

SECTION 10

Portable Test Equipment

(DTR's / Insulation Testers, Ground Resistance Meters, Light Meters, Power Analyzers, Thermometers / Calibrators)

- AEMC
- Fluke
- Simpson
- Yokogawa (YCA)

Portable test equipment from the following manufacturers are also available but not shown in catalog:

- Amprobe
- Electro-Industries
- Extech
- Triplet (LFE)
- UEI



PORTABLE TEST EQUIPMENT

Megohmmeters

Digital/Analog Megohmmeters Models 1030, 1040 & 1045



Models 1030, 1040 & 1045



For motors, cables, switchgear and general applications

Features:

- True Megohmmeter®
- Test voltage combinations 250V, 500V and 1000V
- Insulation measurements to 2000MΩ
- Automatic test inhibition if live sample >25V
- Automatic discharge for operator safety
- Multi-line 4000-count backlit digital display with analog bargraph
- Resistance measurements to 400kΩ
- Continuity with 200mA test current
- Timer function for easy DAR and PI
- Over-molded slip-proof holster for rugged field use
- Designed for use in IEC 1010, 600V, Cat. III environments
- Supplied with a soft carrying case

Specifications

MODELS	1030	1040	1045
Insulation Tests			
Test Voltage:	250V 500V —	— 500V 1000V	250V 500V 1000V
Measurement Range:	50kΩ to 2000MΩ (2GΩ)		
Short Circuit Current:	≤3mA		
Accuracy:	3% Reading ± 5ct (<40MΩ) 3% Reading ± 2ct (>40MΩ)		
Voltage Test/Safety Check:	0 to 600Vac/dc		
Voltage Warning Indicator:	>25V		
Test Inhibition:	Yes >25V		
Resistance Tests (Models 1040 & 1045)			
Measurement Range:	—	0.0 to 400kΩ	
Test Voltage:	—	7 to 9V	
Accuracy:	—	3% Reading ± 1ct	
Continuity Tests			
Measurement Range:	0.00 to 20.00Ω		
Test Current:	≥200mA		
Accuracy:	3% Reading ± 1ct		



Field kits include megohmmeter, field case, two color-coded leads, black test probe, two alligator clips, remote test probe, batteries and user manual.

Hands Free Carrying Case Catalog #2118.99

Catalog No.	Description
2116.89	Megohmmeter Model 1030 (Digital, Bargraph, 250V, 500V)
2116.92	Megohmmeter Model 1040 (Digital, Bargraph, Alarm, Backlight, 500V, 1000V, 400k, Continuity)
2116.93	Megohmmeter Model 1045 (Digital, Bargraph, Alarm, Timer, Backlight, 250V, 500V, 1000V, 400k, Continuity)
2117.30	Megohmmeter Field Kit, Model 1040
2117.31	Megohmmeter Field Kit, Model 1045
Accessories (Optional)	
2118.97	Remote Test Probe for Models 1040 & 1045
2118.98	Field Case (Waterproof) for Models 1040 & 1045
2118.99	Hands Free Carrying Case

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Megohmmeters

1000V Digital/Analog Megohmmeters Model 1050 & 1060



Model 1050

Model 1060

Features:

- True Megohmmeter®
- Test voltage combinations of 50V, 100V, 250V, 500V and 1000V
- Insulation measurements to 4000GΩ (4TΩ)
- Direct measurement of DAR and PI values
- Direct measurement of sample capacitance
- Display of test voltage and run time
- Programmable test run times and PI times
- Smooth and Alarm functions
- Automatic test inhibition if live sample (>25V)
- Automatic discharge after use with voltage display
- Large dual display with time, voltage and measurement
- Bright blue electroluminescent backlight
- Battery powered
- Auto power-down when not in use
- 20 reading memory with adjustable sample rate (Model 1050)
- Remote operation with optional test probe
- Rugged dual wall field case with detachable lead/accessory pouch
- IEC 61010-1, 600V Cat III, IEC 61557 and CE rated

Specifications

MODELS	1050	1060
Insulation Tests		
Test Voltage:	50V, 100V, 250V, 500V, 1000V	
Measurement Range:	2kΩ to 4000GΩ	
Accuracy:	5% Reading ± 3cts (2kΩ to 40GΩ)	
Voltage Test/Safety Check:	0 to 1000Vac/dc	
Voltage Warning Indicator:	>25V	
Test Inhibition:	Yes >25V	
Resistance Tests:		
Measurement Range:	0.01Ω to 400kΩ	
Test Voltage:	12.4Vdc max	
Accuracy:	3% Reading ± 3cts	
Continuity Tests		
Measurement Range:	0.01Ω to 39.99Ω	
Test Current:	≥200mA from 0.01 to 20.00Ω	
Accuracy:	3% Reading ± 4cts	
Other Features		
Smooth Function:	Yes	Yes
Memory of Reading over Time R(t):	Yes (20 Readings)	Yes (128k memory)
Report Print Out on Printer:	No	Yes — Format Preset
Memory of Test Results in Files:	No	128k memory with RS-232
Bi-directional Software:	No	Yes (included)
Power Source:	8 x 1.5V D Cells	NiMH Batteries 85 to 256V (50/60Hz)

Model 1060 includes the following additional features:

- AC rechargeable NiMH batteries
- RS-232 interface for direct printing of results (serial output)
- 128k memory to store measurements in specific files
- Remote operation of megohmmeter through PC



Model 1060 with detachable accessory pouch includes one red, one blue test lead, one black shielded lead, one each black, red & blue color-coded alligator clips, one black test probe, one 6 ft RS-232 DB9/DB25 F/F to DB9/DB25 F/F cable, rechargeable battery, software, US 120V power cord and user manual.

Catalog No.	Description
2130.01	Megohmmeter Model 1050 (50V, 100V, 250V, 500V, 1000V with Analog Bargraph)
2130.03	Megohmmeter Model 1060 (50V, 100V, 250V, 500V, 1000V Digital with Analog Bargraph and Memory)

Megohmmeters

5000V Digital/Analog & Graphical Megohmmeter Models 5050, 5060, & 5070



Models 5060 & 5070

Features

- True Megohmmeter[®]
- Test voltage combinations of 500V, 1000V, 2500V and 5000V
- Insulation measurements from 30kΩ to 10,000GΩ (10TΩ)
- Selectable and programmable test voltage (40 to 5100V)
- Automatic calculation of DAR, PI and DD ratios
- Direct measurement and display of Capacitance and Leakage Current
- Display resistance, test voltage and run time
- Programmable test run times and PI ratio times
- Smooth and Alarm functions
- Automatic test inhibition (if live sample >25V)
- Automatic discharge and display of discharge voltage
- Large dual display with time, voltage and measurements shown (Models 5050 and 5060)
- Graphic and digital display of test voltage, resistance and more (Model 5070)
- Bright blue electroluminescent backlight
- Programmable test voltage lock-out
- Programmable alarm setting
- Auto power-down when not in use



- AC or DC powered with rechargeable NiMH batteries
- Rugged, weatherproof field case
- Designed and built to IEC safety standards
- EN 61010-1, 1000V Cat. III

SPECIFICATIONS

MODELS	5050	5060	5070
INSULATION TESTS			
Test Voltage/Range	500V 1000V 2500V 5000V	30kΩ to 2000GΩ (2TΩ) 100kΩ to 4000GΩ (4TΩ) 100kΩ to 10,000GΩ (10TΩ) 300kΩ to 10,000GΩ (10TΩ)	
User Selectable Test Voltage	Programmable: 40 to 1000V: 10V increments; 1000 to 5100V: 100V increments		
Automatic Step Voltage	-	-	Programmable step voltage and duration up to five steps. Three profiles can be stored.
Accuracy	1kΩ to 40GΩ 40GΩ to 10TΩ	±5% of Reading ± 3cts ±15% of Reading ± 10cts	
Voltage Test/Safety Check	0 to 1000Vac/dc		
Voltage Warning Indicator	Yes >25V		
Test Inhibition ⁽¹⁾	Yes — adjustable from 25 to 1000V depending on test voltage range in use		
Smooth Function (user selectable)	Digital filtering stabilizes display readings		
COMMUNICATION			
Storage of Readings over Time R(t)	4kB memory	128kB memory	128kB memory
Report Print Out Direct to Printer	No	Preset format	Preset format
Storage of Test Results	20 Readings	Stores over 1500 test results	Stores over 1500 test results
Communication Port	-	RS-232	RS-232
PC Software/Report Generation	No	Yes (included)	Yes (included)
ELECTRICAL			
Power Source	Eight NiMH rechargeable batteries – line power: 85 to 256V (50/60Hz)		

⁽¹⁾ Inhibit voltage is selectable at 3, 10 or 20% of test voltage



Megohmmeters

1000V Digital Megohmmeter Model 1026

Features:

- Test voltage combinations of 250V, 500V and 1000V
- Insulation measurements to 4000MΩ
- Resistance measurements to 4000Ω
- Continuity test
- Continuity beeper
- 600Vac/dc test voltage range
- Large, easy-to-read digital display
- Data hold switch
- Test button may be “locked-on” for three minutes for hands-free operation
- Automatic discharge when test button is released
- Low battery indication
- Supplied with a soft carrying case and leads



Model 1026



Soft carrying case and test leads included
Catalog #2117.73

Specifications

MODEL	1026
Insulation Tests	
Test Voltage:	250V, 500V, 1000V
Measurement Range:	0.1 to 4000MΩ
Accuracy:	±3% Reading + 5cts < 2MΩ ±5% Reading + 5cts < 4MΩ
Resistance Tests	
Measurement Range:	400Ω to 4000Ω
Accuracy:	±1% Reading + 5cts
Continuity Tests	
Measurement Range:	Displays and beeps below 40Ω
Accuracy:	5% Reading typical
VOLTAGE TESTS	
AC Voltage:	
Measurement Range:	0 to 600V
Accuracy:	±1% Reading + 5cts
DC Voltage:	
Measurement Range:	0 to 600V
Accuracy:	±1% Reading + 3cts

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Catalog No.	Description
2117.72	Megohmmeter Model 1026 (Digital 250V, 500V, 1000V, 4000Ω, V)

Hipot Testers

Hipot Testers Models H110, H115, H210 & H215 Programmable Digital Electrical Safety Testers



Model H215



Features:

- AC Hipot programmable to 5kV@20mA
- DC Hipot programmable to 6kV@7.5mA
- Continuity measurement @ 100mA
- Insulation Resistance to 9999MΩ @ 500Vdc and 1000Vdc
- ARC current detection with programmable limits
- Programmable ramp and dwell times, output voltages and trip limits
- Selectable AC test frequency 50Hz and 60Hz
- Trip current setting without loads
- Automatic testing — store up to 6 test programs
- Line and load regulation for linear output voltage
- Highly visible warning light indicator for HV output
- Pass and fail lights with adjustable buzzer
- Program lock-out feature to prevent use error or program changes

Specifications

MODEL	H110	H115	H210	H215
AC Hipot				
Voltage Range:	100V to 5000Vac (5kV)			
Voltage Step Resolution:	5V			
Voltage Regulation:	1% of Reading ± 5cts			
Accuracy:	1% of Reading ± 5cts			
Frequency:	50Hz or 60Hz (programmable)			
Trip Current:	0.01mA to 20mA in 0.01mA steps			
Max Current Output:	20mA @ 5kV			
Accuracy:	1% of Reading ± 5cts			
Ramp and Dwell Time:	0.000s to 999.9s			
DC Hipot				
Voltage Range:	—	—	100V to 6000Vdc (6kV)	—
Voltage Step Resolution:	—	—	5V	—
Voltage Regulation:	—	—	1% of Reading ± 5cts	—
Accuracy:	—	—	1% of Reading ± 5cts	—
Trip Current:	—	—	0.01mA to 7.50mA in 0.01mA steps	—
Max Current Output:	7.5mA @ 6kVdc			
Accuracy:	1% of Reading ± 5cts			
Ramp and Dwell Time:	0.000s to 999.9s			
Insulation Resistance (IR)				
DC Test Voltage:	—	500V & 100V	—	500V & 100V
Measurement Range:	—	1 to 9999MΩ	—	1 to 9999MΩ

MODEL	H110	H115	H210	H215
Accuracy:				
	—	5%	—	5%
	—	(1 to 500MΩ)	—	(1 to 500MΩ)
	—	10% (500 to 2000MΩ)	—	10% (500 to 2000MΩ)
Test Time:				
	—	0.000s to 999.9s	—	0.000s to 999.9s
Continuity Check				
Resistance Range:	0.001Ω to 1,500Ω			
Test Current:	100mA ± 10mA			
Accuracy:	±0.1Ω @ 1Ω			
Test Time:	0.000s to 999.9s			
	Programmable cancellation of short resistance of test leads			
ARC Detection				
	Programmable in 10 steps from 2mA to 20mA			

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HV Test Pistol (6 ft) Model SP02 (optional) Catalog #2117.88



HV Test Lead 9 ft (3m) included Catalog #2117.89

Catalog No.	Description
2117.81	Hipot Model H110 (5kVac)
2117.82	Hipot Model H115 (5kVac and IR)
2117.83	Hipot Model H210 (5kVac/6kVdc)
2117.84	Hipot Model H215 (5kVac/6kVdc and IR)
Accessories (Optional)	
2117.88	HV Test Pistol Model SP02
2117.89	HV Test lead 9 ft (unterminated, 3m)

Ground Resistance Testers

Clamp-On Ground Resistance Testers Models 3711 & 3731

Features:

- Simple and fast clamp-on operation — no leads, no auxiliary rods or spacing requirements
- Direct reading of ground resistance from 0.1Ω to 1200Ω
- Direct reading of continuity and ground loop resistance
- Direct reading of ground leakage current from 1mA to 30Arms
- Jaw design with large 1.25" (32mm) window — accommodates up to 1000MCM cables
- Auto-off for power management
- Alarm function with adjustable set point and buzzer for quick field checks (Model 3731)
- Memory function to store 99 field measurements for later retrieval and analysis (Model 3731)
- Meets IEC 1010-1, Cat. III and CE Mark
- Rugged Lexan® head and body construction with one-year warranty
- Alarm settings and stored memory information saved during shutdown
- Patented design



Model 3711

US Patent No. 362,639

Model 3731



Specifications

MODELS		3711	3731
GROUND RESISTANCE Ranges			
	Measurement Range	Resolution	Accuracy
Autoranging 0.01Ω to 1200Ω	0.1 to 1.0Ω	0.01Ω	±(2% Reading ± 0.02Ω)
	1.0 to 50.00Ω	0.1Ω	±(1.5% Reading ± 0.1Ω)
	50.0 to 100.0Ω	0.5Ω	±(2.0% Reading ± 0.5Ω)
	100 to 200Ω	1Ω	±(3.0% Reading + 1Ω)
	200 to 400Ω	5Ω	±(6% Reading ± 10Ω)
	400 to 600Ω	10Ω	±(10% Reading ± 10Ω)
	600 to 1200Ω	50Ω	Approx. 25% ± 50Ω
Current Measurement			
Autoranging 1mA to 30.00Arms	1 to 299mA	1mA	±(2.5% Reading + 2mA)
	0.300A to 2.999A	0.001A	±(2.5% Reading + 2mA)
	3.00A to 29.99A	0.01A	±(2.5% Reading + 20mA)
Resistance Measurement Frequency			
>2kHz			
Current Measurement Frequency			
47 to 800Hz			
Current Overload			
OL displayed above 30Arms			
Power SUPPLY			
9V Alkaline battery; Battery life: 8 hours or approximately 1,000 measurements of 30 seconds			

Features & Functions

MODELS	3711	3731
Ohms Range	YES	YES
Arms Range	YES	YES
Hold Function	YES	YES
Self Test	YES	YES
Auto Off	YES	YES
Battery Life Indicator	YES	YES
Noise Indicator	YES	YES
Open Jaw Indicator	YES	YES
Closed Loop Indicator	YES	YES
Multi-Tone Beeper	YES	YES
Alarm Function	—	YES
Memory (Logging)	—	YES



Clamp-On Ground Resistance Tester Models 3711 & 3731 are packaged with calibration loop, battery and user manual in hard carrying case.

Catalog No.	Description
2117.60	Ground Resistance Tester Model 3711
2117.61	Ground Resistance Tester Model 3731

Ground Resistance Testers

Multi-Function Ground Resistance Tester Model 6470

Measure ground resistance, soil resistivity and bonding resistance with one instrument!

NEW!



Model 6470



SPECIFICATIONS

MODEL	6470
ELECTRICAL	
3-Point Measurement	
Range (Auto-Ranging)	0.01 to 99,000Ω
Resolution	0.01 to 100Ω
Test Voltage	16 or 32V selectable
Resistance Measurement Frequency	40 to 513Hz selectable or automatic selection
Test Current	Up to 200mA
Accuracy	±2% of Reading + 1ct
Soil Resistivity 4-Point Measurement	
Test Method	Wenner or Schlumberger selectable with automatic calculation of test results displayed in Ω-meters or Ω-feet
Range (Auto-Ranging)	0.01 to 99,000Ω
Resolution	0.01 to 100Ω
Test Voltage	16 or 32V selectable
Frequency	73, 91.5, 101, 110 or 128Hz selectable
External Voltage Measurement	
Range (Auto-Ranging)	1.00 to 75.0V _{ac/dc} – DC to 500Hz
Accuracy	2% of Reading + 2cts
Resistance Measurement (Bond Testing)	
Measurement Type	2-Point or 4-Point user selectable
Range (Auto-Ranging)	2-Point 0.01 to 99.9kΩ; 4-Point 0.001 to 99.99kΩ
Accuracy	±2% of Reading + 2cts
Test Voltage	16V _{dc}
Test Current	200mA max
Data Storage	
Memory Capacity	512 test results
Communication	Optically isolated USB
Power Source	
Eight 1.2V NiMH rechargeable batteries	
Recharging Source	
110/120 50/60Hz external charge with 18V _{dc} , 1.9A output or 12V _{dc} vehicle power	

Features

- 3- and 4-Point measurement with manual or automatic frequency selection (even during measurement) from 40 up to 500Hz
- Automatic calculation of Soil Resistivity
- Selectable test voltage of 16 or 32V with up to 200mA
- Automatic frequency scan for optimum test frequency in noisy environments
- Automatic measurement of auxiliary electrodes resistance
- Soil resistivity measurement using Wenner or Schlumberger test method
- 2- and 4-Point DC resistance measurement with automatic polarity change (Bonding test function)
- Auto-off power management
- Automatic recognition of all electrode connections and their resistance value
- Memory stores up to 512 test results
- USB communication
- Remote operation of all measurement functions using DataView® software
- Automatic report generation
- Rechargeable NiMH batteries
- Rugged dustproof and rainproof field case — IP54 in closed position
- IEC 61557 part 4 and part 5 compliance
- Includes DataView® software for data storage, real-time display, analysis report generation and system configuration



Model 6470 includes meter, NiMH batteries, optical USB cable, DataView® software, external battery charger, power adapter 110/240V (line) and user manual.

Ground Resistance Testers

Digital Ground Resistance Tester Models 4620 & 4630



Model 4630

SPECIFICATIONS			
MODELS	4620	4630	
ELECTRICAL			
Range	20Ω	200Ω	2000Ω
Measurement Range	0.00 to 19.99Ω	20.0 to 199.9Ω	200 to 1999Ω
Resolution	10mΩ	100mΩ	1Ω
Open Voltage	≤42V peak	≤42V peak	≤42V peak
Resistance Measurement Frequency	128Hz square wave	128Hz square wave	128Hz square wave
Test Current	10mA	1mA	0.1mA
Accuracy	±2% of Reading ± 1ct	±2% of Reading ± 1ct	±2% of Reading ± 3cts
Auxiliary Electrode Influence Max Res. in Current Circuit Max Res. in Voltage Circuit	3kΩ 50kΩ	30kΩ 50kΩ	50kΩ 50kΩ
Response Time	Approximately four to eight seconds for a stabilized measurement.		
Withstanding Voltage	250VAC or 100VDC		
Power Source	Eight C cell batteries; Alkaline recommended	120/230V 50/60Hz Rechargeable 9.6V, 3.5 Ah NiMH batteries	
Battery Life	>2000 15-second measurements; LO BAT indication on LCD		
Fuse Protection	0.1A, >250V, 0.25 x 1.25"; 30kA Interrupt Capacity		

Features

- Measures soil resistivity (4-Point)
- Measures ground resistance (2- and 3-Point) Fall-of-Potential method
- Step voltage tests and touch potential measurements
- Auto-Ranging: automatically selects the optimum range and test current
- Designed to reject high levels of noise and interference
- Extremely simple to operate: connect – press – read
- LED on faceplate informs operator of high input noise, high auxiliary rod resistance and fault connections
- Large easy-to-read backlit display
- Battery powered (Model 4620)
- AC powered with rechargeable NiMH batteries (Model 4630)
- Rugged dustproof and rainproof field case
- Can also be used for continuity tests on bonding
- Color-coded terminals

Test Kit for 3-Point testing includes two 150 ft color-coded leads on spools (red and blue), one 30 ft lead (green), two 14.5" T-shaped auxiliary ground electrodes, one set of five spaded lugs, 100 ft tape measurer and carrying bag. Catalog #2135.35

Test Kit for 4-Point testing includes two 300 ft color-coded leads on spools (red and blue), two 100 ft color-coded leads (green and black), four 14.5" T-shaped auxiliary ground electrodes, one set of five spaded lugs, 100 ft tape measurer and carrying bag. Catalog #2135.36

Test Kit for 4-Point testing includes two 500 ft color-coded leads on spools (red and blue), two 100 ft color-coded leads (green and black), one 30 ft lead (green), four 14.5" T-shaped auxiliary ground electrodes, one set of five spaded lugs, 100 ft tape measurer and carrying bag. Catalog #2135.37

CATALOG NO.	DESCRIPTION
2130.43	Ground Resistance Tester Model 4620 (Digital, 4-Point, Battery Powered)
2130.44	Ground Resistance Tester Model 4630 (Digital, 4-Point, Rechargeable Battery)
2135.19	Ground Resistance Tester Model 4620 Kit – 150 ft (Model 4620 and Catalog #2135.35)
2135.20	Ground Resistance Tester Model 4620 Kit – 300 ft (Model 4620 and Catalog #2135.36)
2135.21	Ground Resistance Tester Model 4620 Kit – 500 ft (Model 4620 and Catalog #2135.37)
2135.22	Ground Resistance Tester Model 4630 Kit – 150 ft (Model 4630 and Catalog #2135.35)
2135.23	Ground Resistance Tester Model 4630 Kit – 300 ft (Model 4630 and Catalog #2135.36)
2135.24	Ground Resistance Tester Model 4630 Kit – 500 ft (Model 4630 and Catalog #2135.37)
Accessories (Optional)	
2130.60	Tape Measure (100 ft)
2135.35	Test Kit for 3-Point testing (includes two 150 ft color-coded leads on spools (red/blue), one 30 ft lead (green), two 14.5" T-shaped auxiliary ground electrodes, set of five spaded lugs, 100 ft tape measure and soft carrying bag)
2135.36	Test Kit for 4-Point testing (includes two 300 ft color-coded leads on spools (red/blue), two 100 ft color-coded leads (hand-tied green/black), four 14.5" T-shaped auxiliary ground electrodes, set of five spaded lugs, 100 ft tape measure and soft carrying bag)
2135.37	Test Kit for 4-Point testing (includes two 300 ft color-coded leads on spools (red/blue), two 100 ft color-coded leads (hand-tied green/black), four 14.5" T-shaped auxiliary ground electrodes, set of five spaded lugs, 100 ft tape measure and soft carrying bag)
2135.38	Ground Test Kit for 3-Point testing (Supplemental for 4-Point testing – includes two 100 ft color-coded leads, one 30 ft lead (green), two 14.5" T-shaped auxiliary ground electrodes and soft carrying bag)

Ground Resistance Testers

Fall-of-Potential Ground Resistance Tester Models 3620, 3640 & 4610

Features

- Measures soil resistivity (4-Point) (Model 4610)
- Measures ground resistance (2- and 3-Point) Fall-of-Potential method
- Large analog display (Model 3620)
- Large LCD digital display (Models 3640 and 4610)
- Designed to reject high levels of noise and interference
- Auto-Ranging: automatically selects the optimum range (Models 3640 and 4610)
- Battery powered
- Extremely simple to operate: connect – press – read
- Error indicator lights
- Rugged dustproof and rainproof case
- Color-coded terminals and lead identification



Model 4610

All individual units include soft carrying case and user manual.



SPECIFICATIONS

MODELS	3620	3640	4610
Types of Measurements	2- and 3-Point	2- and 3-Point	2-, 3-, and 4-Point
Display	Analog	Digital	Digital
Soil Resistivity Tests	No	No	Yes
Measurement Ranges	0.5 to 1000Ω	20Ω: 0.00 to 19.99Ω 200Ω: 20.0 to 199Ω	2000Ω: 200 to 1999Ω
Resolution	–	10mΩ	100mΩ
Test Current	10mA	10mA	1mA
Open Voltage	≤24V peak	≤42V peak	≤42V peak
Operating Frequency	128Hz square wave		
Accuracy	±5% of Reading + 0.1% scale length	±2% of Reading ± 1ct	±3% of Reading ± 3cts
Interference	All models reject high levels of interference voltage (DC, 50 to 60Hz, harmonics)		
Power Source	Eight 1.5V AA batteries		
Battery Life	Approx. 1680 15-second measurements	Approx. 1800 15-second measurements	
Low Battery Indication	Yes		
Fuse Protection	High breaking capacity, 0.1A, >250V		

CATALOG NO.	DESCRIPTION
2114.90	Ground Resistance Tester Model 3620 (Analog, 3-Point)
2114.92	Ground Resistance Tester Model 3640 (Digital, 3-Point)
2114.94	Ground Resistance Tester Model 4610 (Digital, 4-Point)
2135.10	Ground Resistance Tester Model 3620 Kit – 150 ft (Model 3620 and Catalog #2135.35)
2135.11	Ground Resistance Tester Model 3620 Kit – 300 ft (Model 3620 and Catalog #2135.36)
2135.12	Ground Resistance Tester Model 3620 Kit – 500 ft (Model 3620 and Catalog #2135.37)
2135.13	Ground Resistance Tester Model 3640 Kit – 150 ft (Model 3640 and Catalog #2135.35)
2135.14	Ground Resistance Tester Model 3640 Kit – 300 ft (Model 3640 and Catalog #2135.36)
2135.15	Ground Resistance Tester Model 3640 Kit – 500 ft (Model 3640 and Catalog #2135.37)
2135.16	Ground Resistance Tester Model 4610 Kit – 150 ft (Model 4610 and Catalog #2135.35)
2135.17	Ground Resistance Tester Model 4610 Kit – 300 ft (Model 4610 and Catalog #2135.36)
2135.18	Ground Resistance Tester Model 4610 Kit – 500 ft (Model 4610 and Catalog #2135.37)

Environmental Testers

Infrared Thermometer Models CA870, CA872 & CA876

Features:

- Easy one-hand operation
- Non-contact infrared sensor
- Laser for precise aim (Models CA876 and CA872)
- Measures in °F and °C
- High 1022°F/550°C measurement (Model CA876)
- Fixed 0.95 emissivity (Models CA872 and CA870)
- Adjustable emissivity 0.1 to 1.00 (Model CA876)
- Auto Hold function
- Backlight
- Lightweight and compact
- Includes protective, safety yellow holster

Applications:

- Electrical troubleshooting
- Food safety and processing
- Automotive repair and maintenance
- Marine maintenance and repairs
- Test faulty motor winding insulation
- Test overheated high voltage transformers
- Test terminals on circuit breaker panels
- Perform HVAC energy audits



Model CA870

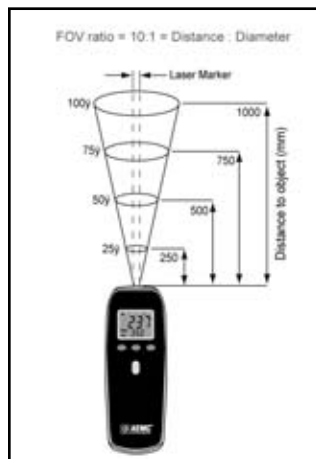
Model CA872

Model CA876



Specifications

MODELS	CA870	CA872	CA876
Measurements — Infrared			
Temperature Range:	-4° to 500°F or -20° to 260°C	-4° to 500°F or -20° to 260°C	-4° to 1022°F or -20° to 550°C
Display Resolution:	1°F or 1°C	1°F or 1°C	1°F or 1°C
Accuracy:	± 2% or ± 6°F/3°C	± 2% or ± 6°F/3°C	± 2% or ± 6°F/3°C
Response Time:	1 second	1 second	1 second
Emissivity:	Preset 0.95	Preset 0.95	Adjustable 0.100
Sensor:	Thermopile	Thermopile	Thermopile
Optical Lens:	Fresnal Lens	Fresnal Lens	Fresnal Lens
Laser:	—	<0.5mW (670nm)	<0.5mW (670nm)
Measurements — K Type			
Temperature Range:	—	—	-328° to 1999°F or -199° to 1370°C
Display Resolution:	—	—	1°F or 1°C or 0.1°F or 0.1°C (auto)
Sensor:	—	—	K Thermocouple
Accuracy: (excluding thermocouple)	—	—	-328° to 1999°F: ±0.1% of Reading ± 2°F -199° to 1370°C: ±0.1% of Reading ± 1°F



Catalog No.	Description
2121.30	Infrared Thermometer Model CA870
2121.31	Infrared Thermometer Model CA872 (Laser)
2121.34	Infrared Thermometer Model CA876 (Laser, Var ϵ , K Thermocouple)

Electrical Test Tools

Phase & Motor Rotation Tester Model PMR-1

Features

- Three functions in one unit
 1. Phase rotation tester
 2. Motor rotation tester
 3. Open phase indication
- Fused phase rotation inputs
- Battery operated (motor rotation)
- Includes three 4 ft leads with large alligator clips and soft carrying case



Model PMR-1 includes 4 ft test leads (black, red and blue) with large alligator clips, soft carrying case and user manual.



Model PMR-1



SPECIFICATIONS	
MODEL	PMR-1
Input Voltage	100V to 600Vac max
Frequency	45 to 70Hz
Power Source	9V Alkaline battery
Phase Motor Indication	ABC or BAC
Motor Rotation Indication	ABC or BAC
Open Phase Indication	A, B, C

CATALOG NO.	DESCRIPTION
2121.04	Phase & Motor Rotation Tester Model PMR-1

Phase Rotation Meter Model PR-1

Features

- Phase rotation (ABC or BAC) LED indicators
- Bright LED indication of Live or Open Phase (A, B, C)
- Fuse protected inputs
- Double insulated case
- Color-coded 5 ft leads and alligator clips
- Permanently attached loss-proof leads
- Tangle proof lead separator
- Simple operation
- Line powered — no battery



Lead separator to prevent tangled leads



Large color-coded clips (attached)



Model PR-1 includes meter with attached 5 ft color-coded leads and alligator clips, soft carrying case and user manual.



Model PR-1



SPECIFICATIONS	
MODEL	PR-1
Input Voltage	100 to 600Vac
Frequency	45 to 70Hz
Power Source	Circuit under test
Live/Open Phase Indication	A, B, C
Phase Rotation Indication	ABC or BAC
Leads	Attached 5 ft, terminated w/insulated alligator clips

CATALOG NO.	DESCRIPTION
2121.06	Phase Rotation Meter Model PR-1

Power Quality Analyzers, Meters and Loggers

Non-Contact AC High Voltage Detector Model 275HVD

Features

- Non-contact high voltage detector
- Wide range of detection; 80V to 275kV; one instrument fits all applications
- Eight switch-selectable voltage sensitivity ranges
- Lightweight, minimizes sway at the end of long hot sticks
- Audible and visual indication of live voltage
- Self-test ensures that all system functions and indicators are working properly by energizing the complete system
- Designed for use with hot sticks incorporating a shotgun adapter

SPECIFICATIONS	
MODELS	275HVD
ELECTRICAL	
Detection Frequency	40 to 70Hz
Ranges	240V, 2kV, 6kV, 11kV, 22kV, 33kV, 132kV, 275kV
Detection	Selection range is detected at approximately 10" (25cm) from the voltage Greater detection distances can be obtained at lower voltage positions
Power Source	Three 1.5V C cell batteries
Low Battery Indication	—
MECHANICAL	
Self Test	User selectable
Indicators	Bright red LED and audible buzzer
ENVIRONMENTAL	
Operating Temperature	5° to 130°F (-15° to 55°C)
Storage Temperature	-4° to 150°F (-20° to 65°C)
Humidity	0 to 93% RH @ 104°F (40°C)



CE



Model 275HVD includes three C cell batteries, shotgun adapter, a hard carrying case and user manual.

CATALOG NO.	DESCRIPTION
2131.12	Non-Contact High Voltage Detector Model 275HVD (240V to 275kV) Manual self-test

Other Electrical Test Instruments

Digital 10A Micro-Ohmmeter Model 5600



Model 5600



Specifications

MODEL	5600					
Ranges:	2000 $\mu\Omega$	20m Ω	200m Ω	2000m Ω	20 Ω	200 Ω
Display:	1999	19.99	199.9	1999	19.99	199.9
Resolution:	1 $\mu\Omega$	10 $\mu\Omega$	100 $\mu\Omega$	1m Ω	10m Ω	100m Ω
Test Current:	10A	1A	1A	100mA	10mA	10mA

Features:

- Four-terminal Kelvin resistance measurement
- 10A test current
- 0.25% basic accuracy
- 1 $\mu\Omega$ resolution
- Direct reading, easy to operate
- Six selectable ranges
- Reverse polarity switch
- Overload and input fuse protection
- Automatic decimal point and zero
- Rechargeable NiCad battery (110/220V)
- Rugged field case for industrial applications

Catalog No.	Description	Price
1431.01	Micro-Ohmmeter Model 5600 (10A)	
Accessories (Optional)		
1017.82	Set of Kelvin probes (2 Spring Loaded)	
1017.83	Set of 1A Kelvin clips	
1017.84	Set of large 10A Kelvin clips	
2118.32	Soft carrying bag for accessories	
2118.52	Set of Kelvin Probes (2 Spring Loaded 20 ft)	

Digital Transformer Ratiometer Model DTR[®]-8500

Specifications

MODEL	DTR [®] -8500
Ratio Range:	Autoranging, 0.8000 to 1500.0:1
Accuracy:	Ratio \leq 1000 to 1: \pm 0.1% of Reading Ratio \leq 1000 to 1: \pm 0.2% of Reading
Excitation Signal:	PT/VT Mode: 44Vrms maximum CT Mode: 0-1A Auto Level, 0.1-5Vrms
Excitation Current Display:	Range: 0-100mA, Accuracy: 2% R \pm 2mA
Excitation Frequency: 70 Hz:	LCD Character, 20 x 2, large format, LED backlight, day/night visible



Model DTR[®]-8500



Features:

- Designed for Power Transformers, VTs, PTs and CTs
- Direct readings from 0.8000:1 to 1500.0:1
- Display Turns Ratio, Polarity and Excitation Current simultaneously
- Dual line and battery power supply and operation
- Display warnings or incorrect lead connections, reverse polarity, open and short circuits
- Includes 15 ft leads

Catalog No.	Description
2111.80	Digital Transformer Ratiometer Model 8500 (110V Supply)
2116.21	Digital Transformer Ratiometer Model 8500 (220V Supply)
Accessories (Optional)	
2118.47	Test lead set (30 ft) in a carrying bag

Micro-Ohmmeters

10A Micro-Ohmmeter Model 6250

Features

- Measure from 0.0001mΩ (0.1μΩ resolution) to 2500.0Ω
- Test current selection of 1mA, 10mA, 100mA, 1A and 10A
- RTD temperature probe to check tested sample (optional)
- Selectable metal types
- Automatic and manual temperature correction
- Two programmable alarm set points
- Stores up to 1500 test results
- Selectable Inductive or Resistive test modes
- Automatic multiple test mode (multiple tests without pressing the test button)
- Large multi-line electroluminescent display
- Local or remote test setup and control
- Direct printout
- Internal rechargeable batteries — conduct up to 5000 10A tests
- Rugged, double insulated waterproof case
- Software included for data storage, real-time display, analysis and report generation



Software included with Model 6250

Model 6250



Kelvin clips, set of two, (1A) 10 ft are included with Model 6250 Catalog #1017.83



Kelvin probes, set of two, spring loaded (10A) 10 ft Catalog #1017.82 (1A) 20 ft Catalog #2118.52



Kelvin clips, set of two, (10A) 10 ft Catalog #1017.84



RTD Temperature Probe with 7 ft extension cable Catalog #2129.96

SPECIFICATIONS

MODEL	6250						
Range	5.0000mΩ	25.000mΩ	250.00mΩ	2500.0mΩ	25.000Ω	250.00Ω	2500.0Ω
Accuracy	0.05% + 0.5μΩ	0.05% + 3μΩ	0.05% + 30μΩ	0.05% + 0.3mΩ	0.05% + 3mΩ	0.05% + 30mΩ	0.05% + 300mΩ
Resolution	0.1μΩ	1μΩ	10μΩ	0.1mΩ	1mΩ	10mΩ	100mΩ
Test Current	10A	10A	10A	1A	100mA	10mA	1mA
Measurement Mode	Selectable: Inductive (continuous test), Resistive (instantaneous test) or Auto (multiple tests)						
Metal Type	Alpha Selectable: Copper, Aluminum or Other Metal Programmable from 000.00 to 99.99						
Alarms	Two – programmable set points from 0.0 to 2500.0Ω						
Memory	Stores up to 1500 test results. Data in memory can be reviewed on the instrument display, on a PC or via direct printout						
Power Source	Rechargeable 6V, 8.5Ah NiMH batteries						
Battery Life	Approximately 5000 10A tests						

CATALOG NO.	DESCRIPTION
2129.81	10A Micro-Ohmmeter Model 6250 (includes one set of 10A Kelvin clips – Catalog #1017.84)
Accessories (Optional)	
1017.82	Kelvin Probes (10A), set of two, spring loaded, 10 ft
1017.83	Kelvin Clips (1A), set of two, 10 ft
1017.84	Kelvin Clips (10A), set of two, 10 ft
2118.52	Kelvin Probes (1A), set of two, spring loaded, 20 ft
2129.95	RTD Temperature Probe (plug into faceplate for ambient temperature)
2129.96	RTD Temperature Probe with 7 ft extension cable

Insulation Resistance Testing

Fluke 1550B and 1520 MegOhmMeters

Powerful troubleshooting and predictive maintenance tools



The 1550B automatically calculates polarization index and dielectric absorption ratios. The 1550B features:

- Standard test voltages of 250 V, 500 V, 1000 V, 2500 V and 5000 V for a wide range of equipment testing
- Programmable test voltages available in 50-volt steps from 250 to 1000 volts and 100-volt steps from 1000 to 5000 volts
- Automatic calculation of Dielectric Absorption (DAR) and Polarization Index (PI) with no additional setup
- Easy set-ups save time and effort when conducting "timed" and "ramp" test of insulation breakdown
- Improved ramp function (0 V dc to 5000 V dc) for breakdown testing
- Autodischarge of capacitive voltage
- Measures resistances up to one teraohm
- Includes improved FlukeView® Forms Software and Optical Interface cable for easier downloading to a Windows® PC

Specifications - 1550B MegOhmMeter

The meter's accuracy is specified for one year after calibration at operating temperatures of 0 °C to 35 °C. For operating temperatures outside the range (-20 °C to 0 °C and 35 °C to 50 °C), add ± .25 % per °C, except on the 20 % bands add ± 1 % per °C.

Insulation resistance measurement		
Test Voltage (dc)	Range	Accuracy (± reading)
250 V	200 kΩ to 5 GΩ	5 %
	5 GΩ to 50 GΩ	20 %
500 V	200 kΩ to 10 GΩ	5 %
	10 GΩ to 100 GΩ	20 %
1000 V	200 kΩ to 20 GΩ	5 %
	20 GΩ to 200 GΩ	20 %
2500 V	200 kΩ to 50 GΩ	5 %
	50 GΩ to 500 GΩ	20 %
5000 V	200 kΩ to 100 GΩ	5 %
	100 GΩ to 1 TΩ	20 %

Function	Range	Accuracy (± reading)
Leakage current	1 nA to 2 mA	± (5 % + 2 nA)
Capacitance measurement	0.01 µF to 15.00 µF	± (5 % rdg + 0.03 µF)
Live circuit indicator	30 V to 600 V ac/dc, 50/60 Hz	± (5 % + 2 V)

Short circuit current: greater than 1 mA and less than 2 mA
 Bar graph range: 0 to 1 TΩ
 Insulation test voltage accuracy: -0 % to +10 % at 1 mA load current
 Induced ac mains current rejection: 2 mA maximum
 Charging rate for capacitive load: 5 seconds per µF
 Timer: 0 to 99 minutes; settable in 1 minute increments; indicated to within 1 second
 Ramp: 0 % to 100 % of selected test voltage, or until breakdown
 Dimensions (HxWxD): 330 mm x 242 mm x 170 mm (13 in x 9.5 in x 6.7 in)
 Weight (with battery): 4 kg (8.8 lb)
 Battery type: 12 V, lead-acid, rechargeable
 Charger input (ac): 85 to 250 V ac, 50/60 Hz, 50 VA
 Operating temperature: -20 °C to 50 °C (-4 °F to 122 °F)
 Storage temperature: -20 °C to 65 °C (-4 °F to 149 °F)
 Relative humidity: 80 % at 31 °C decreasing linearly to 50 % at 50 °C
 Operating altitude: 0 to 2000 meters
 Enclosure sealing: IP 40
 Safety conformance: EN 61010-1, CAT III 600 V, IEC61557, Parts 1 & 2
 Input overload protection: 600 V ac continuous
 Warranty: Two-years
 Software: FlukeView® Forms Basic Software requires a PC running Windows® 95, 98, Me, 2000, NT4.0

Fluke 1520 MegOhmMeter



A proven workhorse, the 1520 can make up to 5,000 insulation resistance tests, more than any other Fluke insulation tester, without changing batteries. A dual analog/digital display makes it easy to use. A lo-ohms function measures voltage and checks connections. Thanks to superb accuracy, endurance and handheld size, the 1520 is a long-standing tool of choice for demanding plant and utilities work.

- Large, backlit LCD with analog bar graph and digital display
- Three output voltages for insulation resistance testing: 250 V, 500 V and 1000 V
- Perform up to 5,000 insulation resistance tests without changing batteries
- Insulation resistance testing up to 4000 MΩ; switches automatically to voltage measurement when voltage is greater than 30 V ac or 30 V dc
- Auto-discharge of capacitive voltage
- AC/DC voltage measurement up to 600 V
- Lo-Ohms function for testing connections
- Last reading memory display

1550B MegOhmMeter Included accessories

Test leads, 5000 V-rated probes, alligator clips, interface adapter and cable, FlukeView Forms software, line cord, soft carrying case and users manual.

1520 MegOhmMeter Included accessories

TL27 Heavy Duty Test Leads, TP74 Lantern Tip Test Probes, AC285 Large Jaw Alligator Clips, protective holster with hand strap, carrying case with accessory storage, four C-cell alkaline batteries, instruction manual and instruction manual on CD-ROM.

Ordering information

Fluke-1520 MegOhmMeter
 Fluke-1550B MegOhmMeter

Recommended accessories - 1550B MegOhmMeter



FVY-UG
FlukeView Forms Software Upgrade



TL1550ERT
25 Foot Extension Test Lead Set



L306
Deluxe LED Hat Light

Recommended accessories - 1520 MegOhmMeter



TL27
Heavy-Duty Test Lead Set



ToolPak
Meter Hanger



SH100
Shoulder harness for 1520



TL223
SureGrip Electrical Test Lead Set



C43
Soft Carrying Case

For these and other Fluke accessories see pages 124-131.

FLUKE®

Insulation Resistance Testing

Fluke 1577 and 1587 Insulation Multimeters

Two powerful tools in one



The Fluke 1577 and 1587 Insulation Multimeters combine a digital insulation tester with a full-featured, true-rms digital multimeter in a single compact, handheld unit, which provides maximum versatility for both troubleshooting and preventative maintenance. Like other tools that you have come to expect from Fluke, the 1577 and 1587 are rugged, reliable, and easy to use. Whether you work on motors, generators, cables, or switch-gear, the Fluke 1577 and 1587 Insulation Multimeters are ideally suited to help you with your tasks.

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

Specifications

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



Recommended accessories



For these and other Fluke accessories see pages 124-131.

Get the most value and productivity from Fluke kits

Establishing preventive maintenance programs is becoming critical to maintaining the uptime of electrical equipment and can significantly reduce both planned and unplanned downtime. Unplanned downtime costs are difficult to calculate, but are often significant. For some industries, it can represent 1 % to 3 % of revenue (potentially 30 % to 40 % of profits) annually.

These kits can help you be proactive and efficient with your maintenance and can save you up to \$50 off the individual price of the tools.

Fluke 1587/ET Advanced Electrical Troubleshooting Kit includes:



- Fluke 1587 Insulation Multimeter
- Fluke 1400 Current Clamp
- Fluke 62 Mini Infrared Thermometer

Fluke 1587/MDT Advanced Motor and Drive Troubleshooting Kit includes:



- Fluke 1587 Insulation Multimeter
- Fluke 1400 Current Clamp
- Fluke 9040 Phase Rotation Indicator

Included accessories

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

Ordering information

Fluke-1577	Insulation Multimeter
Fluke-1587	Insulation Multimeter
Fluke-1587/ET	Advanced Electrical Troubleshooting Kit
Fluke-1587/MDT	Advanced Motor and Drive Troubleshooting Kit

Insulation Resistance Testing

Fluke 1503 and 1507 Insulation Testers

**Insulation resistance testing
in the palm of your hand**



The Fluke 1503 and 1507 Insulation Testers are compact, rugged, reliable, and easy to use. With their multiple test voltages, they are ideal for many troubleshooting, commissioning, and preventive maintenance applications. Additional features, like the remote probe on these tools save both time and money when performing tests.

Insulation test ranges:

- 1507: 0.01 MΩ to 10 GΩ
- 1503: 0.1 MΩ to 2000 MΩ

Insulation test voltages:

- 1507: 50 V, 100 V, 250 V, 500 V, 1000 V
- 1503: 500 V, 1000 V
- Save both time and money with automatic calculation of Polarization Index and Dielectric Absorption Ratio (1507 only)
- Make repetitive tests simple and easy with the 1507's compare (Pass/Fail) function (only available on the 1507)
- Repetitive or hard-to-reach testing is easy with the remote test probe

- Live circuit detection prevents insulation test if voltage > 30 V is detected for added user protection
- Auto-discharge of capacitive voltage for added user protection
- AC/DC voltage: 0.1 V to 600 V
- 200 mA continuity (Lo-Ohms)
- Resistance: 0.01 Ω to 20.00 KΩ
- Save battery power with auto-power off
- Read measurements easily with large, backlit display
- CAT IV 600 V overvoltage category rating for added user protection
- Remote probe, test leads, probes and alligator clips included with each tester
- Accepts optional Fluke TPAK magnetic hanging system to free your hands for other work
- Four AA alkaline batteries (NEDA 15 A or IEC LR6) for at least 1000 insulation tests
- One-year warranty



Application note, literature code 1579160:

Insulation resistance testing

Insulation resistance testers can be used to determine the integrity of windings or cables in motors, transformers, switchgear, and electrical installations.

The test method is determined by the type of equipment being tested and the reason for testing. For instance, when testing electrical cabling or switchgear (low-capacitance equipment) the time-dependent capacitive leakage and absorption leakage currents become insignificant and decrease to zero almost instantly. A steady conductive leakage current flow is reached almost instantly (a minute or less) providing perfect conditions for the spot-reading/short time resistance test.



Recommended accessories



C101
Meter Hard Case



TPak
ToolPak Meter Hanging Kit



C25
Meter Case

For these and other Fluke accessories see pages 124-131.

Included accessories

Remote probe, test leads, test probes, alligator clips, holster and user documentation.

Ordering information

Fluke-1503 Insulation Tester
Fluke-1507 Insulation Tester

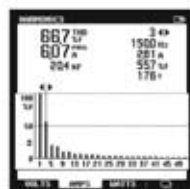
Power Quality Analyzers

Fluke 43B Power Quality Analyzer

Power quality analysis plus a scope and a meter



The Fluke 43B Power Quality Analyzer performs the measurements you need to maintain power systems, troubleshoot power problems and diagnose equipment failures. The 43B has 20 storage locations and can store data as well as screens.



- New! NiMH battery provides extended operating time of 6.5 hours
- Voltage, current and power harmonics up to 51st
- Total harmonic distortion (THD)
- Phase angle of individual harmonics
- FlukeView® software with enhanced analysis and documentation capabilities
- Continuously measure volts and amps cycle-by-cycle for up to 16 days
- Cursors give time and date of sags and swells



Specifications - 43B Analyzer

Function	Fluke 43B*
Volts/Amps/Hz	
Volts rms	± (1 % + 10 counts)
Amps rms	± (1 % + 10 counts)
Frequency (Hz)	± (0.5 % + 2 counts)
Crest Factor (CF)	± (5 % + 1 count)
Sags and swells	± (2 % + 10 counts)
Power	
W, VAR, VA	± (2 % + 6 counts)
PF, Cos (DPF)	± 0.04
Harmonics and THD	
Harmonics	± 3 %
THD	± 3%
Transient display	
Minimum transient detection	40 ms
Inrush current	± 5 % of full scale
Additional capabilities	
AutoTrend	•
Real time scope	•
Ohms, diode, continuity, capacitance	•
Memory (screens/data)	20 (screens, settings, data)
FlukeView software and interface cable	Standard

Battery life: Rechargeable NiMH pack (charger included), 6.5 hours typical (continuous)
Shock and vibration: MIL 28800E, Type 3, Class III, Style B
Operating temperature: 0 °C to 50 °C (32 °F to 122 °F)
Case: IP51 (dust, drip waterproof)
Size (HxWxD): 232 mm x 115 mm x 50 mm (9.1 in x 4.5 in x 2 in)
Weight: 1.1 kg (2.5 lbs)
Safety: IEC 60101-1, CAT III 600 V. Tested and approved to UL 3111-1, CSA C.22.2 No. 90101-92.
Warranty: Three-years on Fluke 43B, one-year on accessories

*Not including current probe specifications

Recommended accessories - 43B Analyzer



For these and other Fluke accessories see pages 124-131.

Application note, literature code 2391563:

The costs of poor power quality

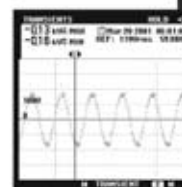
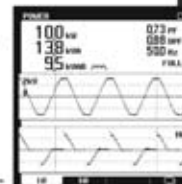
Productivity is the key to survival in today's global competitive environment. Power quality problems can cause processes and equipment to malfunction or shut down. And the consequences can range from excessive energy costs to complete work stoppage. Obviously, power quality is critical.

To reduce your power bill, you need to record consumption patterns and adjust the system and load timing to reduce one or more of the following:

1. Actual power (kWh) usage
2. Power factor penalties
3. A peak demand charge structure



- Watts, power factor, displacement power factor, VA and VAR
- Voltage and current waveforms
- Calculates three-phase power on balanced loads from a single-phase measurement
- Catch up to 40 voltage transients and waveform distortions



Included accessories

The Fluke 43B includes a hard case, voltage and current probes, FlukeView® software, power quality instructional CD, USB interface cable, line voltage adapter/battery charger and users manuals.

Ordering information

Fluke-43B Power Quality Analyzer

Test Instruments

Fluke ScopeMeter® Test Tools

Handheld oscilloscopes for professionals with challenging troubleshooting situations



The ScopeMeter 192, 196 and 199 high-performance oscilloscopes have bandwidth of 60, 100 and 200 MHz and sample rates up to 2.5 GS/s. The C models add a high-resolution color display that has a fast update rate, waveform pass/fail testing and a digital persistence mode—making the analysis of complex and dynamic signals that much easier.

For industrial, electronic or electro mechanical applications, the 123 and 124 Industrial ScopeMeters, feature 20 MHz bandwidth, Connect-and-View™ software for quick measurements and a dual DMM and paperless recorder to get virtually any job done.

Specifications - ScopeMeter® Test Tools

	Fluke 199C	Fluke 196C	Fluke 199B	Fluke 196B	Fluke 192B	Fluke 124	Fluke 123
Bandwidth	200 MHz	100 MHz	200 MHz	100 MHz	60 MHz	40 MHz	20 MHz
Max real time sample rate	2.5 GS/s	1.0 GS/s	2.5 GS/s	1.0 GS/s	0.5 GS/s	25 MS/s	25 MS/s
Max record length (per input)	3000 Points					512 Points (min/max pairs)	
Number of Inputs	2 Scope and 1 DMM (Isolated)					2 Scope Or DMM	
Input sensitivity	2 mV/div. to 100 V/div.		5 mV/div. to 100 V/div.			5 mV/div. to 500 V/div.	
Independently isolated floating inputs	•					—	
Display and display modes							
Display	Color			Monochrome		Monochrome	
Persistence	Digital with variable decay			On/Off		—	
Envelope mode	•			•		•	
Waveform compare	•			•		•	
FFT	•			—		—	
Pass/fail testing	•			—		—	
Triggering							
Connect-and-View™ trigger	•			•		•	
Edge, single, free run	•			•		•	
Video	•			•		•	
Video lines	•			•		•	
Pulse width	•			•		•	
External	•			•		With FTP 120 Option	
Advanced functions							
Cursors	•			•		•	
Zoom	•			•		•	
Dual input Trendplot™	•			•		•	
Scopefaced™ mode	•			•		•	
Automatic capture and replay last 100 screens	•			•		•	
Waveform mathematics	•			•		•	
Save setups and screens	•			•		•	
True-rms multimeter	•			•		•	
	5000 Counts Volts, Amps, Ohms, Continuity, Diode, Temp						
Safety, power and warranty							
Safety (EN61010-1)	CAT II 1000 V/CAT III 600 V			CAT III 600 V ¹		CAT III 600 V ¹	
Battery	4-hour Ni-MH			7-hour NiMH		7-hour NiMH	
Line power	Adapter/battery charger included						
PC printer interface	Yes, using optional optically isolated cable						
Warranty	Three-year on main instrument/one-year on standard accessories						

¹Max input voltage CAT II 1000 V with VP540, 40 MHz 10:1 voltage probe.

Recommended accessories - ScopeMeter Test Tools

Model	Description	192, 196, 199	123, 124
SCC 130	Software, cable and carrying case package	•	•
SCC 190	Software, cable and carrying case package	•	•
C125	Compact soft case	•	•
C195	Universal soft carrying case	•	•
PAC91	Optical to parallel printer adapter cable	•	•



FLUKE®

Digital Thermometers

Fluke 50S and 50D Digital Thermometers

Reliable, Fluke-quality thermometers at our best value pricing.

Fluke 50S (Single input)

Here's a basic, single-input thermometer you can rely on.

- Accepts J or K-type thermocouples
- Rugged holster protects thermometer
- Hold mode freezes display for convenient viewing
- Manual Offset calibration pot increases overall accuracy

Fluke 50D (Dual input)

Great for measuring input/output changes and differential trends, the 50D has all the features and functions of the 50S plus:

- Dual channel with differential output (T1-T2)
- MIN/MAX recording to capture events
- Scan function continuously scans through measurement sequence (T1, T2, T1-T2)



Fluke 50S



Fluke 50D



Fluke 65 Infrared Thermometer

Laser quick. Fluke tough.

The Fluke 65 Infrared Thermometer is ideal for quick, non-contact surface temperature measurement of rotating, hard-to-reach, electrically live, or dangerously hot targets. Targeting objects is easy with the bright laser beam. The large, backlit display is easy to read, even in the dark. Most importantly, the shock-absorbing holster helps to create one of the most rugged IR thermometers in the industry.

Fluke 65 Infrared Thermometer Specifications

Range	-40 to 500 °C (-40 to 932 °F)
Response time	Less than 1 second
Resolution	0.1° up to 200°, 1° over 200°
Repeatability	±1° or ±1%, whichever is greater
Accuracy	Above 0 °C (32 °F): ± 2 °C (± 4 °F) Below 0 °C (32 °F): ± 5 °C (± 9 °F) (with instrument stable at 23°C ± 3 °C)
Optical resolution	8:1 distance to spot size ratio
Emissivity	Fixed at 0.95
Battery life	Approximately 4000 measurements (2xAA)

Features

	54 Series II	53 Series II	52 Series II	51 Series II	50D	50S
Thermocouple types	K, J, T, E, N, R, S	K, J, T, E, N, R, S	K, J, T, E	K, J, T, E	K, J	K, J
Number of inputs	Dual	Single	Dual	Single	Dual	Single
Time stamp	Time of day	Time of day	Relative time	Relative time		
Rugged design with holster	•	•	•	•	•	•
Splash / dust resistant	•	•	•	•		
Dual display with backlight	•	•	•	•		
MIN / MAX / AVG recording with time stamp	•	•	•	•		
Compatible with optional Toolpak™	•	•	•	•		
Differential (T1-T2) readout	•		•		•	
Data logging Up to 500 points	•	•				
IR data port for interface to PC	•	•				

Specifications

	Fluke 50 Series II (51, 52, 53, 54)	50S & 50D
Temperature measurement accuracy (For temperatures above -100° C)	Type J, K, T, E, N: ±[0.05% + 0.3° C (0.5° F)] Type R & S: ±[0.05% + 0.4° C (0.7° F)]	Type K: ±[0.1% + 0.7° C (1.3° F)] Type J: ±[0.1% + 0.8° C (1.4° F)]
Measurement range (depending on thermocouple type)	-250° C (-418° F) to 1767° C (3212° F)	-200° C (-328° F) to 1370° C (2498° F)
Display resolution	0.1° C/°F/K < 1000° 1° C/F/K ≥ 1000°	0.1° C (0.2° F) over full range
Battery life (typical)	1000 hours (3xAA)	800 hours (9V)
Weight	400g (14 oz)	280g (10 oz.)
Warranty	3 years	1 year

Thermometers

Fluke 68 Infrared Thermometer

Measuring temperature in hard-to-reach, hot, rotating or dangerous situations



Reach for a rugged Fluke IR thermometer. You get easy and safe temperature readings in less than a second.

These handheld portable tools enable professionals to research heating and ventilation problems, monitor the status of electrical motors and electrical panels and diagnose car malfunctions with ease.

Fluke 63, 66 and 68 pistol grip infrared thermometers

The new Fluke 63, 66 and 68 pistol grip thermometers offer an easy to use solution for temperature measurement in hard-to-reach, hot, rotating or dangerous situations.

- Wide temperature range and quick response time
- Superb optics for measuring temperature of surfaces from a distance
- Laser sighting
- Adjustable emissivity (66/68 only) for more accurate temperature measurement

Intrinsically safe Fluke 68 version available

New! Fluke 62 Mini Infrared Thermometer

- Temperature measurement range up to 500 °C (932 °F)
- 10:1 optics
- Accurate to within ± 1.5 % of reading or ± 1.5 °C
- MAX temperature display
- Laser sighting
- Backlit display



Specifications - 61, 62, 63, 66, 68

	61	62	63	66	68
Temperature range	-18 °C to 275 °C (0 °F to 525 °F)	-30 °C to 500 °C (-20 °F to 932 °F)	-32 °C to 535 °C (-25 °F to 995 °F)	-32 °C to 600 °C (-25 °F to 1100 °F)	-32 °C to 760 °C (-25 °F to 1400 °F)
Emissivity		Fixed at 0.95		Digitally adjustable (from 0.1 to 1.0 by 0.01)	
Optical resolution	8:1	10:1 at 80 % energy	12:1	30:1	50:1
Laser sighting (class II)	Offset single point laser				
Response time	< 500 msec	< 500 msec	≤ 0.5 second (95 % of reading)		
Spectral response	7 to 18 μm		8 to 14 μm		
Resolution	0.2 °C (0.5 °F)	0.2 °C (0.5 °F)	0.2 °C (0.5 °F)	0.1 °C (0.1 °F)	
Repeatability	± 2 % or ± 2 %, whichever is greater	± 0.5 % or ≤ ± 1 °C (± 2 °F), whichever is greater			
Ambient operating temperature	0 °C to 50 °C (32 °F to 120 °F)				
Relative humidity	10 to 90 % RH non-condensing, at < 50 °C (120 °F)	10 to 90 % RH non-condensing, at < 30 °C (86 °F) ambient			
Storage temperature	-20 °C to 60 °C (-4 °F to 140 °F) without battery	-20 °C to 65 °C (-4 °F to 150 °F) without battery	-20 °C to 60 °C (-13 °F to 158 °F) without battery		
Dimensions	190 mm x 51 mm x 41 mm (7.5 in x 2 in x 1.6 in)	152 mm x 101 mm x 38 mm (6 in x 4 in x 1.5 in)	200 mm x 160 mm x 55 mm (8 in x 6 in x 2 in)		
Weight	341 g (0.75 lb)	200 g (7 oz)	320 g (11 oz)		
Power	9 V alkaline or NiCd battery				
Battery life (alkaline)	12 hours	12 hours	10 hours with laser and back- light on 40 hours with laser and backlight off	20 hours with laser and backlight on 50 % 40 hours with laser and backlight off	
Typical distance to target	1 m (3 ft)	Up to 2 m (6 ft)	Up to 2 m (6 ft)	Up to 5 m (15 ft)	Up to 8 m (25 ft)
Warranty	One-year	Two-year limited	Two-year limited	Two-year limited	Two-year limited

Fluke 61 Infrared Thermometers

- Easy to use one button operation
- Easy targeting with bright laser
- Shock-absorbing molding increases ruggedness



Included accessories

Fluke 61 includes: instruction sheet and 9 V battery.

Fluke 62 includes: storage pouch and instruction sheet.

Fluke 63, 66, 68 includes: carrying case, hand strap, instruction manual and 9 V battery.

Ordering information

Fluke-61	Infrared Thermometer
Fluke-62	Mini Infrared Thermometer
Fluke-63	Infrared Thermometer
Fluke-66	Infrared Thermometer
Fluke-68	Infrared Thermometer
Fluke-68IS	Intrinsically Safe Infrared Thermometer

Recommended accessories - 60 Series Thermometers



For these and other Fluke accessories see pages 124-131.

FLUKE®

Thermal Imagers

Fluke Ti20 Thermal Imager

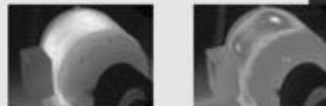
Everything needed for everyday imaging



The Fluke Ti20 Thermal Imager is an unbeatable solution for predictive maintenance and troubleshooting.

- **Complete imaging solution.** The Ti20 Thermal Imager is packaged with all necessary accessories including unlimited-use InsideIR™ companion software and professional training materials.
- **Lowest cost of ownership.** An exceptional value for a high performance imager, the Ti20 also offers affordable instrument service and calibrations.
- **Designed for industrial use.** Rugged Fluke construction; IP54-rated for use in dust and moisture filled environments.
- **Fast and easy inspection routing.** Plan your equipment inspection route, load it once into the imager, and then follow the easy, on-camera instructions each time you perform inspections (simply point, focus and pull the trigger).

Typical thermal imaging applications



Electric motors and pumps

Hot spots may be an early indicator of motor winding problems. Elevated temperatures can damage winding insulation, resulting in operational inefficiencies and premature motor failure. An overheated motor may be an indication of an underrated motor in the application, insufficient cooling or electrical power problems.



Bus bars and fuse boxes

Temperature differences between phases may indicate unbalanced loads, harmonics, component problems, bad connections or bad wiring. These conditions can result in increased energy cost and can damage cables or machines or possibly cause fire. Even small temperature differences between phases should be investigated to determine the root cause.



Rotating machinery

Ball bearings showing an increased temperature are an indication that either the quality of the lubricant is deteriorating or there is poor alignment between the motor and shaft. These problems can cause the bearings to fail, or a motor or pump to overheat.

Specifications - Ti20 Thermal Imager

Detector	
Detector type	128 x 96 thermal element focal plane array (FPA) uncooled microbolometer
NETD (thermal sensitivity)	200 mK
Thermal	
Temperature range	-10 °C to 350 °C (14 °F to 662 °F)
Accuracy	± 2 °C or 2 % (whichever is greater)
Optical	
Field of View (FOV)	20° horizontal by 15° vertical
Optical resolution (D:S)	75:1 or better
Target sighting	Single laser dot (Meets IEC Class 2 and FDA Class II requirements)
Controls and adjustments	
Focus	61 cm (24 in) to infinity
Temperature scale	°C or °F selectable
Palettes	Grayscale, reverse grayscale, rainbow, ironbow
Measurement modes	Auto and manual
LCD backlight	On/off selectable
Adjustable emissivity	0.10 to 1.00 in 0.01 increments
Adjustable reflected background temperature	-50 °C to 460 °C (-58 °F to 860 °F)
Environmental	
Ambient operating temperature	0 °C to 50 °C (32 °F to 122 °F)
Relative humidity	10 % to 95 % non-condensing
Storage temperature	-25 °C to 70 °C (-13 °F to 158 °F)
Water and dust resistant	IP54
Other	
Display	Large color LCD
Storage capacity	50 images stored internally
Power	Rechargeable battery pack or six AA batteries
Battery life	Three hours continuous use
Image frame rate	30 Hz*, 9 Hz
Thermal analysis software	InsideIR™ (included) full-featured analysis and reporting software (unlimited use; no per user license fees)
Size (HxWxD)	40.64 x 20.32 x 30.48 cm (16 in x 8 in x 12 in)
Weight	1.2 kg or (2.65 lbs)
Warranty	One-year

*Subject to U.S. export license compliance. Applicable outside the U.S. and Canada.

Included accessories

Unlimited-use InsideIR PC software for data storage, analysis and reporting, ac/dc power adapter, USB communication cable, hard carrying case, soft-sided carrying case, wrist strap, two (2) rechargeable battery packs, one (1) AA battery carrier, training materials and getting started guide.

Ordering information

Fluke-Ti20 US Thermal Imager North America
 Fluke-Ti20 INT Thermal Imager Ampac
 Fluke-Ti20 INT 9 Thermal Imager Ampac 9 Hz

Temperature Calibrators

Fluke 724 Temperature Calibrator

Feel the heat



- Source/measure TCs, RTDs, volts and ohms
- Measure mA while supplying loop power
- 25% and 100% stepping, auto-step and auto ramp
- For specifications, see page 21



The Fluke 710 Series single function calibrators deliver outstanding performance, durability and reliability. Offered in the rugged Fluke 80 Series DMM package, the calibrators are compact, lightweight, and easy to carry. And with a push-button interface similar to the multifunction Fluke 740 Series Documenting Process Calibrators, the 710s are easy to use. Each calibrator is EMI tolerant, dust- and splash-resistant, and features a removable battery door for quick battery changes.

Fluke 712 RTD Calibrator

- Rosemount® pulsed transmitter compatible (pulses >100ms)
- Measure temperature from RTD output
- Simulate RTD output
- Operates with seven types of RTD
- Measure additional RTDs using Ohms measurement function
- Simulate additional RTDs using Ohms source function
- °F or °C selectable
- Four shrouded banana jacks

Fluke 714 Thermocouple Calibrator

- Measure temperature from TC output
- Simulate TC output
- Operable with nine types of thermocouples
- Calibrate linear TC transmitter with mV source function
- Selectable °F or °C
- Thermocouple mini-jack termination
- Available as accessories: Fluke 700TC1 and TC2 Thermocouple Mini-plug Kits



Specifications

Model	Function	Range	Resolution	Accuracy	Notes
Fluke-712	Measure/simulate RTD	-200 to 800°C (Pt 100)	0.1°C, 0.1°F	0.33°C, 0.6°F (Pt 100)	Pt; 100 200 500 1000 (385); Pt 100 (392); Pt 100 (392) JIS; Ni 120 (672)
	Measure/simulate Resistance	15 Ω to 3200 Ω	0.1 Ω	0.1Ω to 1 Ω	
Fluke-714	Measure/simulate Thermocouple	-200 to 1800°C, depending on type (K, -200 to 1370°C)	0.1°C or °F (1°C or °F; BRS)	0.3°C + 10 μV	9 TC types; J K T E R S B per NIST 175 and ITS-90 L U per DIN 43710 and PTS-68
	Measure/simulate mV	-10 to 75 mV	0.01 mV	0.025% + 1 count	

General specifications for all Fluke 712 through 718 calibrators

Maximum voltage: 30 volts

Non-operating temperature: -40°C to 60°C **Operating temperature:** -10°C to 55°C

Relative humidity: 95% (10°C to 30°C); 75% (30°C to 40°C); 45% (40°C to 50°C); 35% (50°C to 55°C)

Operating altitude: 3,000m max

Shock: 1m drop test **Vibration:** Random, 2g, 5-500 Hz

Safety: CSA C22.2 No. 1010.1:1992 EMC: EN50082-1:1992 and EN55022:1994 Class B

Size/weight (712-717): 187 mm L x 87 mm W x 32 mm D (7.35 in L x 3.41 in W x 1.25 in D) 330g (12 oz)

Size/weight, (712-717 with holster and FlexStand™): 201mm L x 98 mm W x 52 mm D (7.93 in L x 3.86 in W x 2.06 in D) 600g (21 oz)

Size/weight (718): 210 mm L x 83 mm W x 62 mm D (8.25 in L x 3.27 in W x 2.44 in D) 737g (26 oz)

Size/weight, (718 with holster): 216 mm L x 94 mm W x 66 mm D (8.50 in L x 3.72 in W x 2.60 in D) 992g (35 oz)

Power: 9V battery ANSI/NEDA 1604A or IEC 6LR619V alkaline; two batteries in 718

Battery life: 4 to 20 hours, typical, depending on functions used

Warranty: Three years (one year on pressure pump in Fluke 718)

Accessories and ordering information

Included accessories:

Each 71X calibrator includes: C81Y Protective Yellow Holster with Flex-Stand™, Test Leads and Alligator Clips (excluding model 714), single 9V alkaline battery and Instruction Sheet (14 languages).

Ordering information:

Fluke-712 RTD Calibrator

Fluke-714 Thermocouple Calibrator

Fluke-724 Temperature Calibrator

FLUKE®

Fluke Pressure Calibrators

Pump up the pressure



CE SF

CE SF

CE SF

CE SF

- Calibrate P/I transmitters with simultaneous pressure and current measurement
- Select from 11 different engineering units
- Zero, min, max and hold functions

Fluke 717 30G Pressure Calibrator

- Measure pressure and vacuum to 0.05% of full scale with internal 30 psig sensor
- 1/8 NPT pressure fitting
- Compatible with non-corrosive gasses and liquids
- Measure pressure to 10,000 psi/69 mPa using one of 28 Fluke 70Pxx Pressure Modules
- Measure mA with 0.025% accuracy and 0.001 mA resolution, while sourcing 24V loop power

Fluke 718 30G and 100G Pressure Calibrator

- Compact size, lightweight
- Built-in pressure / vacuum hand pump, with vernier and bleed valve
- Pressure measurement to 0.05% of full span, using an internal pressure sensor
- Pressure measurement to 10,000 psi / 700 bar using any of the Fluke 700Pxx Pressure Modules
- Wide range of selectable measurement units for pressure
- Current measurement with 0.025% accuracy and 0.001 mA resolution
- 24 volt loop power supply
- 1/8 inch NPT female pressure fitting
- Min-Max Hold functions

Fluke 713 30G and 713 100G Pressure Calibrators

- Measure pressure, 0.05% of full scale
- Measure mA, 0.025%
- Calibrate P/I transmitters with simultaneous pressure and current measurement
- Select 11 different engineering units
- Compatible with non-corrosive gasses and liquids
- Zero, min, max, hold functions
- 1/8 NPT female pressure fitting
- Two shrouded banana jacks

Fluke 716 Pressure Calibrator

- Measure pressure to 10,000 psi/69 mPa using one of 28 Fluke 700Pxx Pressure Modules
- Measure mA with 0.025% accuracy and 0.001 mA resolution, while sourcing 24V loop power



Fluke 700 Series Pressure Modules

- 29 pressure modules
- Ranges from 1.000 in H₂O (0.2491 kPa) to 10,000 psi (68.948 MPa)
- Gage, differential, dual (compound), absolute, and vacuum modules
- Rugged cases protect the modules from harsh environments
- Full-accuracy performance from 0°C to 50°C
- Pressure readings update twice per second, and may be displayed in up to 11 different units

Accessories and ordering information

Included accessories:

Fluke 713, 716, 717 and 718: Protective Yellow Holster, Test Leads and Alligator Clips, Single 9V alkaline battery (two 9V batteries in 718), Instructions.

Ordering information:

Fluke-713 30G Pressure Calibrator
 Fluke-713 100G Pressure Calibrator
 Fluke-716 Pressure Calibrator
 Fluke-717 30G Pressure Calibrator
 Fluke-718 30US Pressure Calibrator
 Fluke-718 100US Pressure Calibrator

Specifications

713 30G	713 100G	716	717 30G	718 30G	718 100G	Function	Range	Resolution	Accuracy	Notes
			•	•		Measure Pressure ¹ (internal sensor) Over pressure 3xFS	-12 to 30 psi (-83 to 207 kPa)	0.001 psi 0.01 kPa	0.05% full scale	Gasses/Liquids (non-corrosive) ² Zero, Min, Max Hold, Damp
•	•				•	Measure Pressure ¹ (internal sensor) Over pressure 2xFS	-12 to 100 psi (-83 to 690 kPa)	0.01 psi 0.1 kPa	0.05% full scale	Gasses/Liquids (non-corrosive) ² Zero, Min, Max Hold, Damp
		•	•	•	•	Measure Pressure ¹ (with Pressure Modules) Over pressure per pressure module specs	28 Pressure Modules, 1.0 in. H ₂ O/0.25 kPa to 10,000 psi/69 MPa	To 0.0001 psi, per Pressure Module specs	To 0.05% of full span, per Pressure Module Specs	Media compatibility per Pressure Module Specs Zero, Min, Max Hold, Damp
				•	•	Source Pressure, built-in pump	-12 psig to full scale	N/A	N/A	
	•	•	•	•	•	Measure mA	0 to 24 mA	0.001 mA	0.025% + 1 count	
	•		•	•	•	Loop supply	24 V dc	N/A	±10%	Drive: 20 mA into 1000 Ω for battery >6.8V; 700 Ω for battery 5.8 to 6.8V

¹Supported Pressure Units; psi, in. H₂O (4°C), in. H₂O (20°C), cm H₂O (4°C), cm H₂O (20°C), bar, mbar, kPa, inHg, mmHg, kg/cm²

²Fluke 718 for use with non-corrosive gasses.

Loop Calibrators



Fluke 705

- Large display and simple push button interface for ease of use
- Simultaneous mA and % readout for quick, easy, interpretation of readings
- mA accuracy of 0.02%
- Push button 25% steps for fast, easy linearity checks
- “Span Check” for fast confirmation of zero and span
- Selectable slow ramp, fast ramp, and step to provide smooth outputs for valve slewing and loop functional tests
- 24 volt internal loop supply, so you can power and read a transmitter at the same time without carrying a DMM
- 0–20 mA or 4–20 mA default start up modes

Fluke 715 Volt/mA Calibrator

- Measure loop current (0–20 mA, 4–20 mA) signals with 0.015% accuracy and 1 µA resolution
- Measure voltage output process signals from PLCs, transmitters
- Source or simulate 24 mA loop current
- Source voltage to 100 mV or 10V
- 24V loop supply with simultaneous current measurement

Fluke 787

- DMM and loop calibrator in one tool
- Precision 1000V, 440 mA digital multimeter
- DC current source/loop calibrator
- Clear LCD with backlight; 4,000 counts (30,000 counts for dc current)
- Externally accessible battery for easy battery changes
- 1000V overload protection on V, ohms, frequency
- Meets 1000 volt IEC 1010 Cat III standards

Specifications

Functions	Fluke 705	Fluke 715	Fluke 787	
Voltage measurement				
Range	0-28 V dc	0-100 mV 0-10 V	0-1000 V ac or dc	
Resolution	0.001V	10 µV 1 mV	0.1mV to 1.0V	
Accuracy	0.025% Rdg + 1 LSD	0.02% Rdg + 2 LSD	0.1% Rgd + 1 LSD (VDC)	
Current measurement				
Range	0-24 mA	0-24 mA	0-1A dc	0-30 mA dc
Resolution	0.001 mA	0.001 mA	1mA dc	0.001 mA dc
Accuracy	0.02% + 2 LSD	0.015% + 2 LSD	0.2%+2 LSD	0.05%+2 LSD
Current sourcing				
Range	0-20 mA or 4-20 mA ¹	0-20 mA or 4-20 mA ¹	0-20 mA or 4-20 mA ¹	
Accuracy	0.025% Rdg + 2 LSD	0.015% Rdg + 2 LSD	0.05% of span	
Drive capability	1000Ω @ 24 mA	1000Ω @ 24 mA	500Ω @ 24 mA	
Loop power while measuring mA	24V	24V	N/A	
Voltage sourcing	N/A	0-100 mV or 0-10V	N/A	
Resistance measurement	N/A	N/A	to 40MΩ, 0.2% + 1 LSD	
Frequency	N/A	N/A	to 19.999 kHz, 0.005% + 1 LSD	
Diode test	N/A	N/A	2.4 V shows diode voltage drop	
Continuity	N/A	N/A	Beeps for resistance <100 ohms	
Display current and % of span	Yes	mA or %	Yes	
Auto step, auto ramp	Yes	No	Yes	
Span Check	Yes	No	No	
Battery life	18 hours typical, at 12 mA	18 hours typical, at 12 mA	50 hours typical 12 hours sourcing 12mA	

¹Will over-range to 24 mA

Accessories and ordering information

Included accessories:

Fluke 705: C-10 Protective Yellow Holster, TL75 Test Leads, AC70 Test Clips, Instruction Sheet (14 languages).

Fluke 715: C81Y Protective Yellow Holster with Flex-Stand, Test Leads and Alligator Clips, Single 9V alkaline battery, Instruction Sheet (14 languages).

Fluke 787: C81Y Protective Yellow Holster with Flex-Stand, TL75 Safety-Designed Test Lead Set plus AC70A Alligator Clips, one 9V alkaline battery, product overview manual (print) and user's manual (CD ROM) in 14 languages.

Ordering information:

Fluke-705 Loop Calibrator
 Fluke-715 Volt/mA Calibrator
 Fluke-787 ProcessMeter

Test Instruments

260-Series Analog Meters



- Accuracy and rugged construction guarantee superior lab and field performance
- Excellent for adjustment; i.e. nulling and peaking
- Large color-coded scales
- Zero RFI emission
- Mirrored scale
- Wide range capabilities
- Includes test leads and batteries

SPECIFICATIONS:

DC Volts Range:	250mV, 1V, 2.5V, 10V, 25V, 50V, 250V, 500V, 1000V
AC Volts Range:	2.5V, 10V, 25V, 50V, 500V, 1000V
Resistance Range:	X1, X100, 10K (0-20mΩ)
DC Current Range:	50μA, 1mA, 10mA, 100mA, 500mA, 10A
AC Current Range:	Up to 250AAC with amp-clamp accessory probe
Decibels Range:	5 ranges -20dB to +50dB
Overload Protection:	Accuracy VDC 2% FS; VAC3% FS
Dimensions:	Models 260-8P, 260-8PRT, 260-8XPI
Weight:	7"H x 5.5W x 3.1"D 3 lbs

ORDERING INFORMATION:

12388	260-8 General Purpose
12391	260-8P Relay Protected
12389	260-8RT Roll-Top Case
12392	260-8PRT Relay Protected with Roll-Top Case
12395	260-8XI Yellow Case
12396	260-8XPI Yellow Case, relay protected

ACCESSORIES FOR 260-SERIES

Carrying Cases:

00832	Yellow Padded Nylon
00834	Black Padded Nylon
00248	Roll-Top Case
00805	Hard Leatherette, Front Load Case
45028	Molded Plastic Case

Test Leads:

00043	Probe Set, threaded with clips
00125	Probe Leads w/Screw-On Alligator Clips

Amps Clamps

00545	150-2 Amp Clamp (260-8, 8P, 8RT, 8PRT)
00541	150-2 Amp Clamp (260-8XI, 260-8XPI)

Insulation Testers

501



Simpson's Model 501 is the newest addition to its insulation tester family. The Model 501 can be used for general purpose insulation tests that require voltages from 50V to 1000V only.

Additionally, this instrument is equipped with AC and DC measuring ranges up to 1000V. This is especially advantageous for testing for the absence of voltage and the discharge of capacitive devices under test.

The Model 501 features a quick testing signal lamp within the test probe that serves to illuminate the work area. The signal lamp can also be used for quick Pass/Fail evaluations of insulation resistances.

Each tester comes equipped with built-in test probes, an alligator switch, a leatherette carrying case and batteries.

ORDERING INFORMATION

12501	501 1000 Volt Insulation Tester
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505



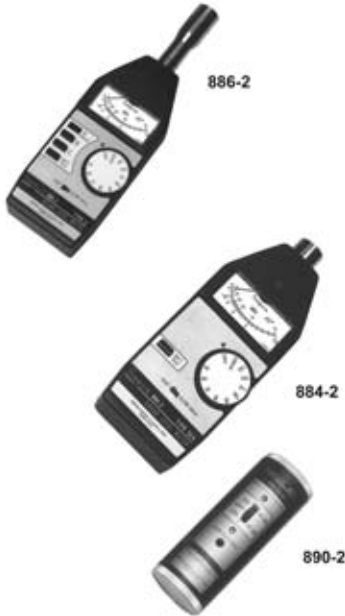
Simpson's Model 505 High Voltage Insulation Tester can measure insulation resistances from 10 kilohms to one teraohm with eight selectable test voltages up to 5000V. As a safety feature, the insulation tester acts as an AC/DC voltmeter to measure the absence of voltage in networks up to 2000V. For added safety, the cables are permanently attached, preventing possible injury caused by accidental removal of the cables. The Model 505 features automatic discharging capability of capacitive units under test and a lock-in test switch for hands-free operation. An optional guard terminal is available to minimize surface leakage errors. There are two LEDs indicating the selected measuring range and one LED signifying valid measurements and batter charge status. Each tester comes in a padded carrying case with permanently connected cables and test probes, two alligator clips and a plug-in battery module with batteries.

ORDERING INFORMATION

12505	505 5000 Volt Insulation Tester	45065	Guard Cable with Alligator Clip
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Testers

Sound Level Meter



- Meets IEC651 and ANSI 51.4-1983
- Meets OSHA and Walsh-Healy Noise Control Specifications
- Full Coverage 40-140dB
- Operates 40 hours on a 9V battery
- AC and DC outputs to external drive devices
- Built in tripod mount

886-2	884-2
<ul style="list-style-type: none"> • "A", "B" and "C" weighting • Detachable microphone • Fast and slow response 	<ul style="list-style-type: none"> • "A" weighting - corresponds to the human ear • Battery operated
ORDERING INFORMATION:	
886-2 Multi-Weight Sound Level meter with case (40004)	884-2 Sound Level Meter with case (40003)
886-2 Kit Multi-Weight Sound Level Meter with case and Calibrator (40007)	884-2 Kit Sound Level Meter w/ Case and Calibrator (40006)

Sound Dosimeter



- Meets ANSI S1.4-1983, SNI D1.25-1978, and IEC 651-1979 specifications
- Selectable ranges and threshold Levels
- Selectable exchange rates and criterion levels
- Built-in datalogger and computer/printer output
- Ideal for OSHA and IEC surveys

Serving as both a sound level meter and a sound dosimeter, the 897 is a compact, battery-operated instrument perfect for conducting noise surveys in order to meet regulatory requirements.

There are two measuring ranges, and sound threshold can be adjusted in 1dB increments, from 50 to 99dB. When in dosimeter mode, both criterion levels and exchange rates can be selected. The built-in datalogger allows the unit to run unattended for more than 30 hours. A RS-232 interface allows recorded data to be easily transferred to a printer or PC.

SPECIFICATIONS:	
Sound Level Mode Ranges:	50 to 100dB, 80 to 130dB
Accuracy:	True RMS, type S2
Dynamic Range:	Selectable 50 to 100dB and 80 to 130dB
Frequency Response Weighting:	"A" Weighting
Frequency Range:	20 Hz to 8KHz
Dosimeter Mode Threshold Level:	Selectable from 50 to 99dB in 1dB increments
Criterion Level:	Selectable 70, 80, 84, 85, or 90dB
Criterion Duration:	8 Hours
Exchange Rate:	Selectable 3, 4, or 5dB
Elapsed Time:	Displays either Hours:Minutes, or Minutes:Seconds, up 99 Hours, 59 Minutes, 59 Seconds
Recording Time:	31 Hours Maximum
Printer Interface:	Centronics and RS-232
Size/Weight:	6.8 x 3.1 x 1.1HWD/18 ozs; 172 x 80 x 28mm HWD/500g

897 Unit includes:	SMS-2 Kit includes:
Description	Description
Parallel printer cable	Items in 897 Unit plus:
AC adapter 110V/220V	RS-232-C serial cable calibrator
Microphone clip	9V Alkaline Battery (for Calibrator)
Nose cone	887-2 Calibrator
Wind screen	
Screwdriver	
Wrench	
NiCd battery pack	
Carrying case and instruction manual	

ORDERING INFORMATION:	
897	Universal Noise Dosimeter (12645)
SMS-2	Universal Noise Dosimeter Kit (12646)

Calibrators

CALIBRATORS

CA71 Multifunction Calibrator

Model CA71/SP1 Features:

- Measure & Generate Simultaneously
- RS232 Communications: Optically isolated interface
- Divided Output (n/m) Function: Eliminates need to calculate for %
- Auto Step Function: Changes output value in step form
- Memory Function: Generated & Measured values can be stored/extracted
- NIST Traceable Certificate, Ten Year Limited Warranty



Standard Accessories:

- 91017: RS232 (9 Pin) Comm. cable
- Software: Data logging software for PC
- A1022UP: 120 V AC Power Supply
- 98020: Source Cables
- RD031: Measurement Lead Cables
- B9108XA: Case For Lead Cables, RJC Sensor etc.
- M1202HJ-A: Instrument Case with magnetic back
- 93016: Carrying Case
- 99021: Terminal Adapter: Used For Temp. Meas.
- A1501EF: Fuse

CA11/12/13 Single Function Calibrator Common Features

- Ten Year Limited Warranty
- Up/Down keys for easy operation/configuration
- AA" batteries or optional AC Adapter
- Long test leads – 5.6'
- Carry case included
- EC safety features and CE marked
- Auto Power Off



CA11 (Voltage/Current)

- Selectable sweep mode from zero to set value & back (16/32 s)
- Loop check 2-wire transmitters & field calibrate various DC instruments
- Step-up/step-down function for 4~20 mA & 1~5 VDC output
- Accuracy: 0.05%, 0.1% for 20mA sink



CA12 (Temperature)

- Source & measure Type K-E-J-T-N-R TCs
- Source & measure 100V, PT100 RTD & 0~400 Ohm's
- Internal RJC included and external RJC available
- Accuracy: .05% source and .07% on the measurement side



CA13 (Frequency)

- For field calibration of totalizers & flowmeters
- Pulse Source: Voltage output 0~10V @ 100Hz, 1kHz & 10kHz
- Open collector on/off output of 100Hz & 1kHz (1 digit accuracy)
- Counter: 1~11V input @ 100Hz, 1kHz & 10kHz; counter on/off input 100Hz & 1kHz (1 digit accuracy)

Testers

INSULATION TESTERS

MY40-SP1 Insulation Tester (includes carrying case)

- Four Voltage/Resistance Ratings: 125V/200MΩ 250V/200MΩ 500V/2000MΩ 1000V/2000MΩ
- Comparator Function: Low symbol & buzzer activates if measured value is smaller than the reference value. Up to three user-defined reference values assignable to each rating
- Memory Function: Save up to twenty measurements per rating
- Automatic Discharge Function: Automatically begins discharging when the MEAS switch is turned to the off position - view bar graph to monitor progress of discharge
- High-Voltage Indicators: High-voltage symbol and LED lamp activate when MY40 is in insulation testing mode or if any voltage remains to be discharged
- Live-Line Alarm: AC voltage > 40V across the input terminals will activate the alarms
- Over Range Input Alarm: If the voltage being measured > 600 V AC the alarms will activate
- Auto-Hold Function: Retains measured resistance 5 seconds after MEAS switch is turned off
- Ten Year Limited Warranty



Standard Accessories:

- 93015: Carrying Case
- 93013: Protection Cover
- 99005: Shoulder Strap
- 98001: Line Probe
- 98002: Earth Probe
- Four AA Batteries

2404 Hand Crank Insulation Tester

- See below for voltage and resistance options
- Easy-to-read black indicator scale with white color graduations and marks
- Rotating Speed of Handle > 120 rpm
- Shock and heat-resistant ABS case, light weight and compact size
- Guard terminal in all models
- Includes carrying case and test leads



240413	240414	240415	240416	240422 (3-Range Model)
500V/100MΩ	500V/1000MΩ	1000V/2000MΩ	2000V/5000MΩ	250V/500MΩ, 500V/1000MΩ, 1000V/2000MΩ

Testers

INSULATION TESTERS

Type	Series/Model	Suffix Code & Backlight	Rating	AC Test Voltage Range	
Digital Insulation Testers	4 ranges	MY40 CE	01 (EL-illuminated)	125V/200M Ω 250V/200M Ω 500V/2000M Ω 1000V/2000M Ω	0-600V
			Single & 2 ranges	2406D CE	51 (N/A)
	61 (LED-illuminated)	250V/200M Ω			0-300V
	52 (N/A)	125V/200M Ω			0-300V
	62 (LED-illuminated)	250V/200M Ω			0-300V
	53 (N/A)	250V/200M Ω			0-300V
	63 (LED-illuminated)	500V/200M Ω			0-600V
	54 (N/A)	1000V/2000M Ω			0-600V
	64 (LED-illuminated)	1000V/2000M Ω			0-600V
	55 (N/A)	1000V/2000M Ω	0-600V		
65 (LED-illuminated)	1000V/2000M Ω	0-600V			

Display	Additional Function	External View
3 1/2-digit LCD	Automatic discharge Conductor resistance measurement Comparator function Memory function	
3 1/2-digit LCD	Automatic discharge	

Type	Series/Model	Suffix Code & Backlight	Rating	AC Test Voltage Range	
Analog Insulation Testers	2 & 3 ranges	2406E CE	31 (N/A)	25V/5M Ω	0-300V
			41 (EL-illuminated)	50V/10M Ω 125V/20M Ω	
			32 (N/A)	125V/20M Ω	0-300V
			42 (EL-illuminated)	250V/50M Ω	
			33 (N/A)	125V/20M Ω 250V/50M Ω	0-600V
			43 (EL-illuminated)	500V/100M Ω	
			34 (N/A)	250V/50M Ω 500V/100M Ω	0-600V
			44 (EL-illuminated)	1000V/2000M Ω	
			35 (N/A)	250V/500M Ω 500V/1000M Ω	0-600V
			45 (EL-illuminated)	1000V/2000M Ω	
	Single range	MY10 CE	01 (afterglow-illuminated)	125V/20M Ω	0-250V
			02 (afterglow-illuminated)	250V/50M Ω	0-300V
			03 (afterglow-illuminated)	500V/100M Ω	0-500V
			04 (afterglow-illuminated)	500V/1000M Ω	0-500V
			05 (afterglow-illuminated)	1000V/2000M Ω	0-500V
Single range	3213A	41 (N/A)	100V/20M Ω	0-150V	
		42 (N/A)	250V/50M Ω	0-250V	
		43 (N/A)	500V/100M Ω	0-300V	
		44 (N/A)	500V/1000M Ω	0-300V	
		45 (N/A)	1000V/2000M Ω	0-300V	

Display	Additional Function	External View
Analog	Automatic discharge Battery Check	
Analog	Automatic discharge Battery Check	
Analog	Battery Check	

Digital Thermometers

TX10 Series Digital Thermometers

- Supports type K/J/E/T thermocouples
- Two channel simultaneous measurement (TX10 03)
- Stores 10 data measurements (TX10 02/03)
- Simple correction function (TX10 02/03)
- Records maximum and minimum values during measurement (TX10 02/03)
- Measures temperature difference between two points (TX10 03)



TM10 Thermo-collector

- Allows switching between external probe, built-in sensor and radiation thermo-probe (external)
- Allows switching between collector mode or logging mode (collector mode: records the measured temperature along with the measured item, name of the person taking measurement, and date/time of measurement in response to a key action.) (logging mode: continuously records the measured temperature at preset time periods)
- Allows input of comments regarding measurement process
- Easy PC data management (automatic layout in Excel)
- High data capacity– (collector mode only: 5,000 data units) (logging mode only: 20,000 data units)– allows mixing of collector mode and logging mode data



TM20 Thermo-Collector

- Supports type K/J/E/T thermocouples
- Analog signal input
- Connects to thermal emission-probe
- Two channel simultaneous measurement
- Allows switching between collector mode or logging mode (collector mode: records the measured temperature along with the measured item, name of the person taking measurement, and date/time of measurement in response to a key action.) (logging mode: continuously records the measured temperature at preset time periods)
- Allows input of comments regarding measurement process
- Easy PC data management (automatic layout in Excel)
- High data capacity– (collector mode only: 5,000 data units) (logging mode only: 20,000 data units)– allows mixing of collector mode and logging mode data
- One 2-channel simultaneous measurement is recorded at two data points

