



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



FLUKE®

Test Tools Catalog

Volume one, 2007



Fluke Ti20
Thermal Imager



Fluke 975
AirMeter™



Fluke 1587
Insulation Multimeter



Fluke 199C
Color ScopeMeter®

Find it. Fix it. Fast.

Test Tools Catalog Volume 37, 2007

FLUKE®

Contents

Fluke tools for:

Commercial Electricians.....	3
Industrial Electricians.....	4
HVAC/IAQ Technicians.....	5

Online resource centers

.....	6
-------	---

Fluke test tool information

.....	7
-------	---

Safety and its importance

.....	8
-------	---

Service, repair, and calibration

.....	9
-------	---

Digital Multimeters

Multimeter Selection Guide.....	10
Faster, Safer Multimeters.....	11
189 Logging Multimeter.....	12
FlukeView Forms® Software.....	13
87V Industrial Multimeter.....	14
179 Digital Multimeter.....	15
Family of True-rms Digital Multimeters.....	16
117 and 115 True-rms Digital Multimeters.....	17
116 and 114 True-rms Digital Multimeters.....	18
77-IV and 73-III Digital Multimeters.....	19
27 Waterproof Multimeter.....	19
88V Automotive Multimeter.....	20
8845A/8846A 6.5 Digit Precision Multimeters.....	21

Electrical Testers

T3 and T5 Electrical Testers, VoltAlert™.....	22
9040 Rotary Field Indicator.....	22

Earth Ground Testers

1625 and 1623 Geo Earth Ground Testers.....	23
1630 Earth Ground Clamp Meter, Handy Geo Earth Ground Tester.....	24

Power Quality Analyzers

430 Series Power Quality Analyzers.....	25
43B Power Quality Analyzer.....	26
1760 Power Quality Recorder, 1650 RPM Power Recorder.....	27
1740 Series Three-Phase PQ Loggers, VR101S Voltage Event Recorder System.....	28
1735 Three-Phase Power Logger, Norma 4/5000 Power Analyzers.....	29

Clamp Meters

Fluke 345 and LH1050, LH1060 Power Clamp Meters.....	30
Fluke 360 and LH41 Current Clamp Meters, LH2015 True-rms Clamp Meter.....	31
Better Clamp Meters from Fluke.....	32
330 and 320 Series Clamp Meters.....	33
902 True-rms HVAC Clamp Meter.....	54

Insulation Testers and MegOhmMeters

1550B and 1520 Megohmmeters.....	34
1587 and 1577 Insulation Multimeters.....	35
1507 and 1503 Insulation Testers.....	36

Process Calibration Tools

Process Tools Selection Guide.....	37
744, 743B, 741B Documenting Process Calibrators.....	38
726, 725 Precision Multifunction Process Calibrators.....	39
724, 714, 712 Temperature Calibrators.....	40
718, 717 Pressure Calibrator, 700 Series Pressure Modules.....	41
715, 707, 705 Loop Calibrators.....	42
789, 787 Process Meters.....	43
771 Milliamp Process Clamp Meter.....	44
9102S, 9100S Handheld Drywell Temperature Calibrators.....	44

Intrinsically Safe Products

707Ex, 718Ex, 725Ex, 700PEX, 574-NI, 68IS, 87V Ex.....	45
--	----

Thermal Imagers

Ti40/Ti50 Series IR FlexCam® Thermal Imagers.....	46-47
Ti20 Thermal Imager.....	48
Ti30™ Thermal Imager.....	49
TiR4, TiR3, TiR2 IR FlexCam™ Thermal Imagers and IR InSight XS, XST Thermal Imagers.....	50

Thermometers

570 Series Infrared Thermometers.....	51
54 Series II Contact Thermometers.....	52
561 HVACPro Thermometer.....	52
60 Series Infrared Thermometers.....	53

HVAC/Indoor Air Quality Tools

975 AirMeter,™ 902 True-rms HVAC Clamp Meter.....	54
971 Temperature Humidity Meter, 983 Particle Counter.....	55

ScopeMeter® Test Tools

ScopeMeter Test Tools Selection Guide.....	56
124 Industrial ScopeMeter Test Tools.....	57
190 Series Color ScopeMeter Test Tools.....	58
Fluke ScopeMeter Accessories.....	59

Accessories

Accessory Selection Guide.....	60
Accessory Sets and Kits.....	61
SureGrip™ Accessories.....	62
Accessories for Electronic and Automotive Applications and High Voltage Probes.....	63
Lights, Software and Specialty Accessories.....	64-65
Current Clamps.....	66-67
Temperature Accessories.....	68-69
Cases, Holsters and Fuses.....	70-71

What's new from Fluke.....back cover

Contact us:

United States

General product and sales information: 1-888-44-FLUKE

Fluke Thermal Imagers: 1-800-760-4620 (U.S. only) all other regions 1-425-446-4620

Service and calibration:

1-800-993-5853

Parts: 1-800-526-4731

Canada

General product and sales information: 1-800-36-FLUKE

Service, parts and calibration: 1-800-36-FLUKE

canada@fluke.com

Australia

General product and sales information: (2) 8850-3333

Parts: (2) 8850-3333

Service and calibration:

(2) 9771-9300

Singapore

General product and sales information: 6738-5655

info.asean@fluke.com

Service, parts and calibration: 6737-2922

service.asean@fluke.com

Japan

General product and sales information: +81-3-3434-0180

Service, parts and calibration:

+81-3-3434-0188

Other countries: 1+(425) 446-5500

Application segment key

To help you better identify the right product for your job, you will find the applicable icons located on the outside edge of each product page.



Residential



Building Diagnostics



Electrical



Industrial



HVAC/IAQ



Electronic



Commercial



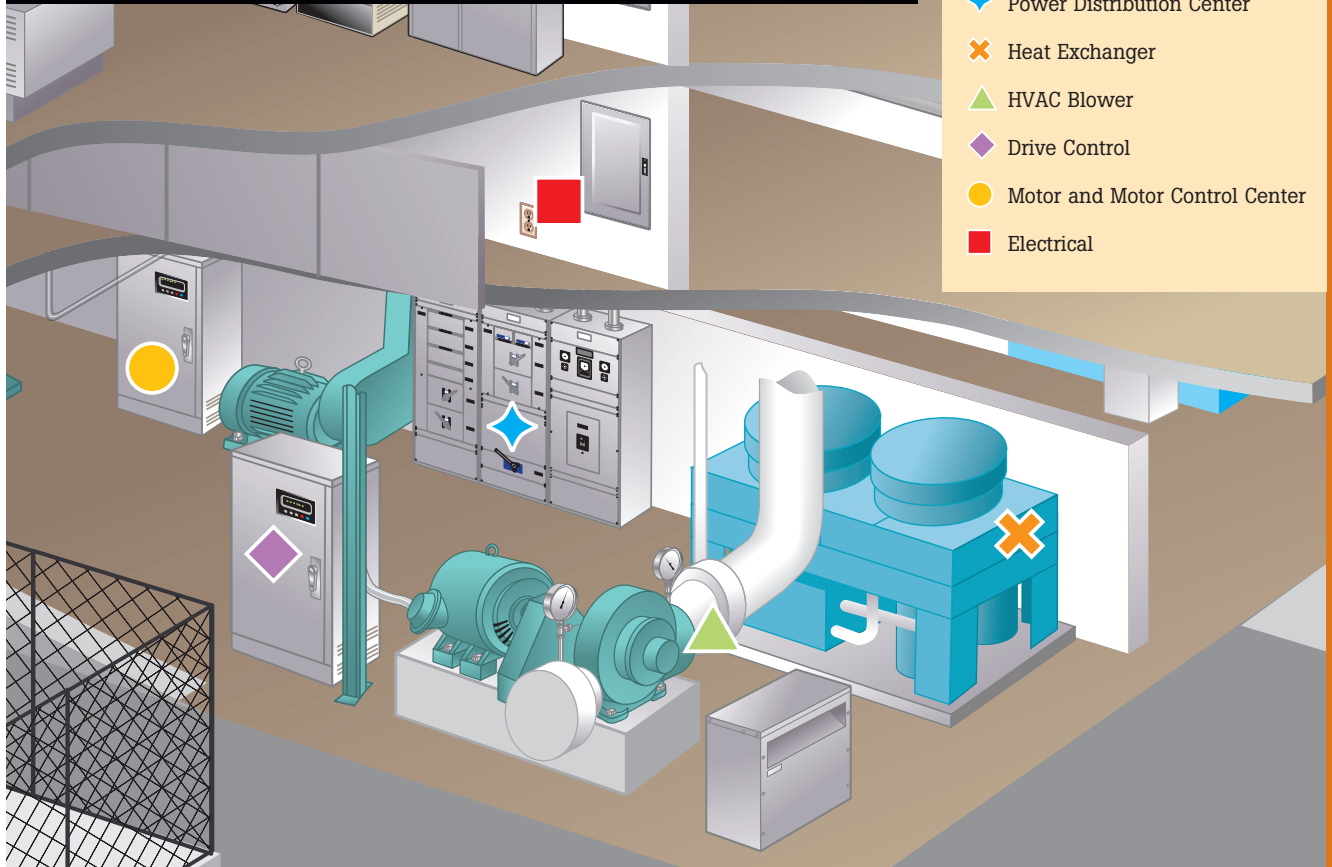
Process



Automotive

Fluke test tools to help you get the job done

Fluke tools for commercial electricians



Legend

- ◆ Power Distribution Center
- ✗ Heat Exchanger
- ▲ HVAC Blower
- ◆ Drive Control
- Motor and Motor Control Center
- Electrical

Fluke 1AC II VoltAlert Voltage Detector



Best suited for:

- Non-contact voltage detection on electrical circuits
- Detecting voltage before work begins

See page 22 for details

Fluke 116 Digital Multimeter



Best suited for:

- Measures volts, ohms, capacitance and temperature
- Resistance and continuity
- 600 V ac and dc measurement range

See page 18 for details

Fluke 62 Mini IR Thermometer



Best suited for:

- Surface temperature readings
- Finding heating and ventilation problems
- Non-contact monitoring of electrical motors and panels

See page 53 for details

Fluke T5 Voltage, Continuity and Current Tester



Best suited for:

- Measure loads on a branch circuit at a service level
- Measure the load side voltage of a circuit breaker or fuse
- Map outlets to breakers
- Check individual voltages (either ac or dc)
- Determine resistances up to 1000 ohms
- Check circuit continuity

See page 22 for details

Fluke 322 Clamp Meter



Best suited for:

- Verify the presence of load current, ac/dc voltage and continuity
- Current measurements up to 400 A in tight cable compartments
- Higher resolution for loads below 40 A

See page 33 for details

Fluke 87V Industrial True-rms Multimeter w/temp



Best suited for:

- VSD motor drive installation and troubleshooting
- Accurate frequency and voltage measurements on motor drives and in electrically noisy environments
- Built-in thermometer for temperature measurements
- CAT III 1000 V rated to protect against high voltage transients up to 8 kV

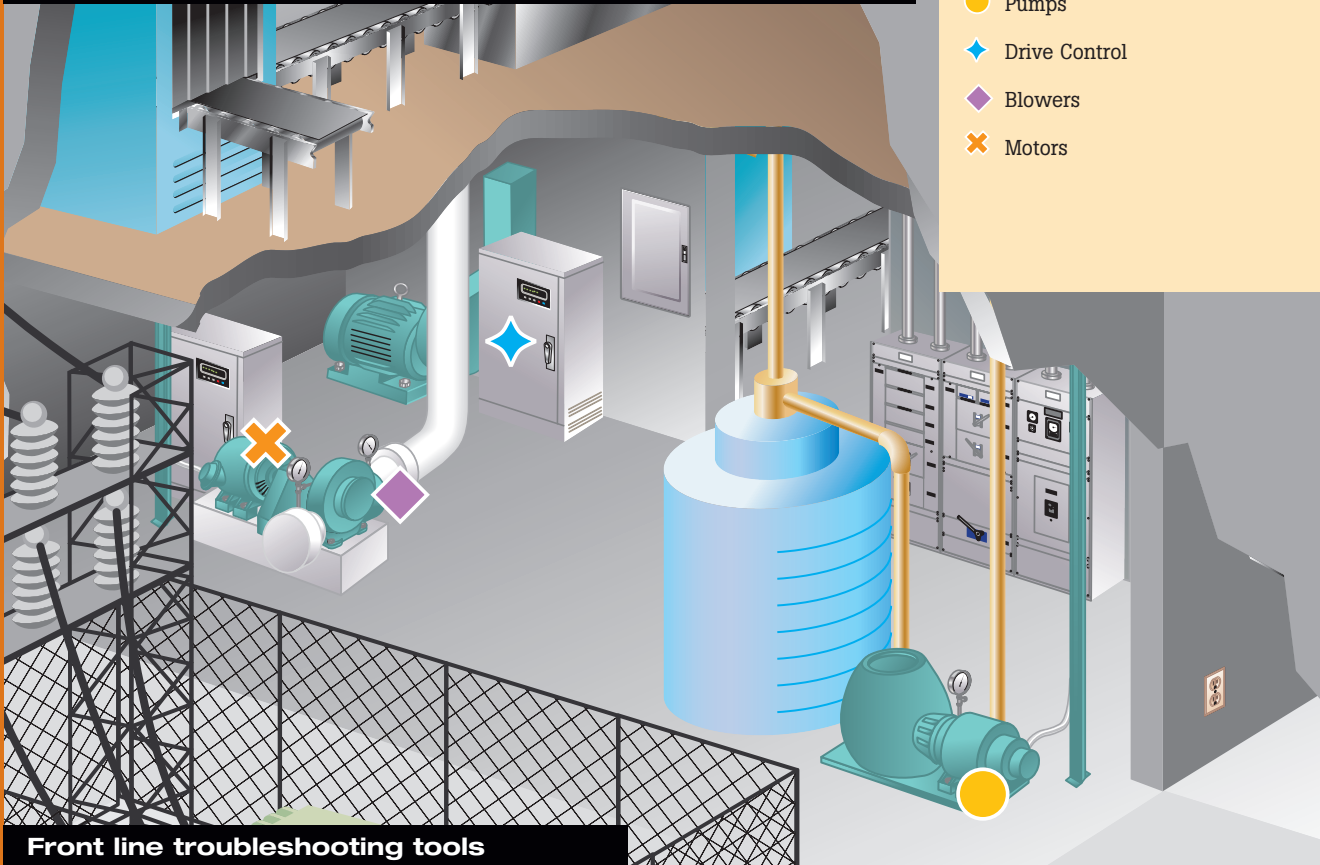
See page 14 for details

Fluke test tools to help you get the job done

Fluke tools for industrial electricians

Legend

- Pumps
- ◆ Drive Control
- ◆ Blowers
- ✕ Motors



Front line troubleshooting tools

Fluke 87V Industrial True-rms Multimeter w/temp



Best suited for: VSD motor drive installation and troubleshooting.

Features:

- Accurate frequency and voltage measurements on motor drives and in electrically noisy environments
- Built-in thermometer for temperature measurements

See page 13 for details



Fluke 1587 Insulation Multimeters



Best suited for: Work on motors, generators, cables or switch-gear.

Features:

- Measuring insulation test voltages to 1000 V
- Prevents insulation test if voltage > 30 V is detected for added user protection
- Filter for motor drive measurements

See page 35 for details



Fluke 337 AC/DC True-rms Clamp Meter



Best suited for: Measure inrush current on electric motor startup and electric motor testing and troubleshooting

Features:

- Inrush current measurements to measure start up current on electric motors
- Frequency measurements to help track down power quality problems

See page 33 for details



Preventive and predictive maintenance

Fluke 434 Three-Phase PQ Analyzer



Best suited for: Troubleshooting and preventing problems in power distribution systems.

Features:

- Simultaneously measure voltage and current on all three phases and neutral
- High-resolution color screen simplifies operation
- Tough enough for industrial environments, easy to carry, works for seven hours per battery charge

See page 25 for details



Fluke 576 Photographic IR Thermometer



Best suited for: Measuring surface temperatures, quickly locating lubrication problems, overloads, short-circuits or misaligned and overheated equipment.

Features:

- Last ten temperature readings displayed on bar graph for easy reference
- Customizable log names, alarms and emissivity values for more efficient, less error-prone predictive maintenance routes

See page 51 for details



Fluke Ti20 Thermal Imager



Best suited for: Displaying a visual image of surface temperatures to easily and safely identify potential problems.

For use on:

- Electrical power distribution systems
- Electro-mechanical equipment
- Process instrumentation
- Facility maintenance

See page 48 for details



Fluke test tools to help you get the job done

Fluke tools for HVAC/IAQ technicians



Legend

- ◆ Indoor Air Comfort
- ✕ Superheat and Subcooling
- ▲ Electrical
- ◆ Motors/Pumps/Compressors
- Building Diagnostics
- Filtration and Ventilation
- ▼ Furnace

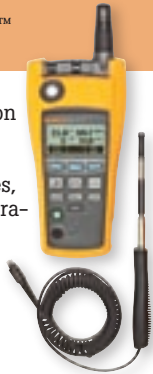
Fluke 975 AirMeter™



Best suited for: Optimizing HVAC ventilation settings for ASHRAE 62 recommendations

- Simultaneously measures, logs and displays temperature, humidity, velocity, CO₂ and CO

See page 54 for details



Fluke 983 Particle Counter



Best suited for: Troubleshooting and maintaining indoor air quality

- Measures particle size, temperature, and relative humidity
- Data logging and six-channel particle size display

See page 55 for details



Fluke 116 Digital Multimeter



Best suited for: Troubleshooting HVAC equipment and flame sensors

- Thermometer and microamps
- Volts ac/dc, resistance, diode, continuity, and Min/Max/Avg

See page 18 for details



Fluke 902 True-rms HVAC Clamp Meter



Best suited for: HVAC system diagnosis and repair

- Capacitance and true-rms
- DC current to 200 μ A
- Contact temperature

See page 54 for details



Fluke 561 HVACPro IR Thermometer



Best suited for: Measuring hot, moving, electrical energized objects

- Contact and non-contact measurement
- Compatible with standard type-K thermocouple
- Includes Velcro® pipe probe

See page 52 for details



Fluke IR Insight XS/XST Thermal Imagers



Best suited for: Quick, accurate building diagnostic surveys

- High resolution images and display
- Industry -leading thermal sensitivity
- Simple, one-button operation

See page 50 for details



Online resource centers

Test tool applications

Electrical Resource Center

www.fluke.com/electrical_resource_ctr

Product demos, software downloads, earth ground education, application notes, training and events information.



HVAC/IAQ Resource Center

www.fluke.com/IAQ

FAQs, white papers, case studies and application notes, downloads, and product demos.



Plant Maintenance Resource Center

www.fluke.com/plant_resource_ctr

ROI calculator, PDM program, maintenance techniques, tool profiles, common culprits.



Thermal Imaging Resource Center

www.fluke.com/thermal_resource

Online product selection guide, product information, application notes, software



Biomedical Resource Center

www.fluke.com/biomed_resource_ctr

Product news and information, catalog, trade-up program, and tradeshow schedule.

Electronics Resource Center

www.fluke.com/electronics_resource_ctr

Tips from the field, product demos, application notes, and product showcase.

Intrinsic Safety Resource Center

www.fluke.com/ex

Standards explanations, industry applications, guidelines, and product information.

Building Diagnostics Resource Center

www.fluke.com/buildings

Image gallery, application notes, and expert tips on using thermography to identify structural, thermal, moisture, and air leakage problems in buildings.

Precision Measurement and Calibration Resource Center

www.fluke.com/precision_resource_ctr

New product information, e-news bulletins, total solutions newsletter, industry links, users community, used certified equipment, technical papers and application notes.

Process Control Resource Center

www.fluke.com/process_resource_ctr

Process calibration glossary, industry information, ROI calculator, application notes, and product demos.

Solve more problems with Fluke Tools

Fluke is more than digital multimeters. These days, Fluke offers the ultimate go-everywhere DMM as well as specialized tools for electrical, industrial, HVAC, and electronic applications.

Increasingly, technicians are using their Fluke tools together, in a one-two troubleshooting combination.

Use a thermal imager to find a problem, then use a DMM, clamp meter, or power quality analyzer to fix it.

Use a power logger to check power usage, use an AirMeter to optimize the HVAC system, and then log power again to see the impact of your adjustments.

The online resource centers on this page can help you find the right tools for your applications, learn how to use them, and get to work.

Your site-specific knowledge plus Fluke tools makes for an impressive troubleshooting team.

Plus, the new generation of Fluke tools is smaller, lighter, and easier to use than ever. They meet higher safety standards. They download to reports. And they're as reliable and tough as ever.

By offering a system of tools that work together, Fluke aims to help you solve more problems, faster and better, no matter where you work.

Utilities Resource Center

www.fluke.com/utilities_resource_ctr

Training and events information, product demos, specialized technical support, application notes, and power quality, thermography and earth ground information for utilities.



Fluke... more than just tools

Test tool information

Since 1949 the Fluke Corporation has been dedicated to the design and manufacturing of innovative test and measurement instruments. Fluke also leads the way in providing programs, training and resources that help you stay at the forefront of your profession.

FlukePlus Tool Info Online

www.fluke.com/flukeplus

FlukePlus is a website for test tool users who want to learn more. Sign up and get:

- Product tips and "how to" articles
- Previews of the newest Fluke tools
- Special offers and promotions
- Direct connection to Fluke technical support



Fluke Education Partnership Program

www.fluke.com/education

We've teamed up with colleges, trade, technical, vocational schools, and apprenticeship programs to bring the latest application information and tools into the classroom. Currently available in USA, Canada, Brunei, Burma, India, Indonesia, Laos, Malaysia, Philippines, Singapore, Taiwan, Thailand and Vietnam.



Electrical Measure- ment Safety Program

www.fluke.com/safety

Get a free safety video, a summary of safety standards and helpful articles on safe electrical measurement practices. (Available only in the U.S.)



Test Tool Users Online Community

www.fluke.com/community

See what other test tool users are saying and get your questions answered, fast! The Test Tool Community online bulletin board is free and open to everyone.



Application Notes www.fluke.com/appnotes

Fluke has a complete library of application notes and white papers on topics ranging from predictive maintenance to maintaining motors and drives to automotive troubleshooting and more.



Fluke News

www.fluke.com/flukenews

Fluke News is published two times a year with new tips, tools and articles in each issue.

Fluke Electrical News

For electrical contractors or electricians working in residential, commercial, or industrial environments.



Fluke Plant News

For electricians, electrical supervisors, field service technicians, plant technicians and process engineers maintaining industrial equipment in the field or plant.



Fluke Electronics News

For electronics or electrical engineers who use DMMs, benchtop meters, and oscilloscopes in prototyping, design and field evaluation situations.



Fluke HVAC/IAQ News

All-new articles about tools, measuring practices, and business opportunities for HVAC and Indoor Air Quality (IAQ) professionals.



Safety and You

Why is safety important? Why should you care?

Between five and ten times on any given day, arc flash explosions, sufficient to send a victim to a special burn center, take place in the U.S. These incidents and other less serious electrical accidents result in injury—sometimes death—lost work time, medical costs and insurance claims, downtime, the list goes on.

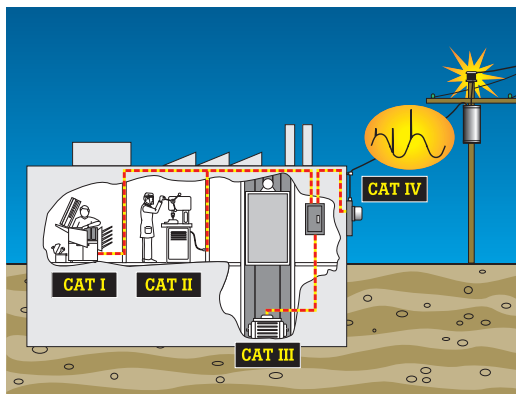
The cost to both the victim, the victim's family and the company involved, are high. Yet many of these accidents can be prevented. The combination of training, good measurement technique, and the use of proper tools can significantly reduce the chance of an accident occurring.

What are the Standards?

To provide improved protection for users, industry standards organizations have taken steps to clarify the hazards present in electrical supply environments. The American National Standards Institute (ANSI), the Canadian Standards Association (CSA), and the International Electrotechnical Commission (IEC), have created more stringent standards for voltage test equipment used in environments of up to 1000 volts.

ANSI, CSA and IEC define four measurement categories of over-voltage transient impulses. The rule of thumb is that the closer the technician is working to the power source, the greater the danger and the higher the measurement category number. Lower category installations usually have greater impedance, which dampens transients and helps limit the fault current that can feed an arc.

- CAT (Category) IV is associated with the origin of installation. This refers to power lines at the utility connection, but also includes any overhead and underground outside cable runs, since both may be affected by lightning.
- CAT III covers distribution level wiring. This includes 480-volt and 600-volt circuits such as 3-phase bus and feeder circuits, motor control centers, load centers and distribution panels. Permanently installed loads are also classed as CAT III. CAT III includes large loads that can generate their own transients. At this level, the trend to using higher voltage levels in modern buildings has changed the picture and increased the potential hazards.
- CAT II covers the receptacle circuit level and plug-in loads.
- CAT I refers to protected electronic circuits.



Some installed equipment may include multiple categories. A motor drive panel, for example, may be CAT III on the 480-volt power side, and CAT I on the control side.

Independent testing labs help ensure safety compliance

You want your tools and equipment to help you work safely. But how do you know that a tool designed to meet a safety standard will actually deliver the performance you are paying for?

Unfortunately it's not enough to just look on the box. The IEC (International Electrotechnical Commission) develops and proposes standards, but it is not responsible for enforcing the standards. Wording like "Designed to meet specification..." may not mean a test tool actually performs up to spec. Designer's plans are never a substitute for an actual independent test.



Go to www.fluke.com/safety to view The Fluke Electrical Measurement Safety Program and order your free copy of the Fluke Safety video. This video makes the standards easy to understand and can be used as part of your own internal safety program.



LISTED

Underwriters Laboratories (UL)



Canadian Standards Association (CSA)



TUV and VDE (German standards organizations) are approval/listing agencies



United States Department of Labor Mine Safety and Health Administration

That's why independent testing is so important. To be confident, check the product for the symbol and listing number of Underwriters Laboratories (UL), the Canadian Standards Association (CSA), TÜV or another recognized testing organization. Those symbols can only be used if the product successfully completed testing to the agency's standard, which is based on national/international standards. That is the closest you can come to ensuring that the test tool you choose was actually tested for safety.

What does the CE symbol indicate?

A product is marked CE (Conformité Européenne) to show it conforms to health, safety, environment and consumer protection requirements established by the European Commission. Products from outside the European Union cannot be sold there unless they comply with applicable directives. But manufacturers are permitted to self-certify that they have met the standards, issue their own Declaration of Conformity, and mark the product "CE." The CE mark is not, therefore, a guarantee of independent testing.

Why are Fluke products different?

Don't be confused by "Listed" vs. "Designed to" in your test tools. IEC sets the standards but does not test or inspect for compliance. So a manufacturer can claim to "design to" a standard with no independent verification. To be UL-Listed, CSA or TÜV-Certified, a manufacturer must employ the listing agency to TEST the product's compliance with the standard. Look for the listing agency's emblem on the meter.

For more information, go to www.fluke.com/safety

Service Information

Think of Fluke first for technical service, repair and calibration

Fluke customer support is ready to help



Calibrating a thermometer.

Technical service at your fingertips

We know Fluke tool users put their tools through the paces, so we're ready to answer your questions and help keep your tools in top shape. No matter what application, in what industry. And we'll do it through real technical service professionals in Everett, Washington.

When you need questions answered, call Sales and Application Support at 1-888-44-Fluke or email fluke-info@fluke.com

The Fluke experts answering your call can help with just about any test tool question. They specialize in:

- Advice on what to buy, from problem analysis to tool compatibility and configuration
"If I'm working with three phase motors, what's the best tool to use?"
- Help on how to use your tools in any application, from automotive to industrial
"How come I'm not getting a reading?"
"How do I transfer my test results?" "How do I measure harmonics?"

When your Fluke tools need repair or calibration, call Customer Support Services at 1-888-99-Fluke or email service.status@fluke.com. Customers outside the U.S. email service.international@fluke.com or visit www.fluke.com/service to find your nearest location.

If your tool isn't working correctly, or if you dropped it, ran over it, or dunked it in the pool, call Fluke. If it's not under warranty, we'll give you a cost estimate over the phone. Once you send it in, we'll verify the problem, fix it, test it and put it back in the mail often in less than five working days.

Fluke recommends having your DMMs, Calibrators and ScopeMeter test tools calibrated once a year—especially if you use them often or need accurate measurements to meet regulations requirements. Calibration compares your tool's measurements to the accuracy standard—sort of like setting your watch to match an atomic clock. Some test tools live a pretty rough life. If you calibrate them, you know they're accurate—even after what you put them through.

For more information on servicing your Fluke tools outside of the U.S., see page 2 for contact information.

Application note, literature code 2153519:

Why calibrate test equipment?

Why would a digital test tool need to be calibrated? It's not as though any analog parts will go out of balance. Well, have any events occurred that would render your instruments less accurate or unsafe? Is accurate measurement essential to your operations? Are you trending data? Read this application note to find out what causes calibration problems and whether you should consider calibrating your test instruments.

Visit www.fluke.com/why-calibrate



Application note, literature code 2138394:

Shocking treatment

Because of our commitment to safety, all Fluke equipment is designed to provide as much protection as possible from the inherent dangers of working in the unsettled sea of electricity.









Fluke products are dropped, shocked, short circuited, injected with thousands of volts of electricity and forced to endure extreme temperature, just to get out the door.

To learn more about our product tests, visit www.fluke.com/shocking



Pick the right digital multimeter for you

Digital Multimeter Selection Guide

								
Models	Highest accuracy with data logging 189	Industrial troubleshooting 87V	True-rms and built-in thermometer 179	Designed for building maintenance 117	Designed for HVAC/R technicians 116	Waterproof and chemical resistant 27	Two powerful tools in one 1587	4-20 mA loop diagnostics 789
Basic features								
True-rms readings	AC+DC	AC	AC	AC	AC		AC	AC
Basic dc accuracy	0.025 %	0.05 %	0.09 %	0.5 %	0.5 %	0.1 %	0.09 %	0.1 %
Wide bandwidth	100 kHz	20 kHz				30 kHz		
Auto/manual ranging	•	•	•	•	•	•	•	•
Digits	4-1/2	4-1/2	3-1/2	3-1/2	3-1/2	3-1/2		3-1/2
Counts	50000	20000	6000	6000	6000	3200	6000	4000
Measurements								
Voltage ac/dc	1000 V	1000 V	1000 V	600 V	600 V	1000 V	1000 V	1000 V
Current ac/dc	10 A	10 A	10 A	10 A	600 µA	10 A	400 mA	1 A
Resistance	500 MΩ	50 MΩ	50 MΩ	40 MΩ	40 MΩ	32 MΩ	50 MΩ	40 MΩ
Frequency	1 MHz	200 kHz	100 kHz	50 kHz	50 kHz	50 kHz	100 kHz	20 kHz
Capacitance	50 mF	10 mF	10 mF	10 mF	10 mF		10 mF	
Temperature	+1350 °C	+1090 °C	+400 °C		+400 °C		+500 °C	
dB	60 dB							
Conductance	50 nS	50 nS				32 nS		
Duty cycle/pulse width	•	•						
Motor drive measurements/low pass filter		•					•	
Continuity with beeper	•	•	•	•	•	•	•	•
Diode test	•	•	•	•	•	•	•	•
Display								
Dual display	•							•
Analog bargraph	•	•	•	•	•	•		•
Backlight	•	•	•	•	•		•	•
Data storage and exchange								
Min/Max recording		•	•	•	•	•	•	•
Min/Max recording/with time stamp	•						•	
Fast Min/Max	250 µs	250 µs						
Display Hold/Auto (Touch) Hold	•	•	•	•	•	•		•
Relative reference	•	•				•		•
PC interface	•							•
Data logging	•							with PC
Readings memories	100							
Other features								
Automatic selection, LoZ				•				
Insulation test range							0.01 MΩ to 2 GΩ	
VoltAlert, non-contact ac voltage detector				•				
Real time clock	•							
Overmolded case, integrated holster	•		•					•
Removable holster		•		•	•		•	
ToolPak Magnetic Hangar compatibility	•	•	•	•	•			•
Closed case calibration	•	•	•	•	•		•	•
Separate battery door	•	•	•	•	•	•	•	•
Completely sealed/watertight						•		
Automatic power off	•	•	•	•	•		•	•
Low battery indication	•	•	•	•	•	•	•	•
Operating temperature range	-20 °C, +55 °C	-20 °C, +55 °C	-10 °C, +50 °C	-10 °C, +50 °C	-10 °C, +50 °C	-40 °C, +55 °C		-20 °C, +55 °C
4-20 mA								•
24 V loop supply								•
Warranty and electrical safety								
Limited lifetime warranty	•	•	•			•		
Warranty (years)				3	3		3	3
Input alert	•	•						
Dangerous voltage indication	•	•	•	•	•		•	•
CAT III measurements	1000 V	1000 V	1000 V	600 V	600 V	1000 V	1000 V	1000 V
CAT IV measurements	600 V	600 V	600 V			600 V	600 V	
See page	12	14	15	17	18	19	35	43

More comprehensive information is available at www.fluke.com/dmm

Test faster and safer with a new Fluke

Move up to more measurement performance and safety

Move up from your old 87 and benefit from more than a dozen improvements

Function	Original 87	87V	Benefit
Selectable filter for motor drives	No	Yes	Accurate voltage and frequency measurements on pulse width modulated signals
Built-in thermometer	No	Yes	No separate thermometer required
Capacitance	5 nf to 5 µF	5 nf to 10,000 µF	Measure more capacitors
V dc accuracy and resolution	0.1 %, 10 µV	0.05 %, 10 µV	Precise measurements in a handheld tool
Display digits	13.5 mm x 7 mm	15.25 mm x 8.5 mm	30 % larger makes it easy to read
Backlight	Green	2-level, bright white	Easier to read in dark locations
Magnetic hanger	No	Optional (included with kit)	Position meter for easy viewing
Peak capture	1 ms	250 µS	Record intermittent problems four times faster
CAT electrical safety rating	No	Yes, 2nd edition ANSI and IEC 61010	Increased protection from 8 kV spikes that can cause arc flash
Battery door	No	Yes	Change battery quickly without breaking cal seal
Warranty	Expired	Limited lifetime	Lower cost of ownership



Get accurate voltage and frequency measurements on adjustable speed motor drives with the 87V.

Move up from your old 8060 or 8062 and benefit from more than 20 improvements

Function	8060	189	Benefit
Built-in recorder with time stamp	No	Yes	Record and view intermittent problems without a chart recorder
PC interface	No	Yes, software optional	Transfer readings to a PC for analysis and documentation
Built-in thermometer	No	Yes, probe optional	No need to carry a separate thermometer
Capacitance	No	5 nf to 50,000 µF	Measure capacitors with one tool
V dc and V ac resolution	10 µV	1 µV	Precise measurements in a handheld tool
dBv and dBm	Yes	Yes	Measure communication circuits
Duty cycle and pulse width	No	Yes	Measure control circuits
In-line current	2 A	10 A, 1000 V fuse	Safely measure five times more current
Relative offset	No	Yes	Remove test lead resistance See small signal variations
Range selection	Manual, 8 switches	Auto/Manual range	Simpler to use, more durable
Peak capture, MIN/MAX	No	250 µS	Record intermittent problems
Backlight	No	2-level, bright white	Easier to read in dark locations
Holster	No	Integrated overmold	Stands up to accidental drops
Magnetic hanger	No	optional TPAK	Position meter for easy viewing
CAT electrical safety rating	No	Yes, 2nd edition ANSI and IEC	Increased protection from 8 kV spikes that can cause arc flash
Battery door	No	Yes	Change battery quickly without breaking cal seal
Warranty	Expired	Limited lifetime	Lower cost of ownership



Use the built-in data logging feature of the 189 to record readings and the time they occurred to catch intermittent problems.

Move up from your old 70 or 20 series and benefit from more than 15 improvements

Feature	Original 77	179	Benefit
True-rms	No	Yes	Accurate on non-linear signals
Accuracy, basic dc	0.3 %	0.09 %	Three times more accurate
Temperature	No	Yes	No need for a separate thermometer
Min/Max/Average	No	Yes	Capture intermittent problems
Display size	Small	20 % larger	Large, easy to read
Display backlight	No	Yes	Easy to read in dark locations
Simple to use	Yes	Yes	No retraining required
Probe holders	Yes	Improved	One-hand operation
Latest electrical measurement safety standards	Not rated	1000 V CAT III, 600 V CAT IV	Designed to withstand 8,000 volt peak transient impulses and protect against arc flash
Optional magnetic hanger	No	Yes	Position meter in best location
Warranty	Expired	Limited lifetime	Lower cost of ownership
Frequency	No	Yes	Built in frequency counter
Capacitance	No	Yes	Measure motor capacitors and components
Max. ac voltage	750	1000	Wider measurement range
Battery door	No	Yes	Change battery quickly without breaking cal seal



The ultimate multi-purpose meter, the 179 combines precision, safety and reliability to help you get any job done.

Fluke 189 Logging Multimeter

Solve complex problems for electronic and industrial applications



True-rms

The Fluke 189 is the most advanced meter with features, precision and accuracy to troubleshoot industrial and electronic equipment in the field or on the bench. The Fluke 189 has a **built-in data logger** to record measurements unattended. Recorded data can be viewed on the 189 or transferred to a PC with optional FlukeView® Forms software.

- Built in data logger (Fluke 189) records reading and time to catch intermittent problems
- True-rms, 100 KHz bandwidth for precise measurement of non linear signals
- 0.025 % dc accuracy and 1 microvolt resolution for bench meter performance in a handheld package
- Measure 20 A for up to 30 seconds, 10 A continuous
- Temperature, capacitance, dB, frequency, pulse width and duty cycle to find more problems with one tool
- Large bright white display with dual parameter readout to view multiple readings at once
- Min/Max with timestamp to record signal fluctuations
- Peak capture to measure transients as short as 250 μ s
- Isolated IR communication port to send data to a PC (with optional FVF pack)
- Premium test leads and alligator clips (AC72) included
- **New!** Optional USB data cable with FlukeView Forms
- **New!** Optional battery pack (BP189) extends battery life to over 400 hours

Electrical safety

All inputs are protected to measurement CAT III 1000 V and CAT IV 600 V.



Available in non-logging version as Fluke 187

Log and document



Buy Combo Pack and Save

NEW! The 189/FVF2 Data Logging Multimeter and Software Combo Pack gives you a practical, affordable approach to predictive maintenance.

- With built-in data logger, the 189 helps you track down elusive, intermittent problems, monitoring equipment with any of its functions, while you do other jobs
- Overlay data from six meters or six time periods to find cause and effect relationships or for condition monitoring applications
- With break-through accuracy and precision, catch events as brief as 50 ms
- Designed for harsh environments that would ruin most data loggers or multimeters
- Log up to 450 hours of data using the extended battery pack
- Turn data into meaningful graphs and tables using FlukeView Forms software
- TPAK™ Magnetic Hanger allows you to securely hang your meter for monitoring or hands-free use
- Soft carrying case to protect your investment
- USB cable included with kit

Specifications - 189 and 187 DMMs

Function	Range and resolution	Best accuracy 180 Series
V dc	50.000 mV, 500.00 mV, 3000.0 mV, 5.0000 V, 50.000 V, 500.00 V, 1000.0 V	± 0.025 %
V ac	50.000 mV, 500.00 mV, 3000.0 mV, 5.0000 V, 50.000 V, 500.00 V, 1000.0 V	± 0.4 %
A dc	500.00 μ A, 5.000 μ A, 50.000 mA, 400.00 mA, 5.0000 A, 10.000 A*	± 0.15 %
A ac	500.00 μ A, 5.000 μ A, 50.000 mA, 400.00 mA, 5.0000 A, 10.000 A*	± 0.75 %
Resistance	500.00 Ω to 500.0 M Ω	± 0.05 %
Capacitance	1.000 nF to 50.00 mF	± 1.00 %
Frequency	500.00 Hz, 5.0000 kHz, 50.000 kHz, 999.99 kHz	± 0.005 %
Temperature	-200 °C to 1350 °C (-328 °F to 2462 °F)	± 1 % of reading
Duty cycle	10 % to 90 %, resolution 0.01 %	—
Pulse width	2 ranges, 499.99 ms and 999.9 ms, best resolution 0.01 ms	3 %
dBm, dBv	-62 to +60, resolution 0.01dB	0.1 dB

*10 A continuous, 20 A for up to 30 seconds and not specified.

Battery life: 72 hours typical (alkaline), 450 hours typical with Battery Extender (BP189)
Size (LxWxD): 203 mm x 100 mm x 50 mm (8.00 in x 3.94 in x 1.97 in)
Weight: 0.545 kg (19.2 oz)

Recommended accessories - 189 and 187 DMMs



TL910
Electronic Test Probes
See page 63



TL81A
Test Lead Kit
See page 63



C125
Meter Case
See page 70



BP189
High Capacity Battery Pack
See page 65



FVF-SC2
FlukeView Forms Software
See page 65

Included accessories

Every 180 series meter comes packaged with TL71 Silicone Test Leads, probe holders, two AC72 Alligator Clips, four AA batteries (installed), CD-ROM (users manual and technical notes) and operator's guide.

Ordering information

Fluke-189/FVF2 Logging Multimeter and Software Combo Pack
 Fluke-189 Logging Multimeter
 Fluke-187 Digital Multimeter
 FVF-SC2 FlukeView Forms Software w/cable

For more information and detailed specifications, go to www.fluke.com/dmm

FlukeView® Forms Software

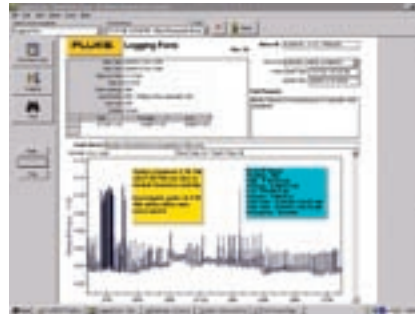
Utilize this powerful tool to analyze your measurements



Harness the power of the data logging function on your Fluke Digital Multimeter. FlukeView Forms offers an easy-to-use, customizable solution to help you document logged data. Easy-to-use wizards allow you to download readings from your Fluke tool and display individual readings or a series of measurements.

- Graph data to help you detect trends, analyze, predict and prevent problems
- Print, save and share logged data
- Log live readings while connected to a PC, or leave your Fluke 189 in place to capture up to 1,000 readings for download to a PC
- Display readings from up to six different meters on the same graph to show links between multiple processes, events and locations
- Record and display any function the meter measures: volts, ohms, frequency, capacitance, temperature, diode testing and more
- Free demo-reader download allows co-workers or clients to open your report and interact with captured data
- Export data into Microsoft® Excel

To take a test drive of the power of FlukeView Forms, download demonstration software for free at www.fluke.com/flukeviewforms

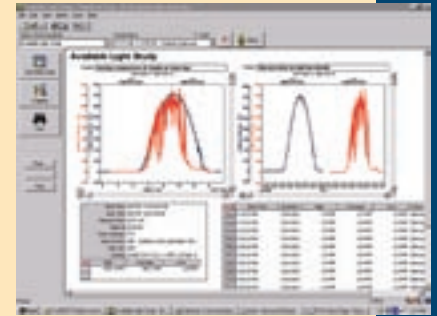


You can share reports and add notes to draw attention to and explain anomalies.

Customize reports using your specific data or company logo, spot trends and document interruptions or spikes.



A single graph overlaying two time periods makes analysis easier.



Use the FlukeView designer to turn simple time and event data into fully customized reports.



Fluke 189, 189/FVF2 Kit and 187 capabilities

	189/FVF2	189	187	Benefit
Fluke 180 Series Multimeter and premium test leads	•	•	•	Fluke's top-of-the-line multimeter with maximum feature set to troubleshoot any situation.
PC connectable	•	•	•	Use to download and document test results.
Logging capabilities	•	•		Reduce man-hours by using logging to find problems and intermittent glitches.
FlukeView Forms software	•			Document and print measurement data in a clear and organized format.
Overlay and graph data from up to six meters	•	•		Find elusive cause/effective relationships.
Compatible with FlukeView Forms Demo Reader	•	•	•	Allow data to be distributed and shared with individuals throughout a company for free.

Compatible with

- FVF-SC2 Fluke 187 and 189 Digital Multimeters, Fluke 1550B MegOhmMeter, Fluke 789 ProcessMeter™
- FVF-SC1 Fluke 53-II and 54-II Thermometers
- FVF-SC3 Fluke 45 Bench Meter

For more information and detailed specifications, go to www.fluke.com/flukeviewforms

Fluke 87V Industrial Multimeter

Diagnostic functions for maximum industrial productivity



True-rms

The Fluke 87V has measurement functions, troubleshooting features, resolution and accuracy to solve more problems on motor drives, in-plant automation, power distribution and electro-mechanical equipment.

New features for maximum productivity

- Unique function for accurate voltage and frequency measurements on adjustable speed motor drives and electrically noisy equipment (87V and 87V Ex)
- Large digit display with bright two level backlight makes the 87V significantly easier to read
- Measure 20 A for up to 30 sec, 10 A continuously
- Optional magnetic hanger for easy setup and viewing while freeing your hands for other tasks (TPAK)
- Expanded capacitance range to 10,000 μ F
- Built-in thermometer (87V)

Electrical safety

All inputs are protected to CAT III 1000 V and CAT IV 600 V. They can withstand impulses in excess of 8,000 V to help protect you from arc blast resulting from surges and spikes.

Available in intrinsically safe version as the **Fluke 87V Ex.**



Also available as 83V average responding multimeter, see below for specifications

Application note, literature code 2155830:

Multimeter measurements on adjustable speed drives utilizing the Fluke 87V DMM

How do I troubleshoot an adjustable speed drive with a digital multimeter?

Read this and other application notes at www.fluke.com/library



New

Features - 87V and 83V DMMs

Feature	87V Ex	87V	83V
ATEX II 2G EEx ia IIC T4 safety rating for use in Zone 1 and Zone 2	•		
True-rms ac voltage and current for accurate measurements on non linear signals	•	•	
Selectable filter for accurate voltage and frequency measurements on motor drives	•	•	
0.05 % dc accuracy	•	•	
4-1/2 digit mode for precise measurements	•	•	
Built-in thermometer lets you carry one less tool	•	•	
Large display digits and two level bright white backlight for increased visibility	•	•	•
10,000 μ F capacitance range for components and motor caps	•	•	•
Peak capture to record transients as fast as 250 μ s	•	•	
Measure up to 1000 V ac and dc	•	•	•
Measure up to 10 A, 20 A for up to 30 seconds	•	•	•
Auto and manual ranging for maximum flexibility	•	•	•
Analog bargraph	•	•	•
Frequency to 200 kHz and % duty cycle	•	•	•
Min/Max and average recording to capture variations automatically	•	•	•
Relative mode to remove test lead resistance from low ohms measurements	•	•	•
Access door for fast battery changes without breaking the calibration seal	•	•	•

Fluke 87V/E2 Industrial Electrician's Combo Kit

Make industrial troubleshooting even more productive with accessories.

- 87V Industrial Multimeter
- **New!** C35 lightweight soft case to provide optimal protection and storage
- TL224 1.5 m silicone leads resist heat
- TP238 removable probes with 4 mm of exposed metal for use on industrial circuits
- AC220 retractable long reach alligator clips
- ToolPak™ meter hanging accessory to hold meter to steel surfaces
- 80BK K-type temperature probe

Included accessories

Every Fluke 83V and 87V meter comes packaged with TL75 Test Leads, AC72 Alligator Clips, holster, 9 V battery (installed), 80BK Temperature Probe (87V only) CD-ROM (users manual and technical notes) and operator's guide.

Ordering information

- Fluke-87-5 Industrial True-rms Multimeter with Temperature
- Fluke-87-5/E2 Industrial Electrician's Combo Kit
- Fluke-83-5 Industrial Multimeter

Specifications - 87V and 83V DMMs

Function	Range and resolution	Basic accuracy	
		87V	83V
DC volts	600.0 mV, 6.000 V, 60.00 V, 600.0 V, 1000 V	0.05 %	0.1 %
AC volts	600.0 mV, 6.000 V, 60.00 V, 600.0 V, 1000 V	0.7 % (true-rms)	0.5 %
DC current	600.0 μ A, 6.000 μ A, 60.00 μ A, 600.0 mA, 6.000 A, 10.00 A	0.2 %	0.4 %
AC current	600.0 μ A, 6.000 μ A, 60.00 μ A, 600.0 mA, 6.000 A, 10.00 A	1.0 % (true-rms)	1.2 %
Temperature [excl. probe]	-200 °C to 1090 °C (-328 °F to 1994 °F)	1.0 %	-
80BK Temperature Probe	-40 °C to 260 °C (-40 °F to 500 °F)	2.2 °C or 2 %	-
Resistance	600.0 Ω , 6.000 k Ω , 60.00 k Ω , 600.0 k Ω , 6.000 M Ω , 50.00 M Ω	0.2 %	0.4 %
Capacitance	10.00 nF, 100.0 nF, 1.000 μ F, 10.00 μ F, 100.0 μ F, 9.999 μ F	1.0 %	1.0 %
Frequency	199.99 Hz, 1.9999 kHz, 19.999 kHz, 199.99 kHz	0.005 %	0.005 %

Battery life: 400 hours typical with backlight off. Size (LxWxD): 201 mm x 98 mm x 52 mm (7.9 in x 3.8 in x 2 in). Weight: 355 g (12 oz)

For more information and detailed specifications, go to www.fluke.com/dmm

Fluke 179 Digital Multimeter

Versatile meters for maintenance and field service



True-rms

The 179 true-rms Multimeter has the features needed to find most electrical and HVAC problems. Simple to use with significant improvements over the original Fluke 70 Series like true-rms, the 179 has more measurement functions, conformance to the latest safety standards and a much larger display that's easier to view.

Features include:

- Wide 1000 V measurement range
- True-rms for precise measurement of non linear signals
- Capacitance, resistance, continuity and frequency
- Built-in thermometer (Fluke 179 only)
- Large, easy-to-read display
- Backlight for work in dimly lit areas (Fluke 177 and 179 only)
- Min/Max/Avg to record signal fluctuations
- Free your hands with the optional TPAK magnetic hanger (Fluke TPAK)

Electrical safety

All inputs are protected to measurement CAT III 1000 V and CAT IV 600 V. This meter can withstand transient impulses in excess of 8000 V to help protect you from arc blasts resulting from surges and spikes.



New

179/EDA2 Electronics Multimeter and Deluxe Accessory Combo Kit

- 179 True-rms Digital Multimeter
- **New!** C35 lightweight soft case to provide optimal protection and storage
- TL910 Electronic Test Probes
- TL224 SureGrip™ Silicone Test Leads resist heat
- AC280 SureGrip™ Heavy Duty Hook Clips
- 80BK Type-K temperature probe
- ToolPak™ meter hanging accessory to hold meter to steel surfaces



New

179/1AC-II Electrician's Multimeter and Voltage Tester Combo Kit

- 179 True-rms Digital Multimeter
- 1AC-II VoltAlert™ Non-Contact Voltage Detector
- **New!** C35 lightweight soft case to provide optimal protection and storage
- AC220 retractable long reach alligator clips
- TP220 sharp 12 mm stainless steel tip provides reliable contact
- TL224 1.5 m silicone leads resist heat
- ToolPak™ meter hanging accessory to hold meter to steel surfaces
- 80BK K-type temperature probe

Features - 175, 177 and 179 DMMs

Feature	179	177	175
Max voltage	1000	1000	1000
True-rms	•	•	•
Temperature	•	•	•
Basic dc accuracy	0.09 %	0.09 %	0.15 %
Backlight	•	•	•
Min/Max/Avg	•	•	•
ToolPak meter hanging kit with magnet	Opt	Opt	Opt

Specifications - 179, 177 and 175 DMMs

Function	Range and resolution	Best accuracy
DC voltage	600.0 mV, 6.000 V, 60.00 V, 600.0 V, 1000 V	± 0.09 % (Models 177 and 179) ± 0.15 % (Model 175)
AC voltage ¹	600.0 mV, 6.000 V, 60.00 V, 600.0 V, 1000 V	± 1.0 % of reading
DC current	60.00 mA, 400.0 mA, 6.000 A, 10.00 A ²	± 1.0 % of reading
AC current ²	60.00 mA, 400.0 mA, 6.000 A, 10.00 A ²	± 1.5 % of reading
Resistance	600.0 Ω, 6.000 kΩ, 60.00 kΩ, 600.0 kΩ, 6.000 MΩ, 50.00 MΩ	± 0.9 % of reading
Capacitance	1000 nF, 10.00 μF, 100.0 μF, 9999 μF	± 1.2 % of reading
Frequency ³	99.99 Hz, 999.9 Hz, 9.999 Hz, 99.99 kHz	± 0.1 % of reading
Temperature (Model 179)	-40 °C to +400 °C (-40 °F to +752 °F)	1.0 % of reading

¹All ac voltage and ac current ranges are specified from 5 % of range to 100 % of range.
²10 A continuous, 20 A for up to 30 seconds.
³Voltage frequency is specified from 2 Hz to 100 kHz. Current Frequency is specified from 2 Hz to 30 kHz.
Battery life: 200 hours typical for alkaline. **Size (HxWxL):** 4.3 cm x 9.0 cm x 18.5 cm (1.7 in x 3.5 in x 7.3 in)

Recommended accessories - 179, 177 and 175 DMMs



For more information and detailed specifications, go to www.fluke.com/dmm

Included accessories

Every Fluke 170 Series meter comes packaged with TL75 test leads, 9 V battery (installed) and manual. The Fluke 179 comes with an 80BK Temperature Probe.


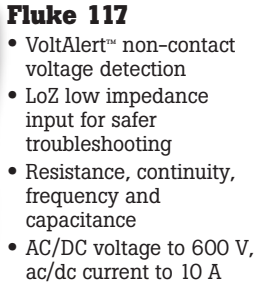






Ordering information

- Fluke-179 Digital Multimeter
- Fluke-179/1AC-II Electricians Combo Kit
- Fluke-179/EDA2 Electronics Combo Kit
- Fluke-175 Digital Multimeter
- Fluke-177 Digital Multimeter



Fluke Family of True-rms Digital Multimeters

Engineered by Fluke for working professionals

Commercial electricians		HVAC/R technicians			
 Fluke 112	 New	 <ul style="list-style-type: none"> • VoltAlert™ non-contact voltage detection • LoZ low impedance input for safer troubleshooting • Resistance, continuity, frequency and capacitance • AC/DC voltage to 600 V, ac/dc current to 10 A 	 Fluke 12, 16	 New	<ul style="list-style-type: none"> • Temperature to 400 °C • Resistance, continuity, frequency and capacitance • LoZ low impedance input for safer troubleshooting • AC/DC voltage to 600 V, ac/dc current to 600 µA
Field service technicians		Basic electrical			
 Fluke 110, 111	 New	<ul style="list-style-type: none"> • Resistance, continuity, frequency and capacitance • AC/DC voltage to 600 V • AC/DC current to 10 A 	 Fluke 7-600	 New	<ul style="list-style-type: none"> • LoZ low impedance input for safer troubleshooting • Resistance and continuity • AC/DC voltage to 600 V

Basic features	114	115	116	117
True-rms readings	ac	ac	ac	ac
Basic dc accuracy	0.5 %	0.5 %	0.5 %	0.5 %
Digits	3-1/2	3-1/2	3-1/2	3-1/2
Counts	6000	6000	6000	6000
Measurements				
Voltage ac/dc	600 V	600 V	600 V	600 V
Current ac/dc	–	10 A	600 µA	10 A
Resistance	40 MΩ	40 MΩ	40 MΩ	40 MΩ
Frequency	–	50 kHz	50 kHz	50 kHz
Capacitance	–	10 mF	10 mF	10 mF
Temperature	–	–	+400 °C	–
Display				
Analog bargraph	•	•	•	•
Large backlit display	•	•	•	•
Data storage and exchange				
Min/Max recording	•	•	•	•
Display hold/auto touch hold	•	•	•	•
Other features				
Automatic selection, LoZ	•		•	•
VoltAlert, non-contact ac voltage detector				•

For more information and detailed specifications, go to www.fluke.com/dmm



Fluke 117 and 115 True-rms Digital Multimeters

Designed for commercial electricians and field service technicians

New



Fluke 117

The Fluke 117 is the ideal meter for demanding settings like commercial buildings, hospitals and schools. The 117 includes integrated non-contact voltage detection to help get the job done faster.

The 117 features include:

- **VoltAlert™ Technology** for integrated non-contact voltage detection
- **AutoVolt feature** for automatic ac/dc voltage selection
- **LoZ:** low input impedance prevents false readings due to "ghost voltage"
- Large display and white LED backlight to work in poorly lit areas more effectively
- Compact design for one-handed operation
- Min/Max/Average to record signal fluctuations
- Compatible with optional magnetic hanger (ToolPak™) for hands free operation
- Current measurement 20 A (30 seconds momentary; 10 A continuous)
- Resistance, continuity, frequency and capacitance

Fluke 115

The new Fluke 115 is the solution for a wide electrical and electronic testing applications.

The 115 features include:

- Large display and white LED backlight to work in poorly lit areas more effectively
- Compact ergonomic design for one-handed operation
- Min/Max/Average to record signal fluctuations
- Resistance, continuity, frequency and capacitance



New



Application note, literature code 1260729:

Why true-rms?

If you're measuring non-linear loads like variable frequency drives, solid state heater drives, or electronics, you need a true-rms tool to get accurate readings.

Average responding meters will read low, up to 30 or 40 percent low in some cases. This application note explains what true-rms is and when you need it in your test tool.

Want to read more? Download this and other application notes at www.fluke.com/library



Features - 117 and 115 DMMs

Feature	117	115
VoltAlert™	•	
AutoVolt/LoZ	•	
Analog bargraph		•
Large backlit digital display	•	•
True-rms for accurate measurements on non-linear loads	•	•
Min/Max recording	•	•
Display hold	•	•
3-1/2 digits	•	•
6000 counts	•	•
CAT III 600 V safety rated	•	•

Specifications - 117 and 115 DMMs

Function	Range and resolution	Best accuracy
Volts ac/dc	600 V	0.5 % + 2
Current ac/dc	10 A	1.0 % + 3
Resistance	40 MΩ	0.9 % + 2
Capacitance	1 nF to 9,999 µF	1.9 % + 2
Frequency	5 Hz to 50 kHz	0.1 % + 2
Diode	2 V	0.9 % + 2

Recommended accessories - 117 and 115 DMMs



ToolPak™
Meter Hanger
See page 71



TL220
SureGrip Industrial
Test Lead Set
See page 61



C50
Carrying Case
See page 70

For more information and detailed specifications, go to www.fluke.com/dmm



New

117/322 Electrician's Combo Kit

- 117 True-rms digital multimeter with non-contact voltage detection
- **New!** C115 Deluxe carrying case with shoulder strap
- 322 Compact clamp meter
- TL75 Hard Point Test Lead Set
- ToolPak Magnetic Meter Hanging Strap

Included accessories

TL75 Test leads, holster, users manual and 9 V battery (installed).

Ordering information

- Fluke-117 Multimeter with Non-Contact Voltage
- Fluke-117/322 Electrician's Combo Kit
- Fluke-115 Multimeter



Fluke 116 and 114 Digital Multimeters

Designed for HVAC/R technicians and electrical troubleshooting

New



Fluke 116

The Fluke 116 was specifically designed for the HVAC professional. It has everything needed in an HVAC meter including temperature and microamp measurements to quickly troubleshoot problems with HVAC equipment and flame sensors.

The 116 features include:

- Built in thermometer for HVAC applications
- Microamps to test flame sensors
- Min/Max/Average to record signal fluctuations
- Large white LED backlight to work in poorly lit areas
- Compact ergonomic design for one-handed operation
- Min/Max/Average to record signal fluctuations
- Compatible with optional magnetic hanger (ToolPak™)
- Resistance, continuity, frequency and capacitance

Fluke 114

The new Fluke 114 is the troubleshooting tool for "go/no-go" testing. It includes a feature to prevent false readings caused by ghost voltage.

The 114 features include:

- AutoVolt: Automatic ac/dc voltage selection
- LoZ: Helps prevent false readings due to ghost voltage
- Large white LED backlight to work in poorly lit areas
- Compact ergonomic design for one-handed operation
- Resistance, continuity, frequency and capacitance

New



Application note, literature code 2434064:

Fossil fuel heating equipment

This application note explains the basic principles of fossil fuel heating systems (gas and oil) and how to troubleshoot them using thermometers, DMMs, clamp meters, pressure/vacuum modules, and other accessories. The instructions cover the thermostat controls, fan controls, flame verification controls, and cad cell testing.

Want to read more? Download this and other application notes at www.fluke.com/library



New

116/62 HVAC Combo Kit

- Fluke 116 HVAC Multimeter with Temperature and Microamps
- Fluke 62 Infrared Thermometer
- TL75 Hard Point Test Lead Set
- ToolPak™ Magnetic Meter Hanging Strap
- **New!** C115 Deluxe carrying case with shoulder strap
- **New!** 80PK-11 Pipe Wrap Thermocouple
- Fluke 80AK Thermocouple Adapter
- Fluke 80BK B-Type Integrated Temperature Probe

Included accessories

TL75 Test Leads, 80BK Integrated Temperature Probe (116 only), holster, users manual and 9 V battery (installed).

Ordering information

Fluke-116 HVAC Multimeter with Temperature and Microamps
 Fluke-116/62 HVAC Combo Kit
 Fluke-114 Electrical Multimeter

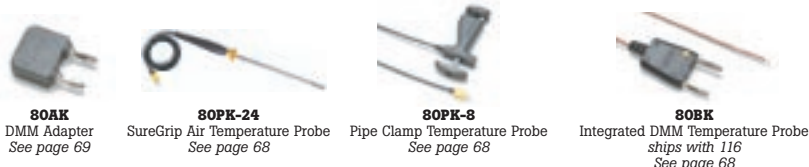
Features - 116 and 114 DMMs

Feature	116	114
Temperature measurements	•	
AutoVolt/LoZ	•	•
Analog bargraph	•	•
Large backlit digital display	•	•
True-rms for accurate measurements on non-linear loads	•	•
Min/Max recording	•	•
Display hold	•	•
3-1/2 digits	•	•
6000 counts	•	•
CAT III 600 V safety rated	•	•

Specifications - 116 and 114 DMMs

Function	Range and resolution	Best accuracy
Volts ac/dc	600 V	0.5 % + 2
Current ac/dc	10 A	1.0 % + 3
Temperature (116 only)	+400 °C	1.0 % + 18
Resistance	50 kHz	0.9 % + 2
Capacitance (116 only)	1 nF to 9,999 µF	1.9 % + 2
Frequency (116 only)	5 Hz to 50 kHz	0.1 % + 2
Diode (116 only)	2 V	0.9 % + 2

Recommended accessories - 116 Digital Multimeter



For more information and detailed specifications, go to www.fluke.com/dmm



Fluke 77-IV Digital Multimeter

Versatile meters for field service or bench repair



The new 77-4 digital multimeter has the features needed to repair most electrical and electronic problems. This meter is simple to use and has significant improvements over Fluke's original 70 Series with more measurement functions, conformance to the latest safety standards, and a much larger display that's easier to view.

Measures

- Wide 1000 V measurement range
- Average responding ac measurements
- 0.3 % accuracy
- 10 Amps continuous
- Frequency and capacitance
- Resistance and continuity

Features

- Large display
- Backlight for work in dim areas
- Min / Max to record signal fluctuations
- Integral holster with probe holders
- Free your hands with the optional TPAK magnetic hanger
- Auto and Manual ranging



Fluke 27 waterproof multimeter

Completely sealed for extreme conditions

Designed for U.S. military, mining and other extreme applications. A special case with o-rings prevents water from entering the input jacks, switches and fuse door. Meets military specifications for vibration, shock and water resistance.



- Waterproof design with rugged, o-ring sealer case protects rotary switch, input jacks, battery and fuse door
- Operates from -15 °C to +55 °C (5 °F to 131 °F) and 95 % relative humidity

Features - 77-IV Digital Multimeter

Feature	Old 77	New 77-IV	Benefit
Accuracy	0.3 %	0.3 %	Same great accuracy
True-rms	No	No	Same familiar readings
Frequency	No	Yes	Built in frequency counter
Capacitance	No	Yes	Test components
Maximum ac voltage	750	1000	Wider measurement range
Min/Max/Average	No	Yes	Capture transients automatically
Display backlight	No	Yes	Usable in dim areas
Battery door	No	Yes	Fast battery changes
Probe holders	No	Yes	One-hand operation
Overvoltage category safety rating	Not rated	600 V CAT IV	Higher level of protection
Optional magnet hanger	No	Yes	Position meter in best location

Fluke 73-III

The Fluke 73-III product represents one of the best selling multimeter designs of all time. It's classic simplicity combined with attractive feature set make this meter the perfect choice for electronic and automotive applications.



The 73-III features include:

- Average responding
- Measures both amps and milliamps
- Removable high impact holster
- Manual or autoranging

Specifications - 77-IV Digital Multimeter

Function	Range	Best accuracy	Best resolution
V dc	600.0 mV to 1000 V	± (0.3 % + 1)	0.1 mV
V ac	6.000 V to 1000 V	± (2.0 % + 2)	1.0 mV
A dc	60.00 mA to 10 A	± (1.5 % + 2)	0.01 mA
A ac	60.00 mA to 10 A	± (2.5 % + 2)	0.01 mA
Resistance	600.0 Ω to 50 MΩ	± (0.5 % + 1)	0.1 Ω
Capacitance	1 nF to 9,999 μF	± (1.2 % + 2)	1 nF
Frequency	99.99 Hz to 99.99 kHz	± (0.1 % + 1)	0.01 Hz

Recommended accessories - 77-IV Digital Multimeter



Fluke 77-IV included accessories

TL75 test leads, 9 V battery (installed) and manual.

Fluke 27 included accessories

TL75 test leads, alligator clips, 9 V battery (installed) and manual.

Ordering information

Fluke-77-4 Digital Multimeter
Fluke-73-3 Digital Multimeter
Fluke-27-YEL Multimeter

For more information and detailed specifications, go to www.fluke.com/dmm

Complete automotive diagnostic tools

Tools designed to help you beat the book



Fluke 88V Automotive Multimeter

The Fluke 88V Automotive Multimeter is designed to help automotive professionals beat the book. This DMM has more measurement functions, troubleshooting features and accuracy to solve virtually any problems on conventional and hybrid vehicles.

- Automotive test functions include dc and ac voltage, resistance and current
- Min/Max recording for logging the highest and lowest readings over time
- Frequency measurements for magnetic sensors and ac/dc frequency signals
- Duty Cycle for variable duty cycle signals with selectable trigger slope and level
- Pulse width for fuel injector on time measurements
- Conductance testing for secondary ignition coils
- RPM measurements for DIS and conventional ignition systems
- Built-in thermometer

Fluke 73-III (see pg 19 for details)

- Simple interface for one-handed operation
- Current measurement (A and mA)
- Auto or manual ranging



Application note, literature code 1547394:

Beat the book

This amazing reference covers test procedures commonly used by experienced automotive technicians. Covers basic troubleshooting techniques and measurements using a DMM and describes tests for the charging system, starting system, fuel and air system, ignition system, and the body electric/engine management/cooling system.



Want to read more? Download this and other application notes at www.fluke.com/library



Features - 88V and 73 DMMs

Feature	88V	73
Digital display with analog bargraph	•	•
Continuity for detecting opens and shorts	•	•
Diode test for alternator testing	•	•
Peak Min/Max captures intermittence as fast as 250 microseconds	•	
Min/Max average to monitor trends in oxygen sensor values for fuel trim	•	
Pulse width for fuel injector on time measurements	•	
Milliamp ranges to find low current parasitic drains	•	
Lo-Ohms (.01 Ω) for low resistance sensor and coil measurements	•	
Duty cycle for pulse width modulated signals	•	
RPM for ignition systems	•	
Temperature for coolant and air temperature sensors	•	
Dwell for points and feedback carburetors	•	
Limited lifetime warranty	•	•

For the complete diagnostics package and maximum value, pick up the 88V/A combo kit.

- Includes Fluke 88 Series V Automotive Multimeter
- TL224 Heat Resistant Silicone Test Leads
- TP220 Removable Sharp Point Test Probes
- AC285 Large Jaw Alligator Clips
- TPAK Magnetic Hanger
- 80BK Temperature Probe
- RPM80 Inductive Pick-up
- Automotive Backprobe Pins
- Insulation Piercing Probe
- Packaged in a durable carrying case (C800)

Buy accessory kits and save



TLK281

Automotive Test Lead Kit
See page 61



TLK282

Deluxe Automotive Test Lead Kit
See page 61



TL288A

Automotive Test Lead Set
See page 62



TL82

Automotive Pin & Socket Adapter Set
See page 63

Recommended automotive accessories - 88V DMM



TP81 or TP82

Insulation Piercing Probes
See page 63



TP84

Oxygen Sensor Insulation Piercing Probe
See page 63



TP88

Rigid Backprobe Pin Set
See page 63



TP40

Automotive Back Probe Pin Set
See page 63

Fluke 88V included accessories

Test leads, 9 V battery (installed), RPM pickup, carrying case and users manual.

Ordering information

Fluke-88-5 Automotive Multimeter
Fluke-88-5/A KIT Automotive Multimeter Combo Kit
Fluke-73-3 Digital Multimeter

For more information and detailed specifications, go to www.fluke.com/dmm

Digital Multimeters

Fluke 8845A and 8846A 6.5 Digit Precision Multimeters

Precision and versatility for bench or systems applications

New



Fluke 8845A

New



Fluke 8846A

True-rms



The Fluke 8845A and 8846A, 6.5 digit precision multimeters have the precision and versatility to handle your most demanding measurements on the bench or in a system.

Dual display offers versatile graphical capabilities: The 8845A and 8846A feature a unique graphical display that can reveal signal quality issues like drift, intermittent and stability by viewing the measurement data as a real time TrendPlot™ Histogram or Statistics using the unique analyze mode.

Wide measurement ranges: Resistance or current has been extended to cover the widest range possible.

Perform 4-wire measurements easily with two leads: Patented split terminal jacks for 2x4 ohms function allow you to perform precise 4-wire measurements with only two leads instead of four. Optional Kelvin leads accessories are available to enable you to establish a 4-wire connection even in tight spaces.

Systems capabilities: Both instruments include an RS-232, IEEE-488 and Ethernet interface as standard, with popular DMM emulation modes that make systems integration a simple task.

Software: Transfer data points from your meter to your PC with the free copy of FlukeView Forms Basic. To customize your forms, upgrade with FVF-UG.

Application note, literature code 2547797:

Understanding specifications for precision multimeters

A solid understanding of specifications is critical when you're evaluating the suitability of DMMs for an application, or when you must be confident that your readings accurately reflect reality. This application note discusses some of the thinking behind DMM specifications and spec sheets. It defines the various elements of DMM specs and gives tips on how to apply them.

Want to read more? Go to www.fluke.com/library to download this and other application notes, or get info specific to your industry and sign up for Fluke News publications at www.fluke.com/subscribe.



Features - 8845A and 8846A

Feature	8845A	8846A
Display	Dual VFD Dot Matrix	
Resolution	6.5 Digits	
Continuity / Diode Test	Yes	
Analytical Functions	Statistics, Histogram, TrendPlot™, Limit Test	
Math Functions	Zero, Min/Max/Average, Std Dev; mx + b, dB/dBm	
USB Device Port	-	USB memory drive port
Real Time Clock	-	Yes
Interfaces	RS-232, IEEE-488.2, Ethernet, USB (with optional adapter)	
Programming Languages/Emulation Modes	SCPI (IEEE-488.2), Agilent 34401A, Fluke 45	
Safety	Designed to comply with IEC 61010-2000-1, ANSI / ISA-S82.01-1994, CAN / CSA-C22.2 No.1010.1-92 1000 V CAT I / 600 V CATII	



Use the built-in TrendPlot paperless chart recorder to graphically identify the extent of drift and intermittent events in analog circuits.



View results in Histogram mode to reveal stability or noise problems in analog circuits.

Specifications - 8845A and 8846A

Function*	8845A			8846A		
	Range	Resolution	Accuracy* (%)	Range	Resolution	Accuracy* (%)
Voltage dc	1000 V	100 nV	0.0035	1000 V	100 nV	0.0024
Voltage ac (freq. 300 Hz)	750 V	100 nV	0.06	1000 V	100 nV	0.06
Resistance (2x4 wire)	100 MΩ	100 μΩ	0.01	1 GΩ	10 μΩ	0.01
Current dc	10 A	100 pA	0.05	10 A	100 pA	0.05
Current ac (freq. 3 Hz to 10 kHz)	10 A	1 μA	0.10	10 A	10 nA	0.10
Freq/period	300 kHz	1 μHz	0.01	1 MHz	1 μHz	0.01
Capacitance	-	-	-	1 nF to 0.1 F	1 pF	1
Temperature RTD	-	-	-	-200 °C to +600 °C	0.001°	0.06°

*Accuracy = ± (% of reading)

Size (HxWxD): 88 mm x 217 mm x 297 mm (3.45 in x 8.54 in x 11.69 in) Weight: 3.6 kg (7.9 lb) One-year warranty



Handle even the most demanding measurements with high accuracy and 6.5 digit resolution.

Recommended accessories - 8845A and 8846A Precision Multimeters



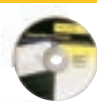
TL2X4W-PT
2x4 Wire Ohms Test Lead
2 mm probe tip



TL2X4W-TWE
2x4 Wire Ohms
Tweezer



884X-512M
USB Memory 512M



FVF-UG
FlukeView Forms
Software Upgrade

For more information and detailed specifications, go to www.fluke.com/884X

Included accessories

LCI Line Power Cord, TL71 Test Lead Set, Spare Line Power fuse, Programmers Manual/User Manual on CD-ROM, FVF-BASIC FlukeView Forms Software Basic Version.

Ordering information

Fluke-8845A 6.5 Digit Precision Multimeter, 35 ppm
Fluke-8846A 6.5 Digit Precision Multimeter, 24 ppm

Fluke T5 and T3 Electrical Testers

Fluke 9040 Rotary Field Indicator

The Fluke 9040 is a premium phase rotation tester with a CAT III, 600 V rating. The frequency range is from 15 Hz to 400 Hz for demanding applications. The clear liquid crystal display and the holster make it suitable for rough outdoor applications. This instrument is supplied with three unique, expandable, test probes which fit most sockets.



For more information, visit www.fluke.com/9040

Fluke T5 Voltage, Continuity and Current Tester

- Excellent front-line troubleshooting and measurement tool
- Available in 600 V and 1000 V models
- Digital display
- OpenJaw™ current measurement
- Rotary switch selects volts, amps and ohms functions
- Heavy-duty test leads

Fluke T3 Voltage and Continuity Tester

- LED voltage indicators
- Seven key voltage levels
- Automatically switches to continuity beeper or ac/dc voltage
- Heavy-duty test leads



Fluke 1AC-II/1LAC-II VoltAlert

The pocket-sized voltage detector

The next generation VoltAlert™ ac non-contact voltage testers from Fluke are easy to use—just touch the tip to a terminal strip, outlet, or supply cord. When the tip glows red and the unit beeps, you know there is voltage present. Electricians, maintenance, service, safety personnel and homeowners can quickly test for energized circuits in the workplace or at home. Certified up to CAT IV 1000 V.

Two models to choose from:

- **1AC-II** – detects voltage from 90 V ac to 1000 V ac
- **1LAC-II** – detects voltage from 20 V ac to 90 V ac

Included accessories

The T5-1000 and T5-600 come with detachable probes and instruction sheet. The T3 has fixed test leads and probes.

Ordering information

T5-1000	1000 V Voltage, Continuity and Current Tester
T5-600	600 V Voltage, Continuity and Current Tester
T3	Voltage and Continuity Tester
T3-1AC Kit	Voltage and Continuity Tester Kit
T5-H5-1AC Kit	Voltage, Continuity and Current Tester Kit
1AC-II 5PK	VoltAlert 5 Pack
1AC-II	Voltage Detector
1LAC-II	Voltage Detector
9040	Rotary Field Indicator

Specifications – T5 and T3 Testers

	T5-1000	T5-600	T3
Measure dc voltage	1000 V	600 V	Preset 6 V, 12 V, 24 V, 36 V, 48 V, 110 V and 220 V*
Measure ac voltage	1000 V	600 V	Preset 24 V, 48 V, 120 V, 208 V, 240 V, 277 V and 480 V*
Measure ac current (average)	100 A	100 A	N/A
Measure continuity	< 25 Ω	< 25 Ω	< 20,000 Ω
Measure resistance	1000 Ω	1000 Ω	N/A
DC polarity indicator	Yes	Yes	Yes
Detachable probe tips with optional probe tips styles	Yes	Yes	N/A
Safety rating	1000 V Overvoltage CAT III	600 V Overvoltage CAT III	1000 V Overvoltage CAT III
Warranty	Two-years	Two-years	One-year

* Voltage levels will vary depending on country of intended use.

Buy Electrical Tester Kits and Save

T3 Tester Kit

- Combo kit includes:
- Fluke T3 Voltage and Continuity Tester
 - Fluke VoltAlert™

T5-1000 Tester Kit

- Combo kit includes:
- Fluke T5-1000 Voltage Electrical Tester
 - Fluke VoltAlert™
 - Fluke H5 Holster

VoltAlert™ Multi Pack

Includes five Fluke VoltAlerts. The special kit pricing gets you the fifth VoltAlert™ free. Outfit your entire staff.

Recommended accessories – Electrical Testers



For more information and detailed specifications, go to www.fluke.com/tseries

Electrical Testers



Fluke 1625 and 1623 Geo Earth Ground Testers

Advanced technology for all your earth ground testing applications



Fluke 1623



Fluke 1625

The new Fluke 1620 Series Earth Ground Testers not only measure ground resistance using the classic 'fall of potential test' but also enable time saving testing using the 'selective' and 'stakeless' methods. 'Selective' testing does not require the electrode under test to be disconnected during the measurement, thus increasing safety. The simple 'stakeless' method quickly checks ground connections using two current transformers (probes) clamped around the ground conductor under test. Offering 'one-button' simplicity, the 1623 is an all-in-one earth ground tester, while the 1625 has extra versatility for more demanding applications.

Earth ground resistance and soil resistivity should be measured when:

- Designing earth ground systems
- Installing new ground system and electrical equipment
- Periodically testing ground and lightning protection systems
- Installing large electrical equipment such as transformers, switchgears, machines, etc.

The 1623 is perfect for performing predictive maintenance checks of commercial and industrial applications. The 1625 is intended for electrical utility or other high frequency environments.

Brochure, literature code 2633834:

Earth Ground Resistance: Principles, testing methods and applications

This brochure is a highly informative collection of information about Earth Ground Systems, testing methods and applications.



Want to read more? Download this and other application notes at www.fluke.com/library

Features – 1625/1623 Earth Ground Testers

Feature	1625	1623
One-button measurement concept		•
3- and 4-pole earth ground measurement	•	•
4-Pole soil resistivity testing	•	•
2-Pole resistance measurement ac	•	•
2-and 4-pole resistance measurement dc	•	•
Selective testing, no disconnection of ground conductor (1 clamp)	•	•
Stakeless testing, quick ground loop testing (2 clamps)	•	•
Measuring frequency 128 Hz		•
Earth impedance measurement at 55 Hz	•	
Automatic frequency control (AFC) [94 Hz to 128 Hz]	•	
Measuring voltage switchable 20/48V	•	
Programmable limits, settings	•	
Continuity with buzzer	•	
Dust/water resistance	IP56	IP56
Safety rating	CAT II 300 V	CAT II 300 V

Battery type: 6 x AA alkaline cells
Size (HxWxD): 110 mm x 180 mm x 240 mm (4.33 in x 7.08 in x 9.45 in)
Weight (including batteries): 1623 Geo: 1.1 kg (2.42 lb); 1625 Geo: 1.5 kg (3.31 lb)
Two-year warranty

Recommended accessories – 1625 and 1623 Earth Ground Testers



Included accessories

Fluke 1625 Tester: 2 test leads, 2 alligator clips, and users manual.

Fluke 1625 Kit: Same as above plus stake/reel set 4 pole, selective/stakeless clamp set, and rugged carrying case.

Fluke 1623 Tester: 2 test leads, 2 alligator clips, and users manual.

Fluke 1623 Kit: Same as above plus stake/reel set 4 pole, selective/stakeless clamp set, and rugged carrying case.

Ordering information

Fluke-1625	Advanced GEO Earth Ground Tester
Fluke-1625 Kit	Advanced GEO Earth Ground Tester Kit
Fluke-1623	Basic GEO Earth Ground Tester
Fluke-1623 Kit	Basic GEO Earth Ground Tester Kit

These products are for unpowered installations measuring grounding connections.

For more information and detailed specifications, go to www.fluke.com/egt



Fluke 1630 Earth Ground Clamp Meter

Measure earth ground loop resistance anywhere. Quickly and easily.



The Fluke 1630 Earth Ground Clamp is able to measure ground loop resistances—using the Stakeless testing method. This test technique eliminates the dangerous, and time consuming activity of disconnecting parallel grounds, as well as the process of finding suitable locations for auxiliary ground stakes. You can also perform earth ground tests in places you have not considered before: inside buildings, on power pylons or anywhere you don't have access to soil.

With the Stakeless testing method, the Fluke 1630 Earth Ground clamp is placed around the earth ground rod or the connecting cable. No earth ground stakes are used at all. A known voltage is induced by one half of the clamp and the current is measured by the other half. The tester automatically determines the ground loop resistance at this grounding connection. Gone are the days of spending time placing and connecting stakes for each earth ground rod on your system—a major time saver.

- Quick and easy use—no earth ground stakes are necessary
- Large, 35 mm (1.35 in) jaw opening
- Measures ground resistance from 0.025 Ω to 1500 Ω
- Measures ground leakage current from 0.2 mA to 30 mA
- High and Low alarming
- Automatic self calibration
- Rugged carrying case and resistance check loop included

What is ground, and what does it do?

The NEC, National Electrical Code, defines a ground as a “conducting connection, whether intentional or accidental between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of the earth.”

When talking about grounding it is actually two different subjects, earth grounding and equipment grounding. Earth grounding is an intentional connection from a circuit conductor usually the neutral to a ground electrode placed in the earth. Equipment grounding is to ensure that operating equipment within a structure is properly grounded.

These two grounding systems are required to be separate except for a connection between the two systems to prevent differences in potential from a possible flashover from a lightning strike. The purpose of a ground besides the protection of people, plants and equipment is to provide a safe path for the dissipation of fault currents, lightning strikes, static discharges, EMI and RFI signals and interference.

Handy GEO Earth Ground Tester Earth ground tester for resistance measurement



The Handy GEO Earth Ground Tester is a rugged, easy-to-use tester for three-pole ground resistance measurements and two-pole ac resistance measurements.

Earth ground resistance is measured by installing earth ground test electrodes and testing with the Handy GEO. Earth ground resistance measurements are used to ensure safe operation and reduce power quality problems. The Handy GEO is extremely lightweight making it ideal to test for lightning protection levels and periodic check-ups during routine maintenance.

Two-pole ac resistance is measured to confirm low resistance between electrical joints:

- Fuse-to-fuse holder (to ensure there is no overheating)
- Bonding of ground earth connections
- Additional bonding
- Cable to terminal connections

AC current can be used to confirm the low resistance path in two directions simultaneously.

The gold standard for measuring ground resistance using classic fall of potential as well as selective and stakeless methods.

Included accessories

Fluke 1630 Clamp Meter: Rugged carrying case with belt, resistance test loop, 9 V battery and users manual.

Handy GEO Tester: Rugged rubber holster with carrying belt, battery, and operating instructions.

Ordering information

Fluke-1630	Earth Ground Clamp Meter
Handy GEO	Earth Ground Tester
Handy GEO Kit	Earth Ground Tester Kit with 25 m and 50 m cable reel and two earth ground stakes

These products are for unpowered installations measuring grounding connections.

For more information and detailed specifications, go to www.fluke.com/egt

Earth Ground Testers



Fluke 430 Series Three-Phase Power Quality Analyzers

Pinpoint power problems faster, safer and in greater detail



Fluke 435

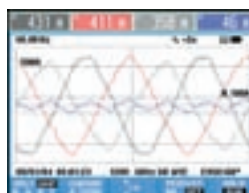


Fluke 434



The Fluke 435 and 434 Three-Phase Power Quality Analyzers help you locate, predict, prevent and troubleshoot problems in three- and single-phase power distribution systems. Troubleshooting is faster with on-screen display of trends and captured events, even while background recording continues. The new IEC standards for flicker, harmonics, and power quality are built right in to take the guess work out of power quality.

- Troubleshoot real-time:** Analyze the trends using the cursors and zoom tools—even while background recording continues
- AutoTrend:** Every measurement you see is always automatically recorded, without any setup
- Automatic Transient Mode:** Capture 200 kHz waveform data on all phases simultaneously up to 6 kV
- Measure all three phases and neutral:** With included four current probes
- Fully Class-A compliant:** Conduct tests according to the stringent international IEC 61000-4-30 Class-A standard
- System-Monitor:** Up to ten power quality parameters on one screen according to EN50160 power quality standard
- Inrush mode:** For troubleshooting nuisance circuit breaker tripping
- Logger function:** Configure for any test condition with memory for over 400 parameters at user defined intervals



Application note, literature code 2435490:

Six simple ways to reduce costs with a Fluke 434 Power Quality Analyzer

There are hundreds of power quality measurements you can take on electrical systems and equipment. These instructions focus on four predictive maintenance (PdM) measurements and two power consumption measurements that can help you uncover hidden costs, protect equipment from damaging conditions, reduce unscheduled downtime, and improve system performance.



Features - 435 and 434 PQ Analyzers

Features	435	434*
Measures voltage, current, dips, swells, interruptions, harmonics, inter-harmonics, flicker, power, energy, transients, frequency, unbalance, inrush, EN50160 overview	•	•
Logger function with multi-parameter logging	•	optional*
Mains signaling	•	optional*
Memory size	16 MB	8 MB
Current probes	3000 A flexible (4)	40 A/400 A clamp (4)
Carrying case	water-tight hard case with rollers	rugged hard case
Software	Fluke Power Log and FlukeView®	FlukeView®

*Optional functionality can be added with upgrade kit.

Recommended accessories - 435 and 434 PQ Analyzers



I5sPQ3
3 pack of 5 A precision current clamps



i430-flex-4pk
4 pack of 3000 A flexible current probes



C435
Water-tight hard case with rollers



GPS430
GPS time synchronization module

For more information and detailed specifications, go to www.fluke.com/pq

Included accessories

Fluke 435 Analyzer: Hard carrying case with rollers, four flexible current probes (i430-flex), five test leads and clips, battery charger, FlukeView software, Power Log software, optical USB cable, color localization set, getting started manual, users manual on CD-ROM.

Fluke 434 Analyzer: Hard carrying case, four current probes (i400s), five test leads and clips, battery charger, FlukeView software, optical USB cable, color localization set, getting started manual, users manual on CD-ROM.

Ordering information

Fluke-435 Three-Phase Power Quality Analyzer
Fluke-434 Three-Phase Power Quality Analyzer

