fluke Connect system.

Find out more at **fluke.com**

Download on the App Store

ANDROID APP ON Google Play



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Smartphone wireless service and data plan not included with purchase. Fluke Connect is not available in all countries.

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

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Printed in U.S.A. 4/2021 210420-6005917-en

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