

**FLUKE®**

**Fluke Digital  
Multimeters**

**Solutions  
for every need**



# How to choose the best DMM for your job

Choosing the right digital multimeter (DMM) requires thinking about what you'll be using it for. Evaluate your basic measurement needs and job requirements and then take a look at special features/functions built into many multimeters. Think about whether you need to do basic measurements, or if you need the more advanced troubleshooting options offered by special features.

## Factors to consider:

- Your work environment (voltage level, types of equipment, types of measurements, applications)
- Specialty features/functions (capacitance, frequency, temperature, non-contact voltage, low impedance mode, min/max record, data logging, trending)
- Resolution and accuracy (6,000, 20,000, or 50,000 count resolution)

## Safety

The increased occurrence and levels of transient overvoltages in today's power systems have given rise to more stringent safety standards for electrical measurement equipment. Transients that ride on top of power sources (mains, feeder or branch circuits) can trigger a sequence of events that may lead to serious injury. Test equipment must be designed to protect people working in this high-voltage, high-current environment.

## Measurement categories at a glance

	In brief	Examples
<b>CAT IV</b>	Three-phase at utility connection, any outdoor mains conductors	<ul style="list-style-type: none"> <li>• Refers to the "origin of installation," i.e., where low-voltage connection is made to utility power</li> <li>• Electricity meters, primary overcurrent protection equipment</li> <li>• Outside and service entrances, service drop from pole to building, run between meter and panel</li> <li>• Overhead line to detached building, underground line to well pump</li> </ul>
<b>CAT III</b>	Three-phase distribution, including single-phase commercial lighting	<ul style="list-style-type: none"> <li>• Equipment in fixed installations, such as switchgear and polyphase motors</li> <li>• Bus and feeders in industrial plants</li> <li>• Feeders and short branch circuits, distribution panel devices</li> <li>• Lighting systems in larger buildings</li> <li>• Appliance outlets with short connections to service entrance</li> </ul>
<b>CAT II</b>	Single-phase receptacle connected loads	<ul style="list-style-type: none"> <li>• Appliance, portable tools, and other household and similar loads</li> <li>• Outlet and long branch circuits                             <ul style="list-style-type: none"> <li>– Outlets at more than 10 meters (30 feet) from CAT III source</li> <li>– Outlets at more than 20 meters (60 feet) from CAT IV source</li> </ul> </li> </ul>



## Wirelessly relay data with Fluke Connect® Meters

Meters can be used as a stand-alone tool or as part of the Fluke Connect system



### ir3000 FC Connector

Adds the power of the Fluke Connect® mobile app to your measurements.

- Fits over the IR port of your existing Fluke tools (289, 287 or 789)
- Enables you to graph, save, and share readings with your team from your smart phone



### a3000 FC Wireless AC Current Clamp Meter

- Measure up to 400 A ac true-rms
- Inrush function
- Logging function for recording and saving up to 65,000 readings



### a3001 FC Wireless iFlex AC Current Clamp Meter

- Measure up to 2500 A ac with a true-rms flexible current meter
- Record over time (up to 65,000 readings) to monitor circuit load changes for an hour, a shift or a week
- Inrush function



### a3003 FC Wireless DC 2000 A Current Meter

- Measure up to 2000 A dc
- Large jaw size (64 mm) for measuring large or parallel current conductors
- Logging function for recording and saving up to 65,000 readings

The largest system of software and wireless test tools in the world.



## Fluke 279 FC Thermal Multimeter



### Find. Repair. Validate. Report.

The 279 FC is a full-featured digital multimeter with integrated thermal imaging and is designed to increase your productivity and confidence. The thermal multimeter helps you find, repair, validate, and report many electrical issues quickly so that you are confident problems are solved.

### Locate the problem immediately

Thermal imaging multimeters are a first-line troubleshooting tool for electrical equipment that can check hot spots on high-voltage equipment and transformers, detect heating of fuses, wires, insulators, connectors, splices and switches. Scanning with the 279 FC's thermal imager reveals many electrical issues rapidly and from a safe distance. By combining two tools into one, the thermal multimeter lightens the load and increases productivity.

### Expanded functionality

Compatible with iFlex® (a flexible current clamp) to expand your measurement capabilities and get into tight, hard to reach spaces for current measurement (up to 2500 A ac). The large full-color LCD screen makes for easier and clearer viewing of images and readings. The 10 hour+ rechargeable battery keeps you going all day long under normal conditions.

### Communicate your results

With built-in Fluke Connect®, transmit results wirelessly to a smartphone and save time on reporting to validate work is complete. Troubleshoot better by instantly trending and monitoring measurements live on your smartphone screen. Create and email reports right from the field.



#### a3004 FC Wireless DC 4-20 mA Current Meter

- Measure 4 to 20 mA dc signals without breaking the loop
- Logging function for recording and saving up to 65,000 readings



#### v3000 FC Wireless AC Voltage Meter

- Measure up to 1000 V true-rms ac
- Logging function for recording and saving up to 65,000 readings



#### v3001 FC Wireless DC Voltage Meter

- Measure up to 1000 V dc
- Logging function for recording and saving up to 65,000 readings

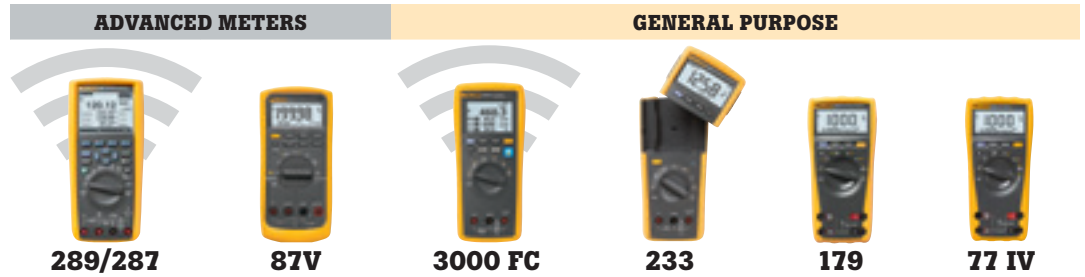


#### t3000 FC Wireless Temperature Meter

- Measure -200 °C to 1372 °C with k-type thermocouple
- Logging function for recording and saving up to 65,000 readings



# Meters designed for the way you work

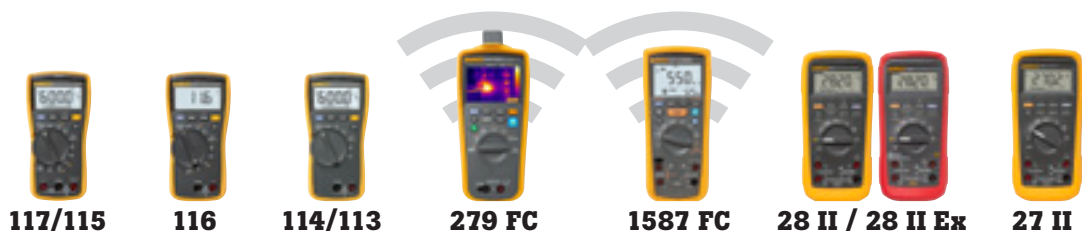


	289/287	87V	3000 FC	233	179	77 IV
<b>Basic features</b>						
Counts	50000	20000	6000	6000	6000	6000
True-rms readings	ac+dc	ac	ac	ac	ac	
Basic dc accuracy	0.025 %	0.05 %	0.09 %	0.25 %	0.09 %	0.3 %
Wide bandwidth	100 kHz	20 kHz				
Auto / manual ranging	• / •	• / •	• / •	• / •	• / •	• / •
Digits	4-1/2	4-1/2	3-1/2	3-1/2	3-1/2	3-1/2
ATEX II 2G Eex ia IIC T4 safety rating Zone 1 and Zone 2						
<b>Measurements</b>						
Voltage ac/dc	1000 V	1000V	1000 V	1000 V	1000 V	1000 V
Current ac/dc	10 A	10 A	400 mA	10 A	10 A	10 A
Resistance	500 MΩ	50 MΩ	50 MΩ	40 MΩ	50 MΩ	50 MΩ
Frequency	1 MHz	200 kHz	100 kHz	50 kHz	100 kHz	100 kHz
Capacitance	100,000 μF	10,000 μF	10,000 μF	10,000 μF	10,000 μF	10,000 μF
Temperature	(+) 1350 °C	(+) 1090 °C		(+) 400 °C	(+) 400 °C	
Conductance / dB	50 nS / 60 dB	50 nS / -				
Duty cycle / pulse width	• / •	• / -				
Continuity / diode test	•	•	•	•	•	•
Motor Drive (ASD) Measurements	• (289)	•				
VoltAlert™, non-contact voltage detection						
VCHEK™						
LoZ: low input impedance	• (289)					
Lo ohms	• (289)					
Microamps	•	•				
<b>Display</b>						
Fluke Connect™-enabled	•*		•			
Dot matrix display	•		•			
Dual display	•		•			
Analog bargraph	•	•			•	•
Backlight	Two level	Two level	•	•	•	•
Graphical trend display	•					
<b>Diagnostics and data</b>						
Min/Max recording / with time stamp	• / •	• / -	• / -	• / -	• / -	• / -
Fast min/max	250 μs	250 μs				
Display Hold/Auto (Touch) Hold	• / •	• / •	• / •	• / •	• / •	• / •
Relative reference	•	•				
Stand alone logging	•					
Trend capture	•					
Readings memories	10,000		(With FC app)			
USB interface	•					
<b>Other features</b>						
Automatic selection, ac/dc volts						
Overmolded case, integrated holster	•		•	•	•	•
Removable holster		•				
Infrared camera resolution						
Infrared camera Range						
iFlex compatibility			(With separate modules)			
Insulation test voltages						
Pi/DAR timed ratio test						
Completely sealed and watertight						
Operating temperature range	-20 °C, +55 °C	-20 °C, +55 °C	-10 °C, +50 °C	-10 °C, +50 °C	-10 °C, +50 °C	-10 °C, +50 °C
<b>Warranty and electrical safety</b>						
Warranty (years)	Lifetime	Lifetime	3	3	Lifetime	Lifetime
Input alert	•	•				
Dangerous voltage indication	•			•	•	•
IP rating		IP 30	IP 54			
EN61010-1 CAT III	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V
EN61010-1 CAT IV	600 V	600 V	600 V	600 V	600 V	600 V

\* ir3000 FC Adapter required—sold separately

COMPACT METERS

SPECIALTY METERS



	117/115	116	114/113	279 FC	1587 FC	28 II / 28 II Ex	27 II
<b>Basic features</b>							
Counts	6000	6000	6000	6000	6000	20000	6000
True-rms readings	ac	ac	ac	ac	ac	ac	
Basic dc accuracy	0.5 %	0.5 %	0.5 %	0.09 %	0.09 %	0.05 %	0.1 %
Wide bandwidth					5 kHz	20 kHz	30 kHz
Auto / manual ranging	• / •	• / •	• / •	• / •	• / •	• / •	• / •
Digits	3-1/2	3-1/2	3-1/2	3-1/2	4-1/2	3-1/2 / 4-1/2	3-1/2
ATEX II 2G Eex ia IICT4 safety rating Zone 1 and Zone 2						28 II Ex	
<b>Measurements</b>							
Voltage ac/dc	600 V	600 V	600 V	1000 V	1000V	1000 V	1000 V
Current ac/dc	10 A	600 µA		2500 A ac (with iFlex)	400 mA	10 A	10 A
Resistance	40 MΩ	40 MΩ	40 MΩ	50 MΩ	50 MΩ	50 MΩ	50 MΩ
Frequency	100 kHz	100 kHz		100 kHz	100 kHz	200 kHz	200 kHz
Capacitance	10,000 µF	10,000 µF		10,000 µF	10,000 µF	10,000 µF	10,000 µF
Temperature		(+) 400 °C		Infrared Camera -10 °C to 200 °C	(+) 537 °C	(+) 1090 °C	
Conductance / dB						60 nS / -	60 nS / -
Duty cycle / pulse width						• / -	• / -
Continuity / diode test	•	•	•	•	•	•	•
Motor Drive (ASD) Measurements				•	•	•	•
VoltAlert™, Non-contact voltage detection	• (117)						
VCHEK™			• (113)				
LoZ: low input impedance	• (117)	•	•				
Lo ohms							
Microamps		•			•	•	•
<b>Display</b>							
Fluke Connect®-enabled				•			
Dot matrix display				•			
Dual display				•			
Analog bargraph	•	•	•			•	•
Backlight	•	•	•	•	•	Two level	Two level
Graphical trend display							
<b>Diagnostics and data</b>							
Min/Max recording / with time stamp	• / -	• / -	• / -	• / -	• / -	• / -	• / -
Fast min/max						250 µs	
Display Hold/Auto (Touch) Hold	• / -	• / -	• / -	• / •	• / •	• / •	• / •
Relative reference						•	•
Stand alone logging							
Trend capture							
Readings memories				(With FC app)	(With FC app)		
USB interface				•			
<b>Other features</b>							
Automatic selection, ac/dc volts	• (117)	•	•				
Overmolded case, integrated holster							
Removable holster	•	•	•	•	•	•	•
Infrared camera resolution				80 x 60			
Infrared camera Range				-10 °C, +200 °C			
iFlex compatibility				•			
Insulation test voltages					50 V, 100 V, 250 V, 500 V, 1000 V		
Pi/DAR timed ratio test					•		
Completely sealed and watertight						•	•
Operating temperature range	-10 °C, +50 °C	-10 °C, +50 °C	-10 °C, +50 °C	-10 °C, +50 °C	-20 °C, +55 °C	-40 °C, +55 °C / -15 °C, +50 °C	-40 °C, +55 °C
<b>Warranty and electrical safety</b>							
Warranty (years)	3	3	3	3	3	Lifetime / 3	Lifetime
Input alert				•	•	•	•
Dangerous voltage indication				•	•	•	•
IP rating	IP 42	IP 42	IP 42	IP 40	IP 40	IP 67	IP 67
EN61010-1 CAT III	600 V	600 V	600 V	1000 V	1000 V	1000 V	1000 V
EN61010-1 CAT IV			600 V (113)	600 V	600 V	600 V	600 V

# Digital Multimeter selection chart



**Fluke 289**



**Fluke 287**



**Fluke 87V**

## Advanced meters

### **Best for**

Advanced industrial troubleshooting, including data logging and graphing intermittent problems.

### **Logging**

For unattended monitoring of signals over time, to detect intermittent problems.

### **Graphing**

View logged values graphically in the field right on the meter, without a PC.

### **Working on VSDs**

Take accurate voltage, current and frequency measurements on the output side of the drive at either the drive itself or the motor terminals.

### **Testing motor windings or contact resistance**

Allows testing of resistance up to 50 ohms with one milliohm (0.001 ohm) resolution.

### **Best for**

Advanced electronic applications, including data logging and graphing intermittent problems.

### **Logging**

For unattended monitoring of signals over time, and characterize device performance.

### **Graphing**

View logged values graphically in the field right on the meter, without a PC.

### **Monitoring two parameters at the same time**

Dual display allows for monitoring of two selectable parameters.

### **Performance testing**

Testing the frequency response of amplifiers and audio transmission line.

### **Best for**

Industrial troubleshooting.

### **Working on VSDs**

Take accurate voltage, current and frequency measurements on the output side of the drive at either the drive itself or at the motor terminals.

### **Industrial troubleshooting**

All of the resolution and accuracy you need to solve more problems on motor drives, in-plant automation, power distribution, and electromechanical equipment.

### **Checking power quality**

Capture glitches and spikes as short as 250  $\mu$ s. Identify irregular signals.



**Fluke 3000 FC**



**Fluke 233**



**Fluke 179**

## General purpose meters

### Best for

Fluke FC wireless test tools work together to help you troubleshoot faster.

### Work faster, safer and easier with FC wireless test tools

The 3000 FC Multimeter displays the meter measurement, plus readings from up to three wireless modules, connect to your smart phone to see reading directly on your phone.

### Build the system as your needs grow

Start with the multimeter and future proof your investment.

### Best for

Remote display digital multimeter.

### Take measurements in hard to reach places.

With its removable display, you have the flexibility to take measurements in hard to reach places or in areas with restricted access. You can be in two places at once and reduce the risk of arc flash by separating yourself from hazardous measurement situations.

### Work more productively

Now one person can complete a test that would have required two people using ordinary test tools.

### Best for

Every day use requiring true-rms, accurate, rugged meter.

### Industrial troubleshooting

Applications requiring exceptional ease-of-use, ruggedness and reliability.

### Electrical maintenance and troubleshooting

Variety of commercial electrical troubleshooting, installation and maintenance.

### Temperature measurements

Built-in thermometer conveniently allows you to take temperature readings without having to carry a separate instrument.

# Digital Multimeter selection chart



**Fluke 117**



**Fluke 116**



**Fluke 115**



**Fluke 113**

## Compact meters

**Best for**  
Wide variety of electrical work.

**Electrical maintenance troubleshooting**

When you need to eliminate false or "ghost" voltages or perform continuity, connection or basic wiring checks.

**Non-contact voltage detection**

Integrated non-contact voltage detection simplifies many tasks.

**Best for**  
HVAC troubleshooting.

**Residential HVAC maintenance**

Lower voltage HVAC residential maintenance, installation and troubleshooting.

**Temperature and microamp measurements**

Troubleshooting problems with HVAC equipment and flame sensors.

**Best for**  
Electronic and field service applications.

**Electronic troubleshooting**

Troubleshoot a wide variety of measurement parameters, including frequency and capacitance.

**Best for**  
Utility applications involving basic electrical tests.

**Revenue meter tests:**

Involving meter sets and reconnects, capacitor checks, detection of absence or presence of voltage, and for continuity, connections or basic wiring checks.

**Simultaneous voltage and continuity checks**

Check LoZ low impedance function allows users to check voltage and continuity simultaneously.





**Fluke 279 FC**



**Fluke 1587 FC**



**Fluke 28 II/27 II**



**Fluke 28 II Ex**

## Specialty meters

**Best for**  
First-line troubleshooting.

**Helping you find, repair, validate and report** on electrical issues quickly, gives you the confidence that the problem has been solved.

**Locate the problem immediately**  
Checking for hotspots on high voltage equipment and transforming and motors.

**Increased productivity**  
Use the thermal imager to scan for problems and then use the digital multimeter further troubleshoot.

**Preventive maintenance simplified, rework eliminated**  
Save time and improve the reliability of your maintenance data by wirelessly syncing measurements directly to an asset record or work order using the Fluke Connect® system.

**Best for**  
Troubleshooting and preventative maintenance around motors, generators, and switch gear.

**Insulations tests:**  
The insulation of electrical power systems can be tested for system performance, system safety, system reliability and as part of asset management.

**Moisture tests:**  
Carrying out PI/DAR timed ratio tests with TrendIt™ graphs to identifies moisture and contaminated insulation problems.

**Working on VSDs**  
Take accurate voltage, current and frequency measurements on the output side of the drive at either the drive itself or the motor terminals.

**Best for**  
Harsh environments requiring dustproof and waterproof test equipment.

**Industrial troubleshooting for indoor and outdoor harsh environments**  
Dustproof, waterproof, shockproof multimeter designed to withstand the toughest environments.

**Working on variable speed drives (VSDs)**  
Take accurate voltage, current and frequency measurements on the output side of the drive at either the drive itself or at the motor terminals. (28 II only)

**Best for**  
Industrial troubleshooting in explosive environments.

**Safety and compliance**  
The Fluke 28 II Ex is an intrinsically safe digital multimeter designed for use in dangerous or explosive atmospheres.

**Agency approvals**  
IECEx Ex ia IIC T4 Gb, Ex ia IIIC T130 °C Db, I M1 Ex ia I Ma.

**Industrial troubleshooting**  
Completely sealed, IP67 rated case; Withstands drops up to 10 feet or 3 meters (with holster); dustproof per IEC60529 IP6x; waterproof per IEC60529 IPx7; meets IEC Overvoltage Electrical Safety Standard No. 61010-1:2001.

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