

## Fluke Handheld Oscilloscopes



The ScopeMeter 190 Series of high performance oscilloscopes have bandwidth of 60, 100, and 200 MHz and sample rates up to 2.5 GS/s. The high resolution color display has a fast update rate and digital persistence mode – making the analysis of complex and dynamic signals that much easier.

Choose the 190 Series for tough troubleshooting problems, like intermittent failures, impulses and signal fluctuations in high speed or sensitive electronic or electromechanical systems. They include automatic measurements, cursors, FFT analysis, paperless recording functions and a DMM input.

For industrial electronic or electromechanical applications, the 120 Series Industrial ScopeMeters offer bandwidth to 40MHz, a dual DMM and paperless recording.

The 125 offers additional capabilities for testing industrial machinery:

- Power & harmonic measurements for single phase and balanced 3-phase systems.
- RPM and Hz reading for motors & engines.
- Vac PWM for motor drive outputs.
- 0.01 ohm resolution for motor & transformer windings.
- a Bus Health function for troubleshooting industrial data networks.

For fast measurement answers and quick display of waveforms all ScopeMeters include Connect-and-View triggering. This feature recognizes signal patterns and automatically sets the oscilloscope for a stable reliable display of even the most complex waveforms. Move from test point to test point and the ScopeMeter will continuously lock onto just about any waveform.

### ScopeMeter 190C Series

**NEW**

### Industrial ScopeMeters

	Fluke 199C	Fluke 196C	Fluke 192C	Fluke 123	Fluke 124	Fluke 125
Bandwidth	200 MHz	100 MHz	60 MHz	20 MHz	40 MHz	40 MHz
Max. real time sample rate	2.5 GS/s	1 GS/s	0.5 GS/s	25 MS/s	25 MS/s	25 MS/s
Display	14.4 cm Full Color LCD			10.2 cm Monochrome LCD		
Persistence	Digital Persistence giving analog oscilloscope-like waveform decay			---		
Max. record length	3000 points per input (Scope mode) 27500 points per input (ScopeRecord mode)			512 min/max pairs per input		
Number of inputs	2 plus external/DMM input all isolated from each other and ground			2		
Number of digitizers	2			2		
Independently floating isolated inputs	Up to 1000 V between inputs, references and ground			600 V RMS max input or any terminal to ground		
Input sensitivity	2 mV/div. ... 100 V/div.			5 mV/div. ... 500V/Div		
Glitch capture	Up to 3 ns using Pulse Width triggering 50 ns peak detect at 5 ms/div. to 1 min/div			40 ns		
Timebase range in Scope mode	5 ns/div. to 2 min/div.			10 ns/div. to 1 min/div.	20 ns/div. to 1 min/div.	
Trigger types	Connect-and-View®, Free Run, Single Shot, Edge, Delay, Video, Video line, Selectable pulse width and External			Connect-and-View®, Free Run, Single Shot, Edge, Video, External		
Scope Measurements	7 cursors, 30 automatic measurements			26 automatic measurements		
Power Measurements	---			W, VA, VAR. PF		
Scope-Record Trigger modes	Start on Trigger / Stop on Trigger			-		
Capture last 100 screens	Automatic with Replay capability			-		
Dual input TrendPlot	Yes with Cursors and Zoom			Yes		
Memory for screens	15 screens and set-ups, 2 replay and set-ups			10	20	
Memory for recordings	Two, each can store 100 scope screens, a ScopeRecord or a TrendPlot			1		
True RMS multimeter	5000 counts, Volts, Amps, Ohms, Continuity, Diode, Temp					
Safety certified	1000 V CAT II / 600 V CAT III (instrument and included accessories)			600 V CAT III		
Battery power	4 hr NiMH battery installed			7 hr NiMH		
Line power	Adapter/battery charger included					
Size (cm)/Weight	25.6 x 16.9 x 6.4/2 kg			23.2 x 11.5 x 5.0/1.2 kg		
Temperature	0-50°C operating, -20 to +60°C Storage					
PC and Printer interface	Using optional Optically Isolated adapter/cable					
Warranty	3 years (1 year on accessories)					

Add /S to model number to include Flukeview software, isolated USB cable & hard carrying case

# Fluke High Performance Digital Multimeters

**NEW**



**287** ▲

Includes manual, 6 AA batteries, TL71 silicone test leads, probe holder, two AC72 alligator clips

The Fluke 287 True-rms Electronics Logging Multimeter with TrendCapture quickly documents performance and graphically displays results.

- Large 50,000 count, 1/4 VGA display with white backlight. Displays multiple sets of measurements simultaneously
- Logging function with expanded memory stores up to 15,000 recorded events
- TrendCapture graphically displays logged data session
- Zoom up to 14X to view & analyze TrendCapture data
- Selectable ac filter helps display rapidly changing or noisy signals
- Adjustable recording & auto hold thresholds, specify a percentage change in the readings that begins a new event
- On board help screens for measurement functions
- Multiple logging sessions without download
- 0.025 % basic dc accuracy
- True-rms ac and ac+dc
- 100 kHz ac bandwidth
- Real-time clock time-stamps saved readings
- Peak capture to record transients as fast as 250  $\mu$ s
- Relative mode to remove test lead resistance from low ohms or capacitance measurements
- Optional FlukeView software to document, store and analyze measurements
- CATIII – 1000V & CAT IV – 600V ratings
- Limited lifetime warranty

SPECIFICATIONS		
Function	Range & resolution	Basic Accuracy
VDC, VAC	50.000 mV, 500.00 mV, 5000.0 mV, 5.0000 V, 50.000 V, 500.00 V, 1000.0 V	0.025% (0.4% AC)
ADC, AAC	500.00 $\mu$ A, 5.000 $\mu$ A, 50.000 mA, 400.00 mA, 5.0000 A, 10.000 A*	0.15% (0.7% AC)
Resistance	500.00 $\Omega$ - 500.0 M $\Omega$ (7 ranges)	0.05%
Capacitance	1.100 nF - 100.0 mF (9 ranges)	1.0%
Frequency	99.999 Hz - 999.99 kHz (5 ranges)	0.005%
Temperature	-200 to 1350°C, -328 to 2462°F	1.0%

Battery life: 100 hours minimum, 200 hours in logging mode \*10A continuous, 20A for up to 30 seconds.  
 Environment: -20°C to 55°C, <90% RH up to 37°C Size: 222x102x60 mm (8.75 x 4.03 x 2.38")

Fluke 289 adds 50 $\Omega$  range for measuring contacts & motor windings plus a LowZ voltage function for eliminating ghost voltages.



**87V** ▲

Includes: TL75 Test Leads, AC72 Alligator Clips, holster, 9V battery, temperature probe

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

- Selectable filters for accurate measurements on adjustable speed drives
- Built-in thermometer
- Capacitance to 10,000 $\mu$ F
- 30% larger display
- 2 level backlight
- 4x faster (250 $\mu$ s) peak capture
- CATIII-1000V & CATIV-600V rating
- Lifetime warranty

SPECIFICATIONS		
Function	Range & resolution	Basic Accuracy (87V)
DC Volts	600.0 mV, 6.000 V, 60.00 V, 600.0 V, 1000 V	0.05 %
AC Volts	600.0 mV, 6.000 V, 60.00 V, 600.0 V, 1000 V	0.7 % (True-rms)
DC Current	600.0 $\mu$ A, 6000 $\mu$ A, 60.00 mA, 600.0 mA, 6.000 A, 10.00 A	0.2 %
AC Current	600.0 $\mu$ A, 6000 $\mu$ A, 60.00 mA, 600.0 mA, 6.000 A, 10.00 A	1.0 % (True-rms)
Temperature (excl. probe)	-200 to 1090 °C (-328 to 1994 °F)	1.0 %
80BK Temperature Probe	-40 to 260 °C (-40 to 500 °F)	2.2 °C or 2 %
Resistance	600.0 $\Omega$ , 6.000 k $\Omega$ , 60.00 k $\Omega$ , 600.0 k $\Omega$ , 6.000 M $\Omega$ , 50.00 M $\Omega$	0.2 %
Capacitance	10.00 nF, 100.0 nF, 1.000 $\mu$ F, 10.00 $\mu$ F, 100.0 $\mu$ F, 9,999 $\mu$ F	1.0 %
Frequency	199.99 Hz, 1.9999 kHz, 19.999 kHz, 199.99 kHz	0.005 %

Battery Life: 100 hours typical with headlight off.  
 Size: (LxWxD): 201mm x 98mm x 52mm (7.9in x 3.6in x 2in)

### Fluke 87V/E2 Industrial Electrician Combo Kit

Includes special accessories to increase productivity.

- 1.5m heat resistance silicone test leads
- Removable test probes with 4mm of exposed metal for use on industrial circuits
- Plunger style alligator clips
- Magnetic hanger to position and hold meter to steel surfaces
- Temperature probe
- Packaged in a durable carrying case

ORDERING INFORMATION	
Fluke-87-5	Industrial True-rms Multimeter with Temperature
Fluke-87-5/E2	Industrial Electrician Combo Kit
Fluke-287	True-rms Electronics Logging Multimeter
Fluke-289	True-rms Electronics Logging Multimeter
FVF-SC2	FlukeView® forms software with cable
80BK	Integrated DMM temperature probe
i410	AC/DC current clamp
TLK287	Electronic test lead set
TPAK	Magnetic hanging kit
C280	Soft case

TEST EQUIPMENT

## Fluke Compact Digital Multimeters



Fluke 117



Every Fluke 110 Series meter comes

with a protective holster, TL75 test leads, 9V battery (installed) and manual.

### ORDERING INFO

Fluke-114	Electrical Multimeter
Fluke-115	Multimeter
Fluke-116	HVAC Multimeter w/ temp. probe
Fluke-117	Electrician's Multimeter

### RECOMMENDED ACCESSORIES

TPAK	Meter hanging kit with magnet
AC220	Alligator clips
C50	Carrying case

These little meters pack more features than some DMMs twice their size:

- True-rms ac voltage and current measurement for accurate readings on all waveforms
- 6000-count display provides improved resolution
- Min/Max/Average feature captures signal fluctuations
- Frequency, capacitance and diode test capabilities (except 114)
- White LED backlight for excellent visibility
- Fast continuity test detects intermittent connections
- IEC CAT III 600V safety rating
- Auto-Volt automatic ac/dc voltage selection

### SPECIFICATIONS

Function	Range & resolution	Best accuracy
VDC	600.0 mV, 6.000 V, 60.00 V, 600.0 V	±0.5 % of rdg + 2 d
VAC <sup>1</sup>	600.0 mV, 6.000 V, 60.00 V, 600.0 V	±1.0 % of rdg + 3 d
ADC (Models 115 & 117 only)	6.000 A, 10.00 A <sup>2</sup>	±1.0 % of rdg + 3 d
AAC (Models 115 & 117 only)	6.000 A, 10.00 A <sup>2</sup>	±1.5 % of rdg + 3 d
Resistance	600.0 Ω, 6.000 kΩ, 60.00 kΩ, 600.0 kΩ, 6.000 MΩ, 40.00 MΩ	±0.9 % of rdg + 1 d
Capacitance (except Model 114)	1000 nF, 10.00 μF, 100.0 μF, 9999 μF	±1.9 % of rdg + 2 d
Frequency <sup>3</sup> (except Model 114)	99.99 Hz, 999.9 Hz, 9.999 Hz, 50.00 kHz	±0.1 % of rdg + 2 d

<sup>1</sup> Specified from 1% of range to 100% of range; CF < 3 up to 4000 counts, 1.5 at full scale.

<sup>2</sup> 10 A continuous, 20 A for up to 30 seconds, 45-500 Hz.

<sup>3</sup> Frequency is ac coupled 5 Hz to 50 kHz for ac volts. Frequency is dc coupled 445 Hz to 5 kHz for ac current.

AC volts is ac-coupled. Auto-V, LoZ and ac mV are dc-coupled.

Battery life: 400 hours typical for alkaline.

33 segment Bargraph display updates 32x/sec.

### Additional Model 116 features:

- °F/°C temperature function for HVAC troubleshooting
- 600μA ac & dc ranges for testing flame sensors

## Fluke Digital Multimeters



Fluke 179

The 170 series replaces the popular 70 Series. The 175, 177 and 179 are designed tough to withstand the harshest work environments. Accuracy rivals most bench meters.

- Lifetime warranty
- 6000 count display
- 0.09% basic dc accuracy (177 & 179)
- True-rms ac voltage and current measurement
- Min/Max/Average records irregular activity
- Auto and Manual hold
- Frequency, capacitance and resistance capabilities

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

- The 179 measures temperature in °C and °F
- 177 and 179 have a backlight to illuminate the screen in dark workspaces
- IEC 1010 CAT IV 600V, CAT III 1000V safety ratings
- Drop protected to 1 meter
- Overmolded case features integrated probe holders
- Compatible with ToolPak™ meter hanging kit

### SPECIFICATIONS

Function	Range & Resolution	Best accuracy
VDC	600.0 mV, 6.000 V, 60.00 V, 600.0 V, 1000V	±0.09 % (177 & 179) ±0.15 % (175)
VAC <sup>1</sup>	600.0 mV, 6.000 V, 60.00 V, 600.0 V, 1000V	±1.0 % of reading
ADC	60.00 mA, 400.0 mA, 6.000 A, 10.00 A <sup>2</sup>	±1.0 % of reading
AAC	60.00 mA, 400.0 mA, 6.000 A, 10.00 A <sup>2</sup>	±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 <sup>3</sup>	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

<sup>1</sup>All AC voltage and AC current ranges are specified from 5% of range to 100% of range.

<sup>2</sup>10 A continuous, 20 A for up to 30 seconds.

<sup>3</sup>Voltage 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: (H x W x L): 4.3 cm x 9.0 cm x 18.5 cm

Lifetime Warranty

### ORDERING INFO

Fluke-175	Digital Multimeter
Fluke-177	Digital Multimeter
Fluke-179	Digital Multimeter

### RECOMMENDED ACCESSORIES

TPAK	Meter hanging kit with magnet
C25	Soft vinyl carrying case
C510	Top grain leather carrying case
i 200	AC current clamp
TL223	Electrical test lead set

## Extech Industrial MultiMeters

- Double Molded Waterproof Case (IP67)
- 11 Functions
- 1000V Protection on All Functions
- True RMS AC
- Dual Sensitivity Frequency Functions
- Large Backlit LCD
- Diode Test Open Circuit 2.8V DC
- Auto Power Off with Disable Feature
- CATIII-1000V & CATIV-600V Ratings
- Drop Proof to 6 Feet

### Model EX505

- 4,000 Count
- 0.5% Accuracy
- Data Hold and Relative
- 10A Max Current

### Model EX520

- 6000 Count - High Resolution
- 0.09% Accuracy
- Min/Max/Relative/Data Hold
- 20A Max Current

### Model EX530

- 40,000 Count - Highest Resolution
- 0.06% Accuracy
- Min/Max/Relative/Data Hold
- 20A Max Current
- Peak Hold (AC only)



### SPECIFICATIONS

#### Measurement Range (auto or manual ranging)

DCV	0.1mV to 1000V (0.01mV on EX530)		
ACV	1mV to 1000V (0.1mV on EX505, 0.01mV on EX530)		
DCA	0.1mA to 20A (10A on EX505)		
ACA	0.1mA to 20A (10A on EX505)		
Ω	EX505:	0.1Ω to 40MΩ	
	EX520:	0.1Ω to 60MΩ	
	EX530:	0.01Ω to 40MΩ	
Capacitance	EX505:	0.01nF to 100mF	
	EX520:	0.01nF to 1000mF	
	EX530:	0.001nF to 40mF	
Frequency	Electrical	Electronic	
	EX505:	5Hz to 1kHz	0.001Hz to 10MHz
	EX520:	10Hz to 400Hz	0.001Hz to 40MHz
EX530:	40Hz to 400Hz	0.001Hz to 100MHz	
Temperature	-50 to 1382°F / -45 to 750°C (-4°F/-20°C min on EX505)		
Duty Cycle	0.1 to 99.9%		
Diode/Continuity	Yes		

Complete with double molded test leads, magnetic hanging strap, Type K bead wire temperature probe (-22 to 572°F/-30 to 300°C), carrying case, and 9V battery.

### ORDERING INFORMATION

EX505	True RMS Industrial MultiMeter (4000 count)
EX520	True RMS Industrial MultiMeter (6000 count)
EX530	True RMS Industrial MultiMeter (40,000 count)
EX/TL810	Electrical Test Lead Kit
EX/TP200	Type K Clamp Probe (212°F/100°C)
EX/HG500	Magnetic Hanging Strap

## Extech Autoranging MultiMeters

- Backlit 1" High LCD
- Resolution to 0.1mA
- CAT III - 600V Rating
- Audible & Visual Alerts
- Diode/Continuity Check
- Three Year Warranty
- Built-in IR thermometer with laser (450 & 470)



### Model 450

- 2000 Count Full Scale
- 0.05% Basic DCV Accuracy
- IR Laser Thermometer
- MAX function

### Model 430

- 4000 Count Full Scale
- TRMS AC
- 0.03% Basic DCV Accuracy
- Capacitance & Frequency
- Type K TC Temperature
- Relative Function

### Model 470

- all of the Model 430 features plus
- IR Laser Thermometer



### SPECIFICATIONS

#### Measurement Range

DCV	0.1mV to 600V
ACV	0.1mV to 600V
DCA	0.1mA to 20A
ACA	0.1mA to 20A
Ω	0.1Ω to 40MΩ (20MΩ on Model 450)
<b>Models 430 &amp; 470:</b>	
Capacitance	0.01nF to 100μF
Frequency	0.001Hz to 10MHz
Duty cycle	0.1 to 99.9%
Type K TC	-4 to 1382°F (-20 to 750°C)
<b>IR Thermometer (Models 450 &amp; 470):</b>	
Range	-4 to 518°F (-20 to 270°C)
Spot size	8:1
Emissivity	0.95

All models supplied with CAT III test leads, multi-position tilt stand and velcro strip for hanging, protective holster with test lead holder, bead wire temperature probe (except Model 450) and battery.

### ORDERING INFORMATION

EX450	MultiMeter with IR Thermometer
EX430	TRMS MultiMeter
EX470	TRMS MultiMeter w/ IR Thermometer
EX/CA310	300A AC clamp-on adapter
EX/380905	2000A AC/DC clamp-on adapter
EX/409996	Pouch carrying case

## Fluke Clamp Meters

**NEW**

Five new models offer an impressive array of innovative features with TRMS current ranges up to 2500A, TRMS voltage ranges to 1000V.



- Measure to 1000A with fixed jaws, 2500A with flexible current probe
- Designed for one hand operation
- Removable display for remote reading up to 30 ft away (381)
- DCV & DCA measurements (most models)
- Resistance & continuity functions
- Frequency to 500Hz (most models)
- Large, backlit display with data hold
- In-rush current function (on most models) for measuring starting current
- Auto shut-off maximizes battery life

SPECIFICATIONS					
	Fluke 373	Fluke 374	Fluke 375	Fluke 376	Fluke 381
AC response	True-rms	True-rms	True-rms	True-rms	True-rms
AC amps (jaw)	600.0 A	600.0 A	600.0 A	999.9 A	999.9 A
Accuracy	2% ± 5 counts (48-62 Hz)	2% ± 5 counts (10-100 Hz)	2% ± 5 counts (10-100 Hz)	2% ± 5 counts (10-100 Hz)	2% ± 5 counts (10-100 Hz)
Crest factor	2.5 @ 600 A	2.5 @ 600 A	3 @ 500 A 2.5 @ 600 A	3 @ 500 A 1.42 @ 1000 A	3 @ 500 A 1.42 @ 1000 A
Flexible current probe	-	compatible	compatible	included	included
AC amps (probe)	-	2500 A	2500 A	2500 A	2500 A
Accuracy	-	3% ± 5 counts (5-500 Hz)	3% ± 5 counts (5-500 Hz)	3% ± 5 counts (5-500 Hz)	3% ± 5 counts (45-500 Hz)
AC volts	600.0 V	600.0 V	600.0 V	1000 V	1000 V
Accuracy	1% ± 5 counts (48-62 Hz)	1.5% ± 5 counts (20-500 Hz)	1.5% ± 5 counts (20-500 Hz)	1.5% ± 5 counts (20-500 Hz)	1.5% ± 5 counts (20-500 Hz)
DC amps	-	600.0 A	600.0 A	999.9 A	999.9 A
Accuracy	2% ± 5 counts	2% ± 5 counts	2% ± 5 counts	2% ± 5 counts	2% ± 5 counts
DC volts	600.0 V	600.0 V	600.0 V	1000 V	1000 V
Accuracy	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts
mV range	-	-	500.0 mV	500.0 mV	-
Resistance	6000 Ω	6000 Ω	60k Ω	60k Ω	60k Ω
Accuracy	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts
Continuity Beeper	<30 Ω	<30 Ω	<30 Ω	<30 Ω	<30 Ω
Capacitance	10-1000 μF	1-1000 μF	1-1000 μF	1-1000 μF	-
Frequency	-	-	5-500 Hz	5-500 Hz	5-500 Hz
Remote Display	-	-	-	-	yes
Max Wire Diameter (jaw)	750 MCM	750 MCM	750 MCM	750 MCM	750 MCM
Inrush	-	yes	yes	yes	yes
MIN/MAX/AVG	-	yes	yes	yes	yes
Backlight	yes	yes	yes	yes	yes
Display Hold	yes	yes	yes	yes	yes
Size HxWxD (mm)	232 x 85 x 45	248 x 85 x 45	248 x 85 x 45	248 x 85 x 45	280 x 88 x 50
Rating	CAT III 600V CAT IV 300V	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V	CAT III 1000V CAT IV 600V



Operating Temperature: -10°C to 50°C (14 °F to 122 °F)  
Warranty: 3 years

### OPTIONAL ACCESSORIES

- i2500-10 iFlex Flexible Current Probe 10"
- i2500-18 iFlex Flexible Current Probe 18"

### ORDERING INFORMATION

- Fluke 373 600A True RMS AC Clamp Meter
- Fluke 374 600A True RMS AC/DC Clamp Meter
- Fluke 375 600A True RMS AC/DC Clamp Meter
- Fluke 376 1000A TRMS Clamp Meter with 18" iFlex probe
- Fluke 381 Remote Display TRMS Clamp Meter with 18" iFlex probe

New Model	Changes from Old Fluke Model
Fluke 376	Includes all 337 features plus: • CAT IV 600 V, CAT III 1000 V • iFlex™ 2500 A ac • 1000 V ac/dc • mV dc • 60 kΩ • 1000 μF
Fluke 375	Includes all 336 features plus: • CAT IV 600 V, CAT III 1000 V • Optional iFlex™ 2500 A ac • mV dc • 60 kΩ • 1000 μF • Min/Max/Avg
Fluke 374	Includes all 335 features plus: • CAT IV 600 V, CAT III 1000 V • Optional iFlex™ 2500 A ac • 600 A ac/dc • 1000 μF • Min/Max/Avg
Fluke 374	Includes all 334 features plus: • CAT IV 600 V, CAT III 1000 V • Optional iFlex™ 2500 A ac • True-rms • 600 A ac/dc • 1000 μF • Min/Max/Avg
Fluke 373	Includes all 333 features plus: • CAT IV 300 V, CAT III 600 V • True-rms • 600 A ac • 6000 Ω • 1000 μF

## Yokogawa Clamp-On Testers

### AC Current CL100 Series

- AC Current to 2000A
- AC Voltage Measurement
- Resistance / Continuity (CL130 & CL150)
- Data Hold
- IEC CAT III

**CL130** ▶



### AC/DC Current CL200 Series

- AC & DC Current to 2000A
- AC & DC Voltage Measurements
- Resistance / Continuity
- TRMS & Frequency (CL235 & CL255)
- Peak / Data Hold

**CL250** ▶



### AC Leakage Current CL300 Series

- AC Current to 1000A
- AC Leakage with 10µA Resolution
- Wide Jaw Opening
- AC & DC Recorder Outputs (CL360)
- Peak / Data Hold

**CL360** ▶



#### ORDERING INFORMATION

YE/CL120	200A AC Clamp-On Tester
YE/CL130	600A AC Multi-Function Clamp-On Tester
YE/CL135	600A AC TRMS Multi-Function Clamp-On Tester*
YE/CL150	2000A AC Multi-Function Clamp-On Tester
YE/CL220	300A AC/DC Clamp-On Tester
YE/CL235	600A AC/DC TRMS Multi-Function Clamp-On Tester
YE/CL250	2000A AC/DC Multi-Function Clamp-On Tester
YE/CL255	2000A AC/DC TRMS Multi-Function Clamp-On Tester
YE/CL320	200A AC Clamp-On Leakage Tester
YE/CL340	400A AC Clamp-On Leakage Tester
YE/CL360	1000A AC Clamp-On Leakage Tester

\*same features as CL130, except TRMS

Limited Lifetime Warranty on all Models

Model No.	Display	DC Current	AC Current	DC Voltage	AC Voltage	Resistance	Functions						Jaw opening capacity	Rating
							TRMS	Frequency	Continuity Check	Peak Hold	Data Hold	Recorder Output		
CL120	2000	-	20/200A (2 ranges)	-	300V (1 range)	-	-	-	-	-	-	24mm 0.95"	CAT III 300V	
CL130	2000	-	200/600A (2 ranges)	-	200/600V (2 ranges)	200Ω (1 range)	-	-	•	-	-	33mm 1.30"	CAT III 600V	
CL150	4000	-	400/2000A (2 ranges)	40/400/750V (3 ranges)	40/400/750V (3 ranges)	400/4000/40k/400kΩ (4 ranges)	-	-	•	-	•	55mm 2.16"	CAT III 600V CAT II 1000V	
CL220	4000	40/300A (2 ranges)	40/300A (2 ranges)	-	-	-	-	-	-	-	•	24mm 0.95"	CAT III 300V	
CL235	4000	400/1000A (2 ranges)	400/600A (2 ranges)	40/400/600V (3 ranges)	40/400/600V (3 ranges)	400/4000Ω (2 ranges)	•	•	•	•	•	33mm 1.30"	CAT III 600V	
CL250	4000	400/2000A (2 ranges)	400/2000A (2 ranges)	40/400/1000V (3 ranges)	40/400/750V (3 ranges)	400/4000Ω (2 ranges)	-	-	•	•	-	•	55mm 2.16"	CAT III 600V CAT II 1000V
CL255	4000	400/2000A (2 ranges)	400/2000A (2 ranges)	40/400/1000V (3 ranges)	40/400/750V (3 ranges)	400/4000Ω (2 ranges)	•	•	•	•	•	•	55mm 2.16"	CAT III 600V CAT II 1000V
CL320	2000	-	20/200mA 200A (3 ranges)	-	-	-	-	-	-	-	-	•	24mm 0.95"	CAT III 300V
CL340	4000	-	40/400mA 40/400A (4 ranges)	-	-	-	-	-	-	-	-	•	40mm 1.57"	CAT III 300V
CL360	2000	-	200mA 2/20/200/1000A (5 ranges)	-	-	-	-	-	-	-	-	•	68mm 2.68"	CAT III 300V

## Extech Clamp Meters

**NEW**

### Model EX623

400A Dual Input Clamp Meters + IR Thermometer + Non-Contact Voltage Detect

- TRMS AC Voltage & Current measurements
- Dual type K thermocouple input with Differential Temperature function
- Non-contact Voltage detector with LED alert
- Non-contact IR Thermometer with laser pointer for locating hot spots
- DC Voltage, DC Current, Resistance, Capacitance, Frequency & Duty Cycle functions
- Autoranging with manual override
- Data Hold plus fast Peak Hold for surges
- Complete with test leads, 9V battery, two Type K bead wire probes and case



▲ **Model EX623**

### Model MA640

600A True RMS Clamp Meters + Non-Contact Voltage Detect

- TRMS AC Voltage & Current measurements
- Non-contact Voltage detector with LED alert
- DC Voltage, DC Current, Resistance, Capacitance, Frequency, Temperature, Duty Cycle
- Relative Mode for Capacitance Zero and Offset Adjustment
- Data Hold and MIN/MAX
- Complete with test leads, Type K bead wire probe, 9V battery and carrying case



▲ **Model MA640**

### 800A Clamp Meters

- AC/DC Current, AC/DC Voltage, Resistance, Frequency, Capacitance, Temperature, Diode Test and Continuity
- True RMS models
- 1.2" (30mm) circular jaw opening
- Backlit LCD
- Peak, Data Hold, Auto power off
- DC Current with Zero (EX730)
- Complete with test leads, 9V battery, Type K bead wire probe (EX720, EX730) and carrying case



▲ **Model EX730**

### 200A AC/DC Mini Clamp plus MultiMeter

- High resolution to 10mA
- Measures voltage, resistance and frequency
- Fast 40 segment bargraph
- One touch auto zero for DC current measurements
- Min/Max
- Data hold and auto power off
- Complete with test leads, wrist strap, 2 AA batteries and carrying case



▲ **Model 380941**

### 30A True RMS AC/DC Mini Clamp

- Measure low AC/DC current with resolution to 1mA DC and 0.1mA AC
- Also measures voltage
- Fast 40 segment bargraph
- One touch auto zero for DC current measurements
- Min/Max
- Data hold and auto power off
- Complete with test leads, wrist strap, 2 AA batteries and carrying case



▲ **Model 380942**

## SPECIFICATIONS

Model	EX623	MA640	380941	380942	EX710	EX720	EX730
AC Sensing:	TRMS	TRMS	Averaging	TRMS	Averaging	TRMS	TRMS
Display counts:	4000	6000	4000	4000	4000, backlit	4000, backlit	4000, backlit
Jaw size/ Cable size:	1.4" (36mm)	1.5" (40mm)	0.9" (23mm); 4/0 AWG	0.9" (23mm); 4/0 AWG	1.2" (30mm): 500MCM	1.2" (30mm): 500MCM	1.2" (30mm): 500MCM
AC Current:	400μA, 40A, 400A	60A, 600A	40A, 200A	400mA, 4A, 30A	800A	800A	800A
DC Current:	400μA, 40A, 400A	60A, 600A	40A, 200A	4A, 30A	---	---	800A
Max resolution:	0.1μA, 0.01A	0.01A	0.01A	AC: 0.1mA, DC: 0.001A	0.01A	0.01A	AC: 0.01A, DC: 0.1A
Basic AC/DC Accuracy:	±1.5%	±2.8%	±1.0%	±1.5%	±2.8%	±3%	AC: ±3%, DC: ±2.5%
AC/DC Voltage (Max. Res.):	AC: 600V (0.1V) DC: 600V (0.01mV)	AC: 600V (1mV) DC: 600V (0.01mV)	400V (0.1V)	400V (1V)	600V (0.1mV)	600V (0.1mV)	600V (0.1mV)
Resistance (Max Res.):	40MΩ (0.01Ω)	60MΩ (0.1Ω)	400Ω (0.1Ω)	---	40MΩ (0.01Ω)	40MΩ (0.01Ω)	40MΩ (0.01Ω)
Capacitance (Max Res.):	40mF (0.01nF)	4000μF (0.01nF)	---	---	40mF (0.001nF)	40mF (0.001nF)	40mF (0.001nF)
Frequency (Max. Res.):	100MHz (0.01Hz)	10kHz (0.01Hz)	1000kHz (0.01Hz)	---	4kHz (1Hz)	4kHz (1Hz)	4kHz (1Hz)
Temperatures (Type K):	-58 to 1832°F	-4 to 1400°F	---	---	---	-4 to 1832°F / -20 to 1000°C	-4 to 1832°F / -20 to 1000°C
IR Temperature:	-58 to 518°F	---	---	---	---	---	---
Diode/Continuity:	Yes	Yes	Continuity	---	Yes	Yes	Yes
Data Hold:	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Min/Max/Peak:	Yes	Yes	Min/Max	Min/Max	Peak	Peak	Peak
Safety Rating:	CAT III-600V	CAT III-600V	CAT III-300V	CAT III-300V	CAT III-600V	CAT III-600V	CAT III-600V

## AEMC Clamp-On Power Meters

- Use on single & 3-phase power to 3MW
- Measure to 1000V AC, DC or AC+DC
- Automatic AC or DC selection
- Ω, Hz & THD measurements
- 10,000 count electroluminescent display
- Fast (1msec) inrush current capture
- 1000V CAT IV & IP54 rated
- Data storage & Bluetooth communication
- 1.89" or 2.36" jaw opening



607

### ORDERING INFORMATION

AE/2139.50	Model 405 (TRMS, 1000Vac/dc, 1000Aac/1500Adc, Power, THD)
AE/2139.51	Model 407 (TRMS, 1000Vac/dc, 1000Aac/1500Adc, Energy, Harmonics, Power, THD, Recording)
AE/2139.60	Model 605 (TRMS, 1000Vac/dc, 2000Aac/3000Adc, Power, THD)
AE/2139.61	Model 607 (TRMS, 1000Vac/dc, 2000Aac/3000Adc, Energy, Harmonics, Power, THD, Recording)

### SPECIFICATIONS

MODEL	405	407	605	607
Measurement Method	TRMS AC/AC+DC/DC		TRMS AC/AC+DC/DC	
Automatic AC/DC Detection	-	Yes	Yes	
A AC	0.15 to 1000A (1500A peak)		0.15 to 2000A (3000A peak)	
A DC	0.15 to 1500A		0.15 to 3000A	
A AC+DC	0.15 to 1000A (1500A peak)		0.15 to 2000A (3000A peak)	
Best A Accuracy	1% of Reading + 3 cts			
V AC	0.15 to 1000V (1400V peak)			
V DC	0.15 to 1400V			
V AC+DC	0.15 to 1000V (1400V peak)			
Best V Accuracy	1% of Reading + 3 cts			
Hz Current	5.0 to 2000Hz			
Hz Voltage	5.0 to 20.00kHz			
Ohm	0.1Ω to 99.99kΩ			
Audible Continuity	Adjustable	Fixed <40Ω	Adjustable	Fixed <40Ω
Diode Test	Yes	-	Yes	-
Power Values	Single Phase & Total 3-phase		Single Phase & Total 3-phase	
Active Power	5W to 1000kW		5W to 2000kW	
Reactive Power	5var to 1000kvar		5var to 2000kvar	
Apparent Power	5VA to 1000kVA		5VA to 2000kVA	
FP / DPF	Yes / No	Yes / Yes	Yes / No	Yes / Yes
THDf / THDr	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
Frequency Analysis	-	25th order	-	25th order
Phase Rotation (2-wire)	Yes	-	Yes	-
True InRush® current	Yes	Yes	Yes	Yes
Hold, Min/Max, +/-Peak	Yes	Yes	Yes	Yes
REL ΔX / Diff. ΔX/X (%)	-	Yes / Yes	-	Yes / Yes
Jaw Opening	1.89" (48mm)		2.36" (60mm)	
Number of Values Displayed	1	3	1	3
Data Recording	-	Yes	-	Yes
Communication Interface	-	Bluetooth	-	Bluetooth
Dimensions	10.70 x 3.62 x 1.61" (272x92x41mm)		11.65 x 4.37 x 1.61" (296x111x41mm)	

## Megger Clampmeters

MULTI-CORE CLAMP METER



- Measure single, two or three core cables
- No need to split wires
- Cable centering clamp
- Backlit display

MMC850

### SPECIFICATIONS

AC Amps	Single-Core Mode	Multi-Core Mode
Mode:	Single-Core Mode	Multi-Core Mode
Range:	200A	100A
Resolution:	0.1A	0.1A
Accuracy:	±1.5% ±3d	±5% ±10d
Frequency:	45Hz - 1kHz	45Hz - 400Hz
Main Jaw Capacity:	13mm (0.51")	
Inner Jaw Capacity:	22mm (0.87")	
Display:	3½ digit, 2000 count	
Operating Temp.:	0°C to +40°C, <80% RH	
Storage Temp.:	-20°C to +60°C, <70% RH	
Battery:	9V Alkaline	
Battery Life:	180hrs typical	
Dimensions:	8.94" x 3.7" x 1.75" (227 x 94 x 44.5mm)	
Safety:	IEC1010-2-032, CAT III 600V	

LEAKAGE CLAMP METER



- 0.01mA resolution for measuring earth leakage currents
- Amp ranges for standard current measurements
- Analog bargraph display for trending
- 40mm jaw opening

DCM300E

### SPECIFICATIONS

Ranges:	30mA/300mA/30A/300A (50/60Hz)
Accuracy:	
30/300mA:	±1.2% rdg ±5d
0-200A:	±1.2% rdg ±5d
200-250A:	±3.0% rdg ±5d
250-300A:	±5.0% rdg ±5d
Circuit Voltage:	600V AC max.
Jaw Capability:	40mm (1.57")
Display:	3½ digit, 3200 count
Data Hold:	Indicated by DH in display
Operating Temp.:	0°C to +40°C, <80% RH
Storage Temp.:	-20°C to +60°C, <70% RH
Battery:	2 LR44 button cells
Dimensions:	2.5" x 7" x 0.9" (64 x 176 x 23mm)
Safety:	300V phase to earth, 500V phase to phase CAT III or 600V CAT II

### ORDERING INFORMATION

ME/MMC850	Multi-Conductor AC Clamp Meter with carrying case
ME/DCM300E	Leakage Clampmeter with carrying case

## Fluke Leakage Clamp Meter

- Measure leakage current with 1  $\mu$ A resolution, for monitoring of insulation erosion
- Measure to 60 A, for general installation needs
- Perform tests without powering down the installation or disconnecting equipment
- Advanced shielding ensures accurate results when measuring near other conductors
- Easy-to-carry, pocket-sized clamp with 40 mm (1.5") jaw size
- Handy "Display-Hold" button for capturing readings in hard-to-reach places
- Auto power-off, with warning buzzer, saves battery life
- Meets safety standard VDE0404-4 and VDE0702 for leakage current and differential current measurement of electrical appliances


**360**

### SPECIFICATIONS

Ranges:	3 ma, 30 mA, 30 A, 60 A
Resolution:	0.001 mA, 0.01 mA, 0.01 A, 0.1 A
Accuracy:	$\pm 1\%$ rdg $\pm 5d$ ( $\leq 50$ A) $\pm 5\%$ rdg $\pm 5d$ ( $>50$ A)
Frequency range:	15-150 Hz
Maximum current:	60 A rms
Digital display:	3200 count LCD
Bargraph display:	32 segment LCD
Measurement cycle:	2/sec. (digital display), 12 /sec. (bargraph display)
Range switching:	Auto-range
Environment:	0-50 °C, <80 % RH (non-condensing)
Temperature coefficient:	<0.05 % of range/°C (0-18 °C & 28-50 °C, <50 A)
Influence of external magnetic field:	0.0005 % typical (on current value of adjacent cable)
Influence of conductor position:	Within accuracy
Circuit voltage:	$\leq 300$ Vrms
Safety standard:	EN 61010-1, EN 61010-2-032. 300 V CAT II, Pollution Degree 2
Battery type:	3 V Lithium battery (CR2032)
Battery life:	Approx. 90 hours (continuous use)
Conductor diameter:	40 mm (1.57") max.
Dimensions:	176 x 70 x 25 mm (6.9" x 2.8" x 1")

### ORDERING INFORMATION

Fluke-360 Leakage Current Clamp Meter

## Hioki AC Power Monitors

**NEW**

### Clamp-On Power HiTester

- Measure up to two 3 $\emptyset$ , 3-wire systems
- Measure up to four 1 $\emptyset$ , 2-wire systems
- 5A to 5000A range
- Simultaneous recording of demand values and harmonics
- Ideal for troubleshooting & energy management


**3169**

### 3169 SPECIFICATIONS

Systems:	1 $\emptyset$ 2-wire, 1 $\emptyset$ 3-wire, 3 $\emptyset$ 3-wire, 3 $\emptyset$ 4-wire (50/60 Hz)	Accuracy:	$\pm 0.2\%$ rdg $\pm 0.1\%$ f.s. + Clamp accuracy (for active power)
Functions:	ACV, ACA, W, VA, VAR, PF, integrated power, Frequency, Harmonics	With 9660:	$\pm 0.3\%$ rdg $\pm 0.02\%$ FS
Ranges:	150/300/600V With 9660: 5-100A, 4 ranges With 9661: 5-500A, 5 ranges With 9669: 100A-1kA, 3 ranges With 9667: 500A-5kA, 2 ranges With 9694: 0.5A-5A, 3 ranges	With 9661:	$\pm 0.3\%$ rdg $\pm 0.01\%$ FS
Power:	75W to 9MW, 108 combination patterns	With 9667:	$\pm 2.0\%$ rdg $\pm 1.5$ mV
		With 9694:	$\pm 0.3\%$ rdg $\pm 0.02\%$ FS
		Harmonics:	Up to the 50th order, $\pm 3\%$ FS + measurement accuracy
		Power:	100 to 240VAC, 50/60 Hz
		Dimensions:	8.3"W x 6.3H x 2.4"D
			Order clamp-on current sensors separately

### Power Logger

- Capture voltage & current wave forms, power & energy use
- Measure to 780V, 5000A
- Harmonics to the 40th order (-21)
- Display demand and trend graphs
- Store months of data on SD card
- 3 current and 3 voltage channels


**PW3360**

### PW3360 SPECIFICATIONS

Systems:	1 $\emptyset$ 2-wire, 1 $\emptyset$ 3-wire, 3 $\emptyset$ 3-wire, 3 $\emptyset$ 4-wire (50/60 Hz)
Range:	Voltage: 90-780V AC, peak: $\pm 1400$ V Current: 5-130% of sensor rating Power: 300.00 W to 9.0000 MW
Measurements:	RMS voltage & current, peak, phase angle, frequency, active power, reactive power, apparent power, power factor, active energy, reactive energy, demand value, demand quality
Harmonics:	Voltage, current & power to 40th order plus THD (PW3360-21 only)
Memory:	132kB internal, optional SD card up to 2GB
Pulse Input:	Use to record power data & production volume counts simultaneously
Pulse Output:	When power consumption exceeds a set output rate (1Wh to 100kWh)
Sampling:	14 bits, 10.24kHz
Display:	3.5" color LCD (320x240)
Interface:	10Base-T/100 Ethernet with HTTP, USB2.0
Rating:	CAT III 600V, CAT IV 300V
Power:	AC adapter; Rechargeable Ni-MH battery optional
Temperature:	-10 to +50 °C, <80% RH
Dimensions:	7.1"W x 4.0"H x 1.9"D
Free Software:	Setup and Data Download, Excel Graph Auto-Creation

### ORDERING INFORMATION

HK/3169-20	Clamp-On Power HiTester, with voltage leads (order CTs below)
HK/PW3360-20	Power Logger, with voltage leads & AC adapter
HK/PW3360-20-01/5000	PW3360-20 w/ 3 5kA Flex CTs, battery, case, 2GB SD card, software
HK/PW3360-21	Power & Harmonic Logger, with voltage leads & AC adapter
HK/PW3360-21-01-5000	PW3360-21 w/ 3 5kA Flex CTs, battery, case, 2GB SD card, software
HK/9660	100A Clamp-On Sensor
HK/9669	1000A Clamp-On Sensor
HK/9667	5000A Flexible Clamp-On Sensor
HK/9694	5A Clamp-On Sensor

## Extech AC Power Clamp Meter

**NEW**

- Dual LCD display (9999 count)
- Measures 1Ø/3Ø True Power (kW), Apparent Power (kVA), Reactive Power (kVAR), plus Horsepower (HP), Power Factor and Phase Angle with Lead/Lag indicator
- AC+DC  $\mu$ A current with 10nA resolution for flame rod tests
- Insulation Resistance tests to 100M $\Omega$
- Type K temperature to 1000°F (900°C)
- 1.6" (40mm) clamp jaw opening
- Max/Min recording with elapsed time indication
- Auto Detect AC/DC Voltage measurements with simultaneous frequency display
- Diode and Continuity tests
- Category III 600V rating


**380976**

Complete with deluxe test lead kit, general purpose Type K thermocouple probe, carrying case and 9V battery.

### SPECIFICATIONS

Function	Max Range / Resolution	Basic Accuracy
True Power (W):	600kW / 10W	$\pm 5\%$
Apparent Power (kVA):	600kVA / 100VA	$\pm 2\%$
Reactive Power (kVAR):	600kVAR/10VAR	$\pm 5\%$
Horsepower (HP):	800HP / 0.01HP	$\pm 5\%$
Phase Angle:	-60 to +60° / 0.1°	$\pm 6^\circ$
AC Current (Trms):	1000A / 10mA	$\pm 2\%$
$\mu$ A Current (AC+DC Trms):	1000 $\mu$ A / 10nA	$\pm 1\%$
AC/DC Voltage (Trms):	600V / 0.1mV	$\pm 1\%$
Resistance:	1000k $\Omega$ / 0.1 $\Omega$	$\pm 1\%$
Resistance (M $\Omega$ ):	100M $\Omega$ / 1k $\Omega$	$\pm 5\%$
Capacitance:	7000 $\mu$ F / 1nF	$\pm 1.5\%$
Frequency:	40Hz to 1kHz / 0.1Hz	$\pm 0.5\%$
Temperature (Type K):	-58 to 1000°F / 0.1°F -50 to 900°C / 0.1°C	$\pm 1\%$
Dimensions:	9" x 3" x 1.6" (228 x 76 x 39mm)	

### ORDERING INFORMATION

EX/380976-K 1000A 1Ø 3Ø AC Power Clamp Meter

## Yokogawa AC/DC Clamp-On Power Meter

- AC & DC Power up to 600 kW
- True RMS for AC
- Harmonics 1st to 25th order
- Power fluctuation using the ACA Inrush and Peak Hold functions
- AC & DC Voltage to 1000 V
- AC & DC Current to 600 A
- Frequency, Resistance, Continuity, Diode check, Power factor
- White LED automatically illuminates front of jaw when clamping
- Category IV 600V & CAT III 1000V compliant


**CW10**

Complete with test leads, carrying case and 9V battery.

### SPECIFICATIONS

Function	Range	Accuracy
AC Current:	99.99 / 600.0	$\pm(1.5\% \text{ Rdg} + 5 \text{ LSD}) @ 50/60\text{Hz}$
AC Voltage:	99.99 / 999.9	$\pm(1\% \text{ Rdg} + 5 \text{ LSD}), 50\text{-}500\text{Hz}$
DC Current:	99.99 / 600.0	$\pm(1.5\% \text{ Rdg} + 5 \text{ LSD})$
DC Voltage:	99.99 / 999.9	$\pm(0.7\% \text{ Rdg} + 2 \text{ LSD})$
Active Power (kW):	9.999 / 99.99 / 600.0	$\pm(2.5\% \text{ Rdg} + 11 \text{ LSD}) \text{ AC}$ $\pm(2.2\% \text{ Rdg} + 22 \text{ LSD}) \text{ DC}$
Inrush Current:	99.99 / 600.0	$\pm(2.5\% \text{ Rdg} + 20 \text{ LSD})$
Resistance:	1k / 10k / 100k	$\pm(1.0\% \text{ Rdg} + 5 \text{ LSD})$
Frequency:	100 / 1000 / 10k	$\pm(0.5\% \text{ Rdg} + 3 \text{ LSD})$
Harmonics:	99.99%	1-12: $\pm(5\% \text{ Rdg} + 10 \text{ LSD})$ 13-25: $\pm(10\% \text{ Rdg} + 10 \text{ LSD})$
Power Factor:	-1.00 to 1.00	$\pm(3^\circ + 2 \text{ LSD})$
Peak Hold (ACV, ACA):	40% overrange	$\pm(3\% \text{ Rdg} + 15 \text{ LSD})$
Dimensions:	9.6" x 7" x 2.0" (242 x 87 x 51mm)	

### ORDERING INFORMATION

YE/CW10 AC/DC Clamp-on Power Meter

## Amprobe Compact Power Quality Clamp

- AC/DC Voltage up to 600V, AC Current up to 600A, Resistance, Frequency; Active (W), Reactive (VAR) and Apparent (VA) Power with dual display Power Factor readout, kWh Recording
- Slim jaws fit in tight spaces & accommodate conductors up to 1.02" (26mm) diameter
- Auto Selection of AC Volts, DC Volts or AC Amps
- 3 phase unbalanced load measurement by calculation of discrete single phase measurements
- Overload protection for all functions to 600V AC and DC
- Peak hold, data hold, audible continuity test
- Optional PC interface capability
- Safety CAT III 600V


**ACD-45PQ**

Supplied with test leads & battery.

### SPECIFICATIONS

Function	Range	Accuracy
AC Current:	40.00 / 400.0 / 600A	$\pm(1.0\% \text{ Rdg} + 5 \text{ LSD}) @ 50/60\text{Hz}$
AC Voltage:	600.0V	$\pm(0.5\% \text{ Rdg} + 5 \text{ LSD}) @ 50/60\text{Hz}$
DC Voltage:	600.0V	$\pm(0.5\% \text{ Rdg} + 5 \text{ LSD})$
Resistance:	999.9 $\Omega$	$\pm(1.0\% \text{ Rdg} + 6 \text{ LSD})$
Frequency:	5.00Hz to 500.0Hz	$\pm(0.5\% \text{ Rdg} + 4 \text{ LSD})$
Active Power (W):	0 to 360.0 kW	$\pm(2.0\% \text{ Rdg} + 6 \text{ LSD}) @$ Harmonics to 10th & PF 0.1 to 0.99
Reactive Power (VAR):	0 to 360.0 kVAR	$\pm(2.0\% \text{ Rdg} + 6 \text{ LSD}) @$ Harmonics to 10th & PF > 0.7
Apparent Power (VA):	0 to 360.0 kVA	$\pm(2.0\% \text{ Rdg} + 6 \text{ LSD}) @$ Harmonics to 10th
Power Factor:	0.10 to 0.99	$\pm 3 \text{ LSD} @$ Harmonics to 21th
Dimensions:	10.5" x 7" x 3.2" (267 x 178 x 82mm)	

### ORDERING INFORMATION

AB/ACD-45PQ 600A Power Quality Clamp

## Yokogawa Clamp-on Power Monitors/Analyzers



### CW121 Clamp-on Power Monitor

For maintenance and long term monitoring of electrical equipment and systems.

- Supports 1Ø 2W to 3Ø 4W systems
- Internal flash card memory
- RS-232 or RS-485 communications
- Sends data to internal memory, PC, optional floppy disk or printer
- Compact and light weight unit

#### SPECIFICATIONS

Voltage:	150, 300, 450 ACV
Current:	20 - 3000 ACA
Measurement Parameters:	V, A, VAR, PF, Hz, Wh
Accuracy:	±0.8% rdg ± 0.4% rng, depending on clamp probe
Record Time:	Settable from 1-30 sec., 1-30 min., 1 hr.
Flash Memory:	Compatible up to 128 MB flash card
External I/O:	One of three options for start / stop Wh
Data Accumulation:	24 hours of data in one second intervals
Wiring Error Check:	Function ensures correct measurement operations
Communications:	RS-232 standard, RS-485 available
Display:	Large backlit LCD
Safety:	UL approved
Dimensions:	4.6"W x 6.4"H x 2.0"D (117x161x51mm)
Power:	100 - 240V AC, 50/60Hz (CAT II)

#### ORDERING INFORMATION

YE/CW121-D-1/SP1 Clamp-on Power Monitor with complete accessory package

Includes all required hardware and software, except clamp-on current probes: Portable Clamp-on Power Meter, UL/CSA standard power cord, four voltage probes, RS-232 communications, 9 pin RS232 communication cable, 16 MB flash memory card and card holder, flash card reader and cable, power cable. (Supplies power from measured circuit), magnetic case for power meter, carrying case for power meter and accessories, data analysis software package.

Add suffix to part number for correct size Current Clamp-on Probes:

/C2	Clamp-on Probes for 20/200A (3pcs / set)
/C4	Clamp-on Probes for 500A (3pcs / set)
/C6	Clamp-on Probes for 700A (3pcs / set)
/C8	Clamp-on Probes for 50A (3pcs / set)
/96034	Clamp-on Probe for 3000A Jaw type
/96035	Clamp-on Probe for 3000A Flexible type



### CW240 Clamp-on Power Analyzer

Records electric energy measurements, instantaneous measurements, demand measurements, waveform measurements, voltage fluctuation measurements, harmonics measurements and leakage current.

- Supports 1Ø 2W to 3Ø 4W 4i (neutral line current) systems
- Supports two system measurements (1Ø 2W X2) (1Ø 3W X2) (3Ø 3W X2)
- Data logging interval up to 1 hour
- Internal flash card memory system
- RS-232 or RS-485 communications
- Sends data to internal memory, PC, optional floppy disk or printer

#### SPECIFICATIONS

Voltage:	150, 300, 600, 1000 ACV
Current:	200.0 ACmA - 3000 ACA
Measurement Parameters:	V, A, VAR, PF, HZ, WATTS, VA, PA
Record Time:	1 cycle- 0.5 sec., 1-30 sec., 1-60 min .
Flash Memory:	Compatible up to 512 MB flash card up to 50th
Harmonic Measurement:	Function ensures correct measurement operations
Wiring Error Check:	Function ensures correct measurement operations
Communications:	RS-232 standard, RS-485 available
Display:	Large backlit LCD
Safety:	UL approved
Operating temperature:	5-40°C, 5-80% RH (no condensation)
Dimensions:	8.11" W x 7.25" H x 2.56" D (206 x 184 x 65mm)
Power:	100 - 240V AC, 50/60Hz (CAT II)
Location:	Indoor use

#### ORDERING INFORMATION

YE/CW240-D/DA/PMI/SPI Clamp-on Power Analyzer with complete accessory package. Includes all required hardware and software, except clamp-on current probes (see below): UL/CSA standard power cord, four voltage probes, NiMH battery pack & six AA alkaline batteries, carrying case, 16 MB flash card and card reader, 9 pin RS-232 cable and Toolbox software package, users manual, quick manual, communications manual.

Add suffix to part number for correct size Current Clamp-on Probes:

/C2	Clamp-on Probes for 20/200A (4 pcs / set)
/C4	Clamp-on Probes for 500A (4 pcs / set)
/C6	Clamp-on Probes for 700A (4 pcs / set)
/C8	Clamp-on Probes for 50A (4 pcs / set)
/C10	Clamp-on Probes for 2A (4 pcs / set)
/C12	Clamp-on Probes for 3000A Jaw type (4 pcs / set)
/C14	Clamp-on Probes for 3000A Flexible type (4 pcs / set)
/96036	Clamp-on Probe for 2A measurement

Optional AP240E Data analysis software package

## Hioki Power Quality Analyzer

Catch power quality problems on the fly.

- Monitor Inrush Current, Voltage Swells, Voltage Dips, Transient Over-Voltage, Interruptions
- Measure and Record: Power and Power Factor, Active/Reactive Energy, Demand, Load Changes (with graph display), Voltage and Current
- Large 4.7" Color LCD with Backlight

**3197**  
▶ & three  
9661  
sensors



### ORDERING INFORMATION

HK/3197	Power Quality Analyzer
HK/9660	100A Clamp-on Sensor (300V, Ø15mm jaw)
HK/9661	500A Clamp-on Sensor (300V, Ø46mm jaw)
HK/9667	5000A Flexible Clamp-on Sensor (1000V, Ø254mm jaw)
HK/9669	1000A Clamp-on Sensor (600V, Ø55mm jaw)
HK/9694	5A Clamp-on Sensor (300V, Ø15mm jaw)
HK/9624-50	Deluxe PQA Analysis Software

Includes: voltage cord set, 6 hour battery pack (rechargeable), AC adapter, USB cable, basic PC software, carrying case & strap. Order current sensors separately.

### SPECIFICATIONS

Measurement lines:	Single-phase 2-wire (1P2W), single-phase 3-wire (1P3W), three-phase 3-wire (3P3W2M & 3P3W3M), three-phase four-wire (3P4W and 3P4W2.5E)
Measurement line frequency:	Auto-detect (50Hz/60Hz)
Voltage range:	600.0V AC (crest factor 2 or less)
Current ranges:	500.0mA, 5.000A, 50.00A, 10.00A, 100.0A, 500.0A, 1.000kA, 5.000 kA (manually switchable in 2 range sets according to clamp sensor)
Measurement items:	
Impulsive voltage quality:	Transient overvoltage (Impulse)
RMS voltage quality:	Voltage swell, Voltage dips, Voltage interruption
Power quality:	Frequency, Voltage, Current, Current peak, Active/Reactive/Apparent power, Power factor (displaced power factor)
Three phase quality:	Voltage unbalance ratio, Current unbalance ratio
Harmonic quality:	Harmonic voltage, Harmonic current, Harmonic power, Harmonic voltage/current phase angle, Total harmonic voltage distortion, Total harmonic current distortion (THD-F, THD-R), (to 50th harmonic)
Measurement method:	Simultaneous digital sampling of voltage and current (sampling frequency 10.24 kHz per channel)
Interval settings:	Auto / 1 / 5 / 10 / 15 / 30 / 60 minutes
Recordable period:	125 days maximum; partition memory into four segments for maximum 31 days of recording each
Internal memory:	4 MB non-volatile
PC Interface:	USB 2.0
Dimensions:	5.1" W x 9.7" H x 2.5" D (128 x 246x 63 mm)

## Hioki AC/DC Current Monitor



◀ **3290**

### Choice of measurement mode:

- DC (for battery measurement)
- AC+DC RMS (for full-/half-wave rectification measurement)
- AC RMS (for current distortion measurement)
- PEAK (for peak value measurement of inrush current, etc.)
- Selectable recorder output and response time
- Current integral, operating time/duty measurements (3290-10)

### ORDERING INFORMATION

HK/3290	Clamp-On AC/DC HiTester
HK/3290-10	Deluxe Clamp-On AC/DC HiTester
HK/9691	100A AC/DC Clamp-on Sensor (600V, Ø35 mm jaw)
HK/9692	200A AC/DC Clamp-on Sensor (600V, Ø33 mm jaw)
HK/9693	2000A AC/DC Clamp-on Sensor (600V, Ø55 mm jaw)
HK/9445-02	AC Adapter
HK/9400	Carrying Case

Includes: carry strap, 4 AA batteries. Order clamp-on sensor separately.

### SPECIFICATIONS

Current measurement:	AC RMS, AC MEAN, AC+DC, DC
Current ranges:	20 to 100A with 9661 clamp 20 to 200A with 9662 clamp 200 to 2000A with 9663 clamp
Frequency:	10 to 1000 Hz
Analog outputs:	DC or AC Current: 2V f.s. Level output with REC mode Waveform output with MON mode Integ./Frequency: 1V/f.s.
Accuracy:	Current: ± 1.3 % rdg. ± 3 digits. (typical) Frequency: ± 0.3 % rdg. ± 1 dgt. (typical at 50/60Hz)
Frequency response:	± 2.3 % rdg. ± 8 dgt. (DC to 1 kHz)
Digital display:	4 digit, maximum 3000 counts (9999 counts on 3290-10)
Bar display:	20 segments
Sampling rate:	Fast: 4 times / sec (3290-10: 10times/sec), Normal: 2 times / sec, Slow: 1 time / 3sec
Crest factor:	2.5 or less
Max. circuit voltage:	600 V AC rms. (insulated wire)
Dimensions:	6.1" W x 3.6" H x 1.9" D (155 x 98 x 47 mm)

3290-10: Polarity specific integral function measures battery charging and discharging. Peak current display shows peak charge and discharge.

## AEMC Three-Phase Power Quality Analyzers



PowerPad™  
3945B



- True RMS single-, two- and three-phase measurements at 256 samples/cycle, plus DC
- Real-time color waveforms
- Easy-to-use on-screen setup
- Automatic current probe recognition and scaling
- True RMS voltage and current measurement
- Measures DC volts, amps and power
- Display and capture voltage, current and power harmonics to 50<sup>th</sup> order, including direction, in real time
- Capture transients down to 1/256<sup>th</sup> of a cycle
- Phasor diagram display
- VA, VAR and W per phase and total
- kVAh, VARh and kWh per phase and total
- Neutral current display for three-phase
- Transformer K-factor display
- Power Factor, displacement PF display
- Captures up to 50 transients
- Short-term flicker display
- Phase unbalance (current and voltage)
- Harmonic Distortion (total and individual) from 1<sup>st</sup> to 50<sup>th</sup>
- Alarms, surges and sags
- Screen snapshot function captures waveforms or other information on the display
- Includes DataView® software for data storage, real-time display, analysis and report generation

### SPECIFICATIONS

#### Electrical

Sampling Frequency	256 samples/cycle
Data Storage	3945B: 4MB 8335: 2GB SD card
Voltage (TRMS)	3945B: 960V Ø-Ø, 480V Ø-N 8335: 10-1000V Ø-Ø & Ø-N
Current (TRMS)	MN Clamp: 5mA to 100mA/ 120A or 2 to 240A MR Clamp: 10 to 1000Aac, 10 to 1400Adc SR Clamp: 3 to 1200A AmpFlex™: 10 to 6500A (Crest factor at 6500 = 1)
Frequency	40 to 69Hz
Other Measurements	kW, kVAR, kWh, kVARh, kVAh, K-Factor, Flicker 3945B: PF, DPF 8335: INrush
Harmonics	1st to 50th, Direction, Sequence
Power Source	9.6V NiMH rechargeable battery pack AC Supply: 110/230VAC ±20% (50/60Hz)
Battery Life	≥8 hrs with display on; ≥35 hours with display off (record mode)

#### Mechanical

Communication	Port Optically coupled RS-232
Display	1/4 VGA (320 x 240) color LCD
Dimensions	9.5 x 7 x 2" (240 x 180 x 55mm)
Weight	4.6 lbs (2.1 kg)
Safety Rating	3945B: 600V CAT III 8335: 1000V, CAT IV



All models include three color-coded current probes with 10 ft leads (MN93 example shown), four\* color-coded 10 ft voltage leads, four\* color-coded alligator clips, RS-232 DB9F optically coupled serial cable, NiMH battery, US 120V power cord, DataView® software, carrying bag, soft carrying pouch and user manual.  
\*Five in 8335 Kits

### ORDERING INFORMATION

AE/2130.75	PowerPad™ Model 3945B w/MN93 (240A)
AE/2130.76	PowerPad™ Model 3945B w/SR193 (1200A)
AE/2130.77	PowerPad™ Model 3945B w/24" AmpFlex™ 193-24 (6500A)
AE/2130.78	PowerPad™ Model 3945B w/36" AmpFlex™ 193-36 (6500A)
AE/2130.79	PowerPad™ Model 3945B w/MR193 (1000Aac/1400Aac)
AE/2130.80	PowerPad™ Model 3945B w/MN193 (6A/120Aac)
AE/2136.21	PowerPad® Model 8335 w/MN93 (240A)
AE/2136.22	PowerPad® Model 8335 w/SR193 (1200A)
AE/2136.23	PowerPad® Model 8335 w/24" AmpFlex® 193-24 (6500A)
AE/2136.24	PowerPad® Model 8335 w/36" AmpFlex® 193-36 (6500A)
AE/2136.25	PowerPad® Model 8335 w/MR193 (1000AAC/1400ADC)
AE/2136.26	PowerPad® Model 8335 w/MN193 (5A/120AAC)

#### Accessories (Optional)

AE/2140.14	Set of three color-coded MN193 probes (6A/120A) with 10 ft leads
AE/2140.17	5A Adapter box
AE/2140.61	Set of four color-coded 30 ft voltage leads
AE/2140.24	Set of three color-coded MN93-30 probes (240A) with 30 ft leads
AE/2140.25	Set of three color-coded SR193-30 probes (1200A) with 30 ft leads
AE/2140.26	Set of three color-coded 24" AmpFlex™ 193-24-30 probes (6500A) with 30 ft leads
AE/2140.27	Set of three color-coded 36" AmpFlex™ 193-36-30 probes (6500A) with 30 ft leads
AE/2140.28	One AC/DC Current Probe Model MR193-BK (black connector) (1000Aac/1400Aac)
AE/2140.29	Set of three color-coded MN193-30 probes (6A/120A) with 30 ft leads
AE/2140.30	Set of three color-coded MR193-30 probes (1000Aac/1400Aac) with 30 ft leads

## AEMC Single-Phase Power Quality Analyzer



### ▲ 8230 PowerPad® Jr.

All models include current probe with 10 ft lead and black connector, black & red 10 ft voltage leads and alligator clips, optical USB cable, NiMH battery, US 120V power cord, DataView® software, carrying bag, soft carrying pouch and user manual.

#### DataView® Software included with Model 8230

- Display and analyze real-time or recorded data on the PC
- Configure all PowerPad® Jr. functions & parameters
- Customize views, templates and reports
- Create and store a complete library of configurations
- Zoom in and out and pan through sections of the graph
- Display waveforms, trend graphs, harmonic spectrums, text summaries, transients, event logs & stored alarms

- Displays Min, Max and Average Volts and Amps, Crest Factor, Peak value and K-Factor
- Calculates and displays Watts, VARs and VA, Power Factor and Displacement Power Factor for single-phase and balanced three-phase
- Displays total harmonic distortion (THD-F and THD-R) for voltage and current
- Displays individual harmonic values and % for Volts and Amps through the 50th harmonic
- Captures, displays and stores inrush current waveforms and statistics
- Stores up to eight screen captures
- Stores up to 1MB of trend recorded data
- Configurable from DataView® software or front panel
- Captures up to 4096 alarm events using up to 10 different thresholds
- Displays and records up to 17 different power quality parameters
- Includes DataView® software for data storage, real-time waveform display, analysis and report generation

### SPECIFICATIONS

<b>Electrical</b>	
Voltage (TRMS)	660V Phase-to-Phase, 600V Phase-to-Neutral
Current (TRMS)	MN Clamp: 5mA to 120A or 2 to 240A MR Clamp: 10 to 1000AAC, 10 to 1400ADC SR Clamp: 3 to 1200A AmpFlex®: 10 to 6500A (Crest factor at 6500 = 1)
Frequency	40 to 70Hz
Other Measurements	kW, kVAR, PF, DPF, kWh, kVARh, kVAh, K-Factor, Flicker, Harmonic Phase Shift, Phase Rotation
Harmonics	THD-R, THD-F, V, A, VA 1st to 50th, Direction, Sequence
Sampling Frequency	256 samples/cycle
Data Storage	1.5MB partitioned for waveforms, alarms & trend
Power Source	NiMH AA rechargeable battery pack AC Supply: 120/230VAC (50/60Hz)
Battery Life	>Eight hrs with display on, >40 hrs with display off (recording mode)
<b>Mechanical</b>	
Communication Port	Optically isolated USB
Display	1/4 VGA (320 x 240) color LCD
Dimensions	8.3 x 4.3 x 2.4" (211 x 108 x 60mm)
Safety Rating	EN 61010, 600V Cat. III, Pollution Degree 2

### ORDERING INFORMATION

AE/2130.82	PowerPad® Jr. Model 8230 w/MN93-BK (240A)
AE/2130.83	PowerPad® Jr. Model 8230 w/SR193-BK (1200A)
AE/2130.84	PowerPad® Jr. Model 8230 w/24" AmpFlex® 193-24-BK (6500A)
AE/2130.85	PowerPad® Jr. Model 8230 w/36" AmpFlex® 193-36-BK (6500A)
AE/2130.86	PowerPad® Jr. Model 8230 w/MR193-BK (1000AAC/1400ADC)
AE/2130.87	PowerPad® Jr. Model 8230 w/MN193-BK (6A/120AAC)

## AEMC Power Quality Meter



### ▲ 8220

- Displays Min, Max and Average Volts and Amps, Crest Factor, Peak value and K-Factor
- Calculates and displays Watts, VARs and VA, Power Factor and Displacement Power Factor for single-phase and balanced three-phase
- Displays total harmonic distortion (THD-F and THD-R) for voltage and current
- Displays individual harmonic values and % for Volts and Amps through the 50th harmonic
- Captures and displays inrush current
- Calculates & displays phase rotation & RPM
- Displays °F or °C & resistance to 2000Ω
- Conducts continuity and diode tests
- Stores up to nine complete sets of readings for all volt, amp, power, harmonics and other measurements
- Configurable from DataView® software or front panel
- Operates off batteries or optional AC adapter
- Includes DataView® software for data storage, real-time waveform display, analysis and report generation

All models include current probe with 10 ft lead & black connector, black & red 10 ft voltage leads and alligator clips, optical USB cable, six 1.5V batteries, two safety test probes, DataView® software, carrying bag, soft carrying pouch and user manual.

### SPECIFICATIONS

<b>Electrical</b>	
Voltage (TRMS)	660V Phase-to-Phase, 600V Phase-to-Neutral
Current (TRMS)	MN Clamp: 5mA to 120A or 2 to 240A MR Clamp: 10 to 1000AAC, 10 to 1400ADC SR Clamp: 3 to 1200A AmpFlex®: 10 to 6500A (Crest factor at 6500 = 1)
Frequency	40 to 70Hz
Other Measurements	kW, kVAR, PF, DPF, VA, Harmonics, Phase Rotation, Temperature, RPM, Resistance, Continuity, Diode Test
Sampling Frequency	256 samples/cycle
Data Storage	Stores nine sets of readings
Power Source	Six 1.5V AA Alkaline batteries (>8hr life with display on) AC Supply: 120/230VAC (50/60Hz) – optional
Communication Port	Optically isolated USB
Dimensions	8.3 x 4.3 x 2.4" (211 x 108 x 60mm)

### ORDERING INFORMATION

AE/2130.91	Power Quality Meter Model 8220 w/MN93-BK (240A)
AE/2130.92	Power Quality Meter Model 8220 w/SR193-BK (1200A)
AE/2130.93	Power Quality Meter Model 8220 w/24" AmpFlex® 193-24-BK (6500A)
AE/2130.94	Power Quality Meter Model 8220 w/36" AmpFlex® 193-36-BK (6500A)
AE/2130.95	Power Quality Meter Model 8220 w/MR193-BK (1000AAC/1400ADC)
AE/2130.96	Power Quality Meter Model 8220 w/MN193-BK (6A/120AAC)

Three-line backlit digital display with custom icons

## Fluke Three Phase Power Quality Analyzers



The Fluke 435 and 434 three-phase power quality analyzers help locate, predict, prevent and troubleshoot problems in three-phase and single-phase power distribution systems. The new IEC standards for flicker, harmonics and power quality are built in.

- Analyzer trends using cursor & zoom tools even while background recording
- Seven hours operating time per charge on NiMH battery pack
- Transfer data files to your PC for reporting and analysis using FlukeView® software

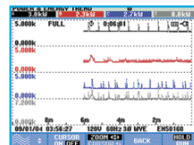
**435 Includes:** Hard carrying case with rollers, four flexible current probes (i430-flex), five test leads and clips, battery charger, FlukeView software, Power Log software, optical USB cable, color localization set, Getting Started manual, Users manual.

**434 Includes:** 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.

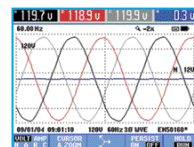
3 Year warranty

### ORDERING INFORMATION

Fluke 435	3Ø Power Quality Analyzer
Fluke 434	3Ø Power Quality Analyzer



- Automatic transient capture: never miss an event
- Auto Trends: don't waste time setting up recordings



- Four voltage and four current channels capture waveform data on all phases simultaneously
- Meter display of phase readings

Feature	435	434
Measure voltage, current, dips, swells, interruptions, harmonics, inter-harmonics, flicker, power, energy, transients, frequency, unbalance, inrush, EN50160 overview	•	•
Logger function with multiple parameters	•	Optional*
Mains signalling	•	Optional*
Current probes	3000A flexible (4)	40/400A clamp (4)
Memory	16MB	8MB
Software	Power Log & FlukeView	FlukeView
IEC61000-4-30 Class A compliance	•	•
Safety rating	CAT IV 600 V/CAT III 1000 V	
Battery life	Up to 7 hours/charge	

\*Optional function can be added with upgrade kit.

### SPECIFICATIONS

System Configuration	1Ø+neutral, 1Ø split phase, 1Ø IT no neutral, 3Ø WYE, 3Ø Δ, 3Ø IT, 3Ø hi leg, 3Ø open leg, 3Ø 2-element, 3Ø 2½-element
Voltage Inputs	Four (3 phases + neutral), dc coupled
Maximum	1000V rms, 6kV maximum peak measured
Bandwidth	>10kHz, up to 100kHz for transient display
Accuracy (ac+dc)	435: ±0.1% of nominal voltage, 434: ±0.5% of nominal
Current Inputs	Four ((3 phases + neutral), dc coupled
Range	Determined by clamp-on probes used
Nominal Frequency	40-70Hz, BW >10kHz
Accuracy (ac+dc)	435: ±0.5%±20d, 434: ±1%±5d (with supplied probes)
Watts (VA, VAR)	1.0-20.00MW (resolution 0.1 to 1 kW)
Accuracy	435: ±1%±10d, 434: ±1.5%±10d
Sampling	16 bit resolution. 200k samples/second max
Logger Function	Captures up to 10000 events, 100 parameters/phase
Display	4.5" x 3.4" Color LCD, 320x240 pixel
Power	115/230V ac or battery, built-in battery charger

## Fluke Power Quality Analyzer



- Voltage, current and power harmonics up to 51st
- Total harmonic distortion (THD)
- Phase angle of individual harmonics
- Watts, power factor, displacement power factor, VA and VAR
- Voltage and current waveforms
- Calculates 3Ø Power on Balanced Load from 1Ø Measurement
- Use cursors to read time and date of sags and swells.
- Catch voltage transients and waveform distortion
- See current at the instant of voltage events
- Catch and save up to 40 transients
- Correlate the cause of distortion with time and date stamps
- 3 Year Warranty

The Fluke 43B includes a hard case, voltage and current probes, FlukeView® PC software and cable, line voltage adapter/battery charger, applications manual, power quality video and user's manuals.

### ORDERING INFORMATION

Fluke 43B	Power Quality Analyzer
-----------	------------------------

The Fluke 43B Power Quality Analyzer performs the measurements you need to maintain power systems, troubleshoot power problems and diagnose equipment failures. All in a rugged handheld package.

Function	Measurement	Accuracy/Selection
Volts	5.000V-600V RMS (AC & DC)	
Amps	50.00A-50.00kA RMS (AC & DC)	±(1%+10d)
Mains Frequency	40.0-70.0Hz	±(0.5%+2d)
Watts, VAR, VA	250W-2.5MW	±(4%+4d)
PF, DPF	0.25-1.00	±0.04
Sags & Swells	Voltage and Current	4 min-16 days selectable
Transient Capture	40 ns pulse width Up to 40 transients	Select 20/50/100/200% above or below line voltage
Thrush Current	1A to 1000A	1s to 5 min selectable
Ohms	500.0Ω to 30.00MΩ	±(0.6%+5d)
Capacitance	50.00nF to 500.0μF	±(2%+10d)
Scope	Dc, ac, ac+dc, peak, peak-peak, Hz, duty cycle, phase, pulse width, crest factor	Sampling rate: 25MS/sec Bandwidth: Voltage BW (Channel 1): 20MHz Current BW (Channel 2): 15kHz
Screen Saves	All functions	10 screens
Recording	V/A/Hz, Power, Harmonics, Ω/Cap, Temperature, Scope	4 min-16 days selectable parameters in each display mode

Battery life: Rechargeable Ni-Cd pack (charger included), 6 hrs typical (continuous)

### OPTIONAL ACCESSORIES

i200s	240A AC current probe
80i-1000s	1000A AC current probe
i2000flex	2000A flexible AC current probe
80TK	Thermocouple module
80T-IR	Non-contact infrared temperature probe
PAC91	Parallel printer adapter

## Extech Infrared Thermometers

### Mini IR Thermometers

Compact thermometers with choice of 500°F or 1200°F maximum reading

- Model 42500 measures -4 to 500°F (-20 to 260°C) with 1° resolution
- Model 42510A measures -25 to 1200°F (-50 to 650°C) with 0.1° resolution up to 1000°
- Built-in laser pointer and backlit LCD display
- Adjustable emissivity (42510A)
- Field of view: 42500 6:1, 42510A 12:1
- Complete with 9V battery and carrying case



▲ **Model 42510A**

### Dual Laser IR Thermometers

Two laser pointers converge to 1" target spot

- Measure to 1800°F (1000°C) with 1° resolution
- 12" or 30" laser convergence distance
- Fast 0.15 second response time
- White backlit dual LCD display
- Adjustable emissivity increases accuracy
- Lock function for continuous readings
- Adjustable high/low setpoints with audible alarm alerts
- Complete with 9V battery and carrying case



▲ **Model 42512**

### High Temperature IR Thermometer

Measures surface temperature to 1832°F with 50:1 distance to target ratio

- Measures small surface areas at greater distances
- Adjustable emissivity increases accuracy for different surfaces
- Displays MAX, MIN, average and difference (MAX-MIN) values
- Audible high/low alarm alerts user when temperature exceeds set limits
- Large, backlit LCD display with automatic Data Hold feature
- Complete with 9V battery and hard carrying case



▲ **Model 42545**

### IR Thermometer with Wireless PC Interface

Wireless USB interface transmits temperature data to a PC

- Wide range (-58 to 1922°F / -50 to 1050°C)
- High 30:1 distance to target ratio
- Manual or Automatic emissivity
- Type K probe for accurate measurements on different surfaces
- Transmit continuous readings to the remote receiver with PC connection via USB CABLE
- Complete with transmitter base, receiver with USB cable, type K probe, PC software, 9V battery, AC adapter & case



▲ **Model 42560**

### ORDERING INFORMATION

EX/42500	500° Mini IR Thermometer
EX/42510A	1200° Mini IR Thermometer
EX/42511	Dual Laser IR Thermometer - 12" Convergence
EX/42512	Dual Laser IR Thermometer - 30" Convergence
EX/42545	High Temperature IR Thermometer
EX/42560	IR Thermometer with Wireless PC Interface
EX/IR201	Pocket IR Thermometer

### Pocket IR Thermometer

Handy troubleshooting thermometer with Laser pointer

- Measures from -58°F to 518°F (-50° to 270°C)
- Built-in laser pointer to improve aim
- Fixed emissivity (0.95) covers 90% of surface applications
- 6:1 field of view
- Complete with two AAA batteries and carrying case



▲ **Model IR201**

### SPECIFICATIONS

Model	42500	42510A	42511	42512	42545	42560	IR201
Temperature: (non-contact)	-4 to 500°F -20 to 260°C	-25 to 1200°F -50 to 650°C	-58 to 1100°F -50 to 600°C	-58 to 1832°F -50 to 1000°C	-58 to 1832°F -50 to 1000°C	-58 to 1922°F -50 to 1050°C	-58 to 518°F -50 to 270°C
Temperature (Type K):	---	---	---	---	---	-58 to 2498°F -50 to 1370°C	---
Basic Accuracy: (non-contact)	±2.5% of reading or ±4°F / 2°C (whichever is greater)	±1% of reading ± 2°F / 1°C	±1% of reading ± 2°F / 1°C	±1% of reading ± 2°F / 1°C	±2% of reading ± 4°F / 2°C <932°F (500°C)	±2% of reading or ±4°F / 2°C (whichever is greater)	±2.5% of rdg ±3°F / 2°C
Max. Resolution:	1°	0.1° up to 999.9°	0.1°	0.1°	0.1° up to 199.9°	0.1°	1°
Emissivity	0.95 fixed	0.1-1.00 adjust	0.1-1.00 adjust	0.1-1.00 adjust	0.1-1.00 adjust	0.1-1.00 adjust	0.95 fixed
Field of View: (Distance to Target)	6:1	12:1	12:1	30:1	50:1	30:1	6:1
Dimensions:	3.2 x 1.7 x 6.7" 82x44x170mm	3.2 x 1.6 x 6.3" 82x42x160mm	5.7 x 4.1 x 1.6" 146x104x43mm	5.7 x 4.1 x 1.6" 146x104x43mm	3.9 x 2.2 x 9" 100x56x230mm	3.9 x 2.2 x 9" 100x56x230mm	3.7 x 2 x 1" 94x51x25mm
Weight	4.9oz (140g)	6.4oz (180g)	5.7oz (163g)	5.7oz (163g)	10.2oz (290g)	10.2oz (290g)	2.7oz (76g)
Warranty:	3 years	3 years	3 years	3 years	3 years	3 years	1 year

## Yokogawa Insulation Testers

### 2406E Analog Insulation Tester

- 3 Ranges
- Discharge Function
- Portable Case for Hanging Tester from Neck
- Sky-Blue EL Illumination


**2406E**


### MY10 Analog Insulation Tester

- Single Range Models
- AC Voltage Measurement Function (needle and LED)
- Automatic Discharge Function (LED)
- Easy to Use Pull-Up Switch


**MY10**


### MY40 Digital Insulation Tester

- Four Voltage Ranges
- Memory Function
- Comparator Function with Sound Alert
- Auto Discharge Function
- Large LCD Display with Stable Indication
- AC Voltage/Resistance Measuring Functions
- Conductor Resistance Measurement


**MY40**


Model	Rating	Measure	Display	Illumination	
YE/2406	31	50V / 10M 125V / 20M	300V AC	Analog Meter	Back-lit EL display (41/42/43/44/45)
	41				
	32	125V / 20M 250V / 50M			
	42				
	33	125V / 20M 250V / 50M 500V / 100M			
	43				
	34				
	44	250V / 50M 500V / 100M 1000V / 2000M			
	35				
45					
YE/MY10	01	125V / 20M	250VAC	Analog Meter	Phosphorescent scale
	02	250V / 50M	300VAC		
	03	500V / 100M	500VAC		
	04	500V / 1000M			
	05	1000V / 2000M			
YE/MY40	01	125V / 200M 250V / 200M 500V / 2000M 1000V / 2000M	600VAC	3.5 digit & 400Ω	LED Lighting bargraph LCD

**Lifetime Warranty on All Models**
**Dimensions:**

2406	4.7"x4.3"x2.4" (120x110x60mm)
MY10, MY40	4.9"x4.1"x2.1" (125x103x53mm)

**Power:**

2406	6 AA Batteries (included)
MY10, MY40	4 AA Batteries (included)

## Fluke Infrared Thermometers

- Dot Laser Sighting
- Comfortable Pistol Grip
- Large Backlit Display
- Hi/Lo Alarms
- Displays Difference Between Two Measurements
- Small Size Easily Fits in Toolbox or Clips to Belt Loop
- 3-Meter (9.8-Foot) Drop Tested
- IP54 Dust & Water Resistance

**62 MAX**

**SPECIFICATIONS**

MODEL	62 MAX	62 MAX+
Range °C	-30 to 500	-30 to 650
Range °F	-22 to 932	-22 to 1202
Spot Distance	10:1	12:1
Emissivity	0.10-1.00	0.10-1.00
Min/Max/Avg/Diff	Yes	Yes
Hi/Lo Alarms	Yes	Yes
Display Resolution	0.1°C (0.2°F)	0.1°C (0.2°F)
Basic Accuracy	1.5% or 1.5°C	1.0% or 1.0°C
Response Time (95%)	<500 ms	<300ms
Laser Sighting	Single	Dual

Battery: One AA (included)

Size: 6.88x3.34x2.95" (175x85x75mm)

Weight: 9 oz (255g)

Operating Temp: 0 to 50°C, &lt;90% RH non-condensing

**ORDERING INFORMATION**

62 MAX Single Laser Infrared Thermometer

62 MAX+ Dual Laser Infrared Thermometer

## Yokogawa Thermometers

### TM10 Thermistor Data Collecting Thermometer



- Switch Between External Probe, Infra-Red Sensor and Built-In Sensor
- Measure from -30 to 200 °C

### TM20 TC Data Collecting Thermometer



- Two Channel Simultaneous Measurement
- Measure Type K/J/E/T Thermocouples, mV Inputs & Infra-Red Sensors
- Display Channel Readings, Min, Max, Average & Difference

### TX10 Series

- Measure J/K/T/E Thermocouples
- 3 ½ Digit Display for Resolution to 0.1 °C
- IP54 Drip Proof Case
- Two Channel Measurement (TX10-03)
- 10 Measurement Storage (TX10-02/03)
- Min & Max Storage (TX10-02/03)
- Temperature Difference Display (TX10-03)



### SPECIFICATIONS

	TM10	TM20	TX10
Range	-30 to 200 °C (-22 to 392 °F)	K -200 to 1372 °C (-328 to 2501 °F) J 200 to 1000 °C (-328 to 1832 °F) E -200 to 700 °C (-328 to 1292 °F) T -200 to 400 °C (-328 to 752 °F)	TC same as TM20
Accuracy	±0.3 °C (0-100 °C)	TC ±0.3% rdg ±0.3 °C (>-100 °C) V ±0.1% rdg ±0.2% range	±0.3% rdg ±0.7 °C (-100 to 200 °C)
Resolution	0.1 °C	TC 0.1 °C V 0.001V mV 0.1mV	0.1 °C (below 200 °C)
Operating Temp	-20 to 50 °C	0 to 50 °C	0 to 50 °C

### TM10 & TM20 Common Features

- Backlit LCD Display
- IP54 Drip Proof Case
- 1 Second to 24 Hour Measuring Intervals
- Data Capacity up to 20000 Readings
- Hi/Lo Alarms
- RS232 Port for PC Interfacing
- Easy PC Data Management (Automatic Layout in Excel)

Collector mode records the measured temperature along with the measured item, operator name, date/time of measurement in response to a key action. Test comments can also be recorded. Logging mode continuously records the measured temperature at a preset time interval.

### ORDERING INFORMATION

YE/TM10	Thermistor Data Collecting Thermometer
YE/TM20	TC Data Collecting Thermometer
YE/TX10-01	Single function, 1 channel Thermometer
YE/TX10-02	Multi-function, 1 channel Thermometer
YE/TX10-03	Multi-function, 2 channel Thermometer

Order probes and carrying case separately

### ACCESSORIES

#### TM10 Accessories

YE/90010	150mm needle probe
YE/90011	120mm sharp needle probe
YE/90012	Surface probe
YE/90013	Rounded probe (for liquids)
YE/93010	Soft case

#### TM10 & TM20 Accessories

YE/90003	Non-contact probe
YE/91011	RS-232 PC cable

#### TX10 & TM20 Accessories

YE/90020	Type K rounded probe
YE/90023	Type K needle probe
YE/90030	Type K surface probe
YE/245907	Type K bead
YE/93012	Soft case

## Hioki Megohm Testers



**3455**

- Tests insulation on transformers, cables & motors
- Calculates PI (Polarization Index) and DAR (Dielectric Absorption Ratio)
- Temperature measurement & compensation
- Step voltage testing
- Leakage current display

### SPECIFICATIONS

<b>Insulation Resistance:</b>	
Test voltage:	250V, 500V, 1kV, 2.5kV, 5kV DC
Manual adjust:	25V step (<1kV), 100V step (>1kV)
Resistance:	0.00MΩ - 5TΩ in 7 ranges (±5% rdg. ±5d for test current >100nA)
Leakage current:	1.00nA-1.2mA in 6 ranges (±2.5% rdg. ±5d above 100nA)
Voltage Measure:	50-750V AC, 50/60Hz; 50-1000V DC (±5% rdg. ±5d)
Temperature:	-10.0 to 70.0°C (±1.5°C)
PI, DAR test:	Times are user programmable.
Step voltage test:	500V-2.5kV in 500V steps, 1kV-5kV in 1kV steps
Compensation:	Displays the resistance based on reference temperature. Compatible to 10 insulation materials
Timer:	30s to 30min
Data memory:	Manual recording: 100 data Interval recording: 360 times x 10 data
Energy discharge:	Automatic discharge after measurement
Display LCD:	Digital and bargraph display, with backlight
Display Info:	Time, date, test voltage, timer, battery level
PC software:	For USB data transfer and report editing
Power supply:	6 AA batteries
Standards:	CAT IV 600V, CAT III 1000V
Dimensions:	10.2"W x 9.9"H x 4.7"D (260 x 251 x 119mm)



- 5 test ranges to 1000V
- Insulation readings to 4000MΩ
- Pass/Fail indicator
- AC/DC voltage measurements
- Live wire warning
- Continuity check at 200mA
- Drop proof from 1m (3.3ft)

**IR4056**

### SPECIFICATIONS

<b>Insulation Resistance:</b>	
50 / 125 / 250 / 500 / 1000V DC test voltage	
Ranges:	100 / 250 / 500 / 2000 / 4000MΩ
Accuracy:	±4% rdg.
Low Resistance:	10.00 / 100.0 / 1000Ω ranges
Accuracy:	±3% rdg. ±2d
AC Volts Measure:	420.0 & 600V ranges, 50/60Hz
Accuracy:	±2.3% rdg. ±8d
DC Volts Measure:	4.200 to 600V in 4 ranges
Accuracy:	±1.3% rdg. ±4d
Response time:	0.8 sec for Pass/Fail decision
Other functions:	Live wire warning, automatic discharge, DC/AC detection
Power Supply:	4 AA batteries (20 hr life)
Dimensions:	6.3"W x 7.0"H x 2.1"D (159 x 177 x 53mm)

### ORDERING INFORMATION

HK/3455-01	5kV MΩ HiTester with 3m leads, USB cable, PC software
HK/IR4056-20	1kV MΩ HiTester with test leads & neck strap
HK/L9787-91	Breaker pin for IR4056
HK/L9788-11	Test lead set with remote switch for IR4056
HK/9631-01	Temperature sensor for 3455 (1m)
HK/9750	10m Test Leads for 3455
HK/9459	Rechargeable Battery pack for 3455
HK/9753	AC adapter for 3455

## Fluke MegOhmMeters



**1507**

### Handheld MegOhmMeter

- Insulation resistance to 10GΩ (1507)
- Test voltages to 1000V
- Calculates Polarization Index & Dielectric Absorption Ratio (1507)
- AC/DC voltage measure to 600V
- Pass/Fail function for repetitive tests (1507)
- Remote probe for hard-to-reach tests

### SPECIFICATIONS

<b>Insulation Resistance:</b>	
Ranges:	0.01 MΩ to 10 GΩ (1507); 0.01 MΩ to 4000 MΩ (1503)
Test Current:	1mA max.
Test Voltage:	50, 100, 250, 500, 1000 V (500 & 1000 V on 1503)
Basic Accuracy:	±(1.5% rdg + 5d) up to 2000 MΩ
Resistance:	0.01 Ω to 20.00 kΩ
Basic Accuracy:	±(1.5% rdg + 3d)
Voltage:	0 - 600.0 V DC or AC (50-400Hz)
Live Circuit Indicator:	Inhibits insulation resistance test if >30V AC/DC present
Operating Temperature:	-20 to 55°C
Rating:	CAT IV 600V

Includes test leads, test probes, alligator clips, protective holster & batteries.

### ORDERING INFORMATION

Fluke 1503	1kV Handheld Insulation Resistance Tester
Fluke 1507	Deluxe 1kV Handheld Insulation Resistance Tester
Fluke 1550B	5kV MegOhmMeter



**1550B**

### 5kV MegOhmMeter

- Resistance to 1TΩ
- Ramp function
- DAR & PI calculations
- Auto-discharge
- 99 memory storage
- Live circuit voltage warning

### SPECIFICATIONS

<b>Insulation Resistance:</b>	
250V	200 kΩ - 50 GΩ
500V	200 kΩ - 100 GΩ
1000V	200 kΩ - 200 GΩ
2500V	200 kΩ - 500 GΩ
5000V	200 kΩ - 1 TΩ
Step Size:	50V up to 1000V, then 100V
Leakage Current:	1 nA - 2 mA
Capacitance:	0.01 μF - 15.00 μF
Timer:	0 - 99 minutes
Power:	12V rechargeable battery
Charger:	85-250VAC
Operating Temperature:	-20 to 50°C

Includes test leads, 500V probes, alligator clips, interface adapter & cable, FlukeView®

## Megger® Insulation Resistance Testers



▲ MJ15

### MJ15 and BM15

The BM15 and MJ15 are compact 5-kV insulation testers that are simple to use and provide a quick, accurate reading of insulation resistance. Both instruments offer four test voltages (500 V, 1 kV, 2.5 kV, 5 kV), analog scales and measurement sensitivity to 20 GΩ.

These models include “pass/fail” display overlays for a rapid “go/no go” testing and trend analysis.

The BM15 is powered by 8 “AA” or rechargeable alkaline batteries while the MJ15 includes a hand-crank generator in addition to battery power.

### MIT515 and MIT525 5kV Testers

**NEW**

This new generation of insulation testers offers increased measurement range, better accuracy, longer battery life, additional functionality and improved safety features.

#### MIT515

A rugged, portable tester designed for years of trouble free operation:

- Three industry standard tests can be programmed and run automatically
  - Insulation resistance (IR)
  - Dielectric absorption (DAR)
  - Polarization index (PI)
- Resistance measurements to 10 TΩ with 5% accuracy up to 1 TΩ
- Voltage, capacitance & leakage current measurements
- Test voltage can be set in 10 V increments from 50 V to 1 kV, and in 25 V increments above 1 kV
- Timer control, timer display and alarm limit modes
- Test lockout when an external voltage is present, for redundant safety
- Dual operation from AC line or rechargeable batteries



▲ MIT515

#### MIT525

All the features of the MIT515 plus expanded capabilities to afford the skilled operator more flexibility in analyzing and reporting the condition of capital equipment:

- Ramp test, auto step voltage (SV) test, auto dielectric discharge (DD) test
- Advanced memory functions with recall to screen, real time clock, time/date stamped results and data downloaded via RS232 or USB ports
- Includes PowerDB Lite software for documenting test results

### MIT1025 10kV Insulation Tester

**NEW**

Same features and functions as the MIT525, but with 10kV maximum output:

- Test voltage range from 50 V to 10 kV, in 10 V increments to 1 kV and 25 V increments above 1 kV
- Increased measurement range to 20 TΩ, for testing the best insulating materials
- Automatic performance of standardized tests, including Step Voltage, Dielectric Absorption Ratio and Dielectric Discharge
- Capacitance measurements from 1 nF to 25 μF, providing additional equipment diagnostic information
- RS232 & USB ports for downloading test results
- A 'quick start' guide in the lid to make field operation simple and user-friendly



▲ MIT1025

IEEE43:2000 "IEEE Recommended Practices for Testing Insulation Resistance of Rotating Machinery" recommends testing machines rated above 12kV at 10kV.

The Polarisation Index test is performed on equipment and cables to assess the general condition of the insulation before applying potentially destructive test voltages.

The new MIT 5kV & 10kV models easily perform both these tests.

### ORDERING INFORMATION

Catalog No.	Test Voltage (V dc)	Resistance
ME/MJ15	500	100 kΩ - 20GΩ
	1000	
	2500	
ME/BM15	5 kV	10 kΩ - 10 TΩ
	250	
	500	
	1000	
ME/MIT515	2500	10 kΩ - 10 TΩ
	5 kV	
	250	
	500	
	1000	
ME/MIT525	2500	10 kΩ - 20 TΩ
	5 kV	
	250	
	500	
	1000	
ME/MIT1025	2500	10 kΩ - 20 TΩ
	5 kV	
	500	
	1000	
	10 kV	

## Megger® Insulation Resistance Testers

### MJ Series

The MJ159 is the recognized industry standard, upgraded with modern circuitry. This analog meter allows the trained operator to determine much more from the needle movement than just a MΩ reading. Available in line, battery or hand cranked models.

Other features include:

- IR measurements to 2000MΩ
- Four test voltages to 1kV
- Guard terminal
- Continuity and kΩ functions for troubleshooting

**MJ159** ▶



### MIT400 Series

The MIT400 Insulation/Continuity Testers offer outstanding performance and ease of use. Dual digital displays show test results and test voltage simultaneously. Hands free 200 & 20mA continuity test ranges ensure the accurate measurement of circuit conductors and bonding. An audible continuity alarm speeds testing. These models offer:

- Insulation resistance measurements to 200GΩ; selectable test voltages to 1000V
- Backlit LCD with dual digital and analog arc displays
- Leakage current readout (except MIT400)
- Live circuit warning & test inhibit for voltages >75V
- PI/DAR and Timer functions (except MIT400)
- IP54 & CAT IV 600V rating

The MIT series offers TRMS & DC Voltage measurements to 600V. The MIT420 and MIT430 add capacitance (to 10uF), frequency (to 400Hz) and test result storage. MIT430 has Bluetooth for wireless data transfer and comes with Megger download software.

All models include carrying case, test leads, battery. All models except the MIT400 also include a remote switch probe for “hands free” testing.

◀ **MIT410**



▶ **MIT310**



### MIT300 Series

The new MIT300 Series features a large display and hands-free operation. The tough, rubber armored case is designed for rough handling and weatherproof to IP54. A rigid cover folds up to protect the front panel when not in use. Intelligent safety features include:

- Safety Interlock – prevents unsafe connection of test leads
- Safe contact detectors – the tester will remain safe and not be damaged if connected to a live circuit while on continuity setting.
- Live voltage warning – alerts when circuit voltage is >25V.
- Safety lockout – inhibits test when circuit voltage is >50V.
- Continuity check – prevents a continuity test on a live circuit.

Each model includes a 200mA continuity test function and continuity buzzer. All models except the MIT300 measure DCV & ACV (50/60Hz) to 600V. The MIT330 adds memory for storing 1000 test results and a USB interface. The MIT310A has an analog meter display for those who prefer a moving needle.

### ORDERING INFORMATION

Catalog No.	Model No.	Test Voltage (V dc)	Insulation Resistance	Resistance Range	Display	Power Source
ME/212159	MJ159	100, 250, 500, 1000	0 to 2000 MΩ	0 to 5000 Ω	Analog	Hand-Cranked
ME/212559	MJ559	100, 250, 500, 1000	0 to 2000 MΩ	0 to 5000 Ω	Analog	Line or Rech. Batt.
ME/MIT400	MIT400	250, 500, 1000	0.01 MΩ to 20 GΩ	0.01 Ω to 999 kΩ	Analog/ Dual Digital	Alkaline or Rechargeable NIMH Battery (5 x AA)
ME/MIT410	MIT410	50, 100 250, 500, 1000	0.01 MΩ to 100 GΩ	0.01 Ω to 999 kΩ	Analog/ Dual Digital	
ME/MIT420	MIT420	50, 100 250, 500, 1000	0.01 MΩ to 200 GΩ	0.01 Ω to 999 kΩ	Analog/ Dual Digital	
ME/MIT430	MIT430	50, 100 250, 500, 1000	0.01 MΩ to 200 GΩ	0.01 Ω to 999 kΩ	Analog/ Dual Digital	
ME/MIT300	MIT300	250, 500	10 kΩ – 999 MΩ	-	Digital/Analog	Alkaline or Rechargeable NIMH Battery (8 x AA)
ME/MIT310	MIT310	250,	10kΩ –	-	Digital/Analog	
ME/MIT310A	MIT310A	500, 1000	999 MΩ	10 Ω – 2 kΩ	Analog	NICD/NIMH
ME/MIT320	MIT320	250,	10 kΩ – 999 MΩ	0.01 – 99.9 Ω	Digital/Analog	Battery
ME/MIT330	MIT330	500, 1000	with limit alarm	10 Ω – 999 kΩ	w/backlight	(8 x AA)

## AEMC Megohmmeters

### 1000V Digital/Analog Megohmmeter Models 1050 & 1060

- 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 (Model 1050)
- Auto power-down when not in use
- Remote operation with optional test probe
- Rugged dual wall field case with detachable lead/accessory pouch
- EN 61010-1, 600V Cat III, IEC 61557 and CE rated



▲ 1060  
CE □

#### 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
- Includes DataView® software to configure instrument and generate reports

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

- 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



▲ 5070  
CE □



DataView® is included with the Models 1060, 5060 and 5070

#### DataView® Software for Models 1060, 5060 & 5070

- Configure all functions and run tests from your PC
- Retrieve and display data in real time
- Retrieve data from memory in real time
- Display plots & print reports

### ORDERING INFORMATION

AE/2130.01	Megohmmeter Model 1050 (Digital, with Analog Bargraph, Backlight, Alarm, Timer, 50V, 100V, 250V, 500V, 1000V, Auto DAR/PI, Res., Continuity)
AE/2130.03	Megohmmeter Model 1060 (Digital, with Analog Bargraph, Alarm, Timer, 50V, 100V, 250V, 500V, 1000V, Auto DAR/PI, Res., Continuity, RS-232 with DataView® software, 128kB Memory)
AE/2130.20	Megohmmeter Model 5050 (Digital, with Analog Bargraph, Backlight, Alarm, Timer, 500V, 1000V, 2500V, 5000V, Auto DAR/PI/DD)
AE/2130.21	Megohmmeter Model 5060 (Digital, with Analog Bargraph, Backlight, Alarm, Timer, 500V, 1000V, 2500V, 5000V, Auto DAR/PI/DD, RS-232 w/DataView® software)
AE/2130.30	Megohmmeter Model 5070 (Graphical, Analog Bargraph, Backlight, Alarm, Timer, 500V, 1000V, 2500V, 5000V, Ramp, Auto DAR/PI/DD, RS-232 w/DataView® software)

## AEMC Flexible Current Probe



▲ 24-3001  
CE □

- 24" flexible sensor fits around conductors up to 7.6" in diameter
- Reads Amps directly on DMM or Scope
- mV output directly proportional to AC current (10mV/A on 300A range and 1mV/A on 3000A range)
- Accuracy 1% of Reading ± 500mA
- 4% influence of conductor position in jaw
- 300 hour battery life
- EN 61010, 1000V Cat. III

### ORDERING INFORMATION

AE/2120.81	FlexProbe® Model 24-3001 (300/3000A, 24", 10mV/A/1mV/A, with lead)
AE/2118.46	Banana (Female) - BNC (Male) Adapter (XM-BB) for use with scopes

## AEMC Megohmmeters

### Digital/Analog Megohmmeters

1040  
&  
1045



**For motors, cables, switchgear and general applications**

- True Megohmmeter\*
- Test voltage combinations of 250V, 500V and 1000V
- Insulation measurements to 2000MΩ (2GΩ)
- 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 (Model 1045)
- Over-molded slip-proof holster for rugged field use
- EN 61010-1, 300V Cat. II, EN 61557 and CE rated
- Supplied with a soft carrying case

### Analog Megohmmeters

1015



1005



**Ideal for acceptance testing and preventive maintenance**

- Compact and lightweight
- Test voltage to 500V (Model 1005) or 1000V (Model 1015)
- Insulation measurements to 1000MΩ
- 600VAC voltage measurement range (safety check)
- 0 to 10Ω+ and 0 to 10Ω - continuity ranges
- Continuity measurements with 200mA test current
- Resistance range to 1000Ω (Model 1015)
- Push button for battery check
- Large, direct-reading, colored scale
- Rugged construction for heavy duty field use
- Includes test leads, shockproof rubber housing & soft carrying case

### 1000V Megohmmeter



6527



- Test voltage combinations of 250V, 500V and 1000V
- Insulation measurements to 4000MΩ
- Resistance measurements to 400kΩ
- Continuity meter, up to 200mA test current
- Voltmeter measures to 600VAC/1000VDC
- Large, dual, backlit digital display
- Auto HOLD function to freeze readings
- TEST LOCK feature for time sensitive measurements up to 15 minutes
- Automatic discharge after insulation test
- Auto power off
- CAT IV 600V rating
- Supplied with a soft carrying case and test leads

### Hand-Cranked Megohmmeters

- True Megohmmeter\*
- Test voltages of 250V, 500V and 1000V
- Insulation measurements to 200MΩ and 5000MΩ
- LED indicates constant voltage output and proper cranked speed
- Automatic discharge when measurement is finished
- Auto-Ranging with dual scale operation for better sensitivity and easier readings
- Voltage display prior to, during and at end of test
- Compact self-contained package; folding crank
- Large direct-reading scale
- CAT III 300V rating



6501



## ORDERING INFORMATION

AE/2116.92	Megohmmeter Model 1040 (Digital, with Analog Bargraph, Alarm, Backlight, 500V, 1000V, 400kΩ, Continuity)
AE/2116.93	Megohmmeter Model 1045 (Digital, with Analog Bargraph, Alarm, Timer, Backlight, 250V, 500V, 1000V, 400kΩ, Continuity)
AE/2117.30	Megohmmeter Field Kit, Model 1040
AE/2117.31	Megohmmeter Field Kit, Model 1045
AE/2126.53	Megohmmeter Model 6527 (Digital, 250V, 500V, 1000V, 400kΩ, 600VAC/1000VDC measure)
AE/2126.51	Megohmmeter Model 6501 (Hand-cranked, 500V, 500kΩ, Continuity)
AE/2126.52	Megohmmeter Model 6503 (Hand-cranked, 250V, 500V, 1000V)
AE/1402.01	Megohmmeter Model 1005 (Analog, 500V, Continuity)
AE/1403.01	Megohmmeter Model 1015 (Analog, 500/1000V, Resistance, Continuity)

## AEMC Ground Resistance Testers

### Digital Ground Resistance Tester Models 4620 & 4630



▲ 4630 CE

- Measures soil resistivity (4-Point) method
- 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
- 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

Also available as full kits



### Clamp-On Ground Resistance Tester Models 3711 & 3731



▲ 3731  
US Patent No. 362,639



- 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 or phase 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 EN 61010-1, Cat. III and CE Mark
- Rugged Lexan® head and body construction resists breakage
- Alarm settings and stored memory information saved during shutdown (Model 3731)
- Patented design

### Multi-Function Ground Resistance Tester Models 6470B & 6472

- 2- and 4-Wire Bond Resistance/Continuity measurement
- 3-Point Fall-of-Potential measurement with manual/automatic frequency selection
- 4-Point soil resistivity measurement with automatic calculation of Rho & user selection of Wenner or Schlumberger method
- 3-Point earth coupling measurement
- Frequency scan 40-513Hz for testing in electrically noisy environments
- Selectable test voltage of 16 or 32V up to 250mA of test current
- Automatic recognition of all electrode connections & resistance
- Stores up to 512 complete test results
- Optically isolated USB communication
- Rechargeable NiMH batteries from wall charger or vehicle power
- Rugged dustproof and rainproof field case
- Includes DataView® software for remote operation, data storage, real-time display, analysis, report generation & system configuration

Tester includes meter, NiMH batteries, optical USB cable, DataView® software, external battery charger, power cord, user manual.

Kit includes Tester, test leads, 30 ft ground lead (green), auxiliary ground electrodes, spaded lugs, 100 ft tape measure, ground tester workbook CD, carrying bag for meter, carrying bag for kit.

#### Model 6472 adds:

- Manual and automatic frequency scan to 5078Hz
- Measures Ground Resistance using the 2 clamp method (selective ground testing)
- Measures Ground Impedance up to 5kHz to test lightning strike protection

▲ 6470B



**NEW**

## ORDERING INFORMATION

AE/2130.43 Ground Resistance Tester Model 4620 (4-Point, Digital, Battery Powered)

AE/2130.44 Ground Resistance Tester Model 4630 (4-Point, Digital, Rechargeable Battery)

AE/2135.20 Model 4620 Kit with 300/100 ft leads

AE/2135.23 Model 4630 Kit with 300/100 ft leads

AE/2117.60 Ground Resistance Tester Model 3711 (Clamp-On)

AE/2117.61 Ground Resistance Tester Model 3731 (Clamp-On with memory and alarm)

AE/2135.01 Ground Resistance Tester Model 6470B

AE/2135.03 Ground Resistance Tester Model 6470B 4-point Kit – 300/100 ft leads

AE/2135.04 Ground Resistance Tester Model 6470B 4-point Kit – 500/100 ft leads

AE/2135.51 Ground Resistance Tester Model 6472

AE/2135.53 Ground Resistance Tester Model 6472 4-point Kit – 300/100 ft leads

AE/2135.54 Ground Resistance Tester Model 6472 4-point Kit – 500/100 ft leads

AE/2135.71\* AC Current Probe Model MN82 for use with Model 6472

AE/2135.72\* AC Current Probe Model SR182 for use with Model 6472

\*2 probes required for two clamp testing method.

## Megger® Ground Resistance Testers

### Three-Terminal Ground Resistance Testers

BIDDLE® Model 250260 is the tried and proven analog tester. It is a simple, three-terminal model that will tolerate 2V peak-to-peak voltage interference.

The MEGGER® DET3TD is a digital tester with an expanded resistance range and selectable 25/50V test voltage. It rejects noise up to 40V p-p and measures earth voltages up to 100V. The DET3TC adds an ART (Attached Rod Technique) resistance measurement and earth current measurements from 0.5mA to 19.9A with the optional current clamp.

All DET3 and DET4 models are CAT IV 100V and IP54 rated. Test leads and carrying case are included.

### Four-Terminal Ground Resistance Testers

Addition of a fourth terminal permits soil resistivity testing as well as more precise resistance (installed ground) measurements.

The new DET4TD2 offers the same features as the DET3TD, but with 4-terminal capability and a 20kΩ upper resistance limit. The DET4TC2 increases this to 200kΩ. The DET4TCR2 has rechargeable batteries that can be charged from the AC mains or a vehicle battery (with optional adapter). The DET4TC2 and DET4TCR2 offer 4 test frequencies for testing in noisy environments. Both models can be ordered with clamps to perform the stakeless test method, like a clamp style earth tester. A backlit LCD provides improved visibility in dark locations.

For testing in extreme electrical environments, the DET2/2 offers full autoranging, 0.001Ω resolution, adjustable test frequency and additional interference filtering.



### ORDERING INFORMATION

Model No.	Measurement	Resistance	Voltage	Gnd Current	Power Source	Display	Test Leads
250260	2/3 Term.	0.5 - 500Ω			Battery	Analog	250560
DET2/2	2/3/4 Term.	0.010Ω - 20kΩ			Rechargeable Battery	Digital	250581
DET3TD	2/3 Term.	0.01 - 2000Ω	0 - 100V		Battery	Digital	included
DET3TC	2/3 Term. + ART*	0.01 - 2000Ω	0 - 100V	0.5mA - 19.9A*	Battery	Digital	included
DET4TD2	2/3/4 Term.	0.01Ω - 20kΩ	0 - 100V		Battery	Digital	included
DET4TC2	2/3/4 Term.	0.01Ω - 200kΩ	0 - 100V		Battery	Digital	included
DET4TC2+Clamps	2/3/4 Term. + stakeless	0.01Ω - 200kΩ	0 - 100V	0.5mA - 19.9A	Battery	Digital	included
DET4TCR2	2/3/4 Term.	0.01Ω - 200kΩ	0 - 100V		Rechargeable Battery	Digital	included
DET4TCR2 +Clamps	2/3/4 Term. + stakeless	0.01Ω - 200kΩ	0 - 100V	0.5mA - 19.9A	Rechargeable Battery	Digital	included

\* Attached Rod Technique (ART) requires optional current measuring clamp.

## Megger® Clamp-on Testers

**NEW**


### Ground Resistance Testers

- Easy, fast clamp-on operation – No rods or cables needed
- Measure ground resistance from 0.05Ω to 1500Ω
- Measure ground leakage or phase current from 0.5mA to 35A
- Auto ranging with high & low alarms
- Automatic self calibration
- Data storage & USB interface

**DET24C**

### APPLICATIONS

- Measure resistance and continuity of grounding loops around pads, poles and buildings.
- Check multi-grounded systems without disconnecting the ground rod/stake under test.
- Measure leakage current flowing to ground or circulating in ground systems.
- Use on cell towers, RF transmitters and telecom sites.
- Inspect and verify lightning protection systems.
- Test consumer installations, including pools, spas, etc.

### FEATURES

- Backlit LCD display can be read in bright sunlight.
- Large 39 x 55mm jaw with 39mm (1.5") opening.
- Noise filter for stable readings in noisy environments.
- Hold function for difficult to reach installations.
- 24 hour battery life with auto-off to save on battery power.
- Two alarms with adjustable threshold & audible indication.
- Stores 2000 test results (DET24C).
- Calibration check loop insures proper operation.
- CAT IV 600V safety rating.

Range	Resolution	Accuracy	Range	Resolution
0.05 - 0.99Ω	0.01Ω	±1.5% ± 0.05Ω	0.5 - 0.99mA	0.01mA
1.00 - 9.99Ω	0.01Ω	±1.5% ± 0.1Ω	1.00 - 9.99mA	0.01mA
10.0 - 99.9Ω	0.1Ω	±2% ± 0.5Ω	10.0 - 99.9mA	0.1mA
100.0 - 199.9Ω	0.1Ω	±5% ± 1Ω	100 - 999mA	1mA
200 - 400Ω	1Ω	±6% ± 5Ω	1.00 - 9.99A	0.01A
400 - 600Ω	1Ω	±10% ± 10Ω	10.0 - 35.0A	0.1A
600 - 1200Ω	10Ω	±20%		
1200 - 1500Ω	10Ω	±35%		

TRMS reading, CF<5, 50-400Hz  
Basic Accuracy 2% @ 50/60Hz

Model DET24C includes USB interface, IrDA dongle and software for downloading test data. Both models include batteries, carrying case, carrying strap & calibration loop.

### ORDERING INFORMATION

ME/DET14C	Digital Earth Test Clamp-on Meter
ME/DET24C	Digital Earth Test Clamp-on Meter with USB

## Hioki Battery Testers


**3554**

- Test without disconnecting the batteries
- Three level indication: Pass, Warning, Fail
- Audible beeper (3555)
- PC Interface & software (3554)

Get an instantaneous check of battery condition based on internal resistance and voltage.

Model 3554 for medium and high capacity lead-acid batteries. Model 3555 for compact storage batteries used in portable telephones and similar applications.

### SPECIFICATIONS

	3554	3555
Measurement Ranges:		
Ohms:	3μΩ-3Ω	300μΩ-30Ω
# Ranges	4	3
Best resolution	1μΩ	100μΩ
Accuracy	0.8% rdg +6d	0.8% rdg +6d
Test Current	150mA-1.5mA	5mA-50μA
DC Volts	±6V, ±60V	±3V, ±30V
Best resolution	1mV	1mV
Accuracy	0.08% rdg +6d	0.1% rdg +6d
Temperature	-10 to +60°C	--
Resolution	0.1°C	--
Test Frequency	1kHz	1kHz
Max. Input	60V DC	50V DC
Comparator	Hi & low ohm limit, low volt limit (both models)	
# Limit Sets	200 stored	10 stored
Data Memory	4800 data/limit sets	--
Alert	LCD icon	LED & Beeper
Batteries	9 x AA	6 x AA
Life	up to 10 hrs	up to 18 hrs
PC Interface	USB	--
Operating Temp.	0-40°C, <80% RH non-condensing	
Dimensions	7.7 x 5.1 x 2.2" (196x130x55mm)	

### SUPPLIED ACCESSORIES

3554	Pin-type test leads, USB cable, data management software, carrying case, zero adjust board, batteries, spare fuse
3555	Pin-type test leads, batteries.

### ORDERING INFORMATION

HK/3554	Battery Tester (lead-acid batteries)
HK/3555	Battery Tester (portable batteries)
HK/9382	Carry case for 3555
HK/9453	4-terminal lead set
HK/9466	Remote Control Switch for 3554

## Megger® High-Pot Testers

### Production Line High-Pot Testers

BIDDLE® High-Pot Testers are designed for ease of operation and readily adapt to development, maintenance or production testing. These instruments are supplied with 4-ft removable probes.

Available in one AC/DC and two AC models; the AC units feature a front-panel, NEMA-5-15R three-prong output receptacle.

The BIDDLE high-pot testers are packed with features for safety and convenience, including:

- Ground continuity check of 3-wire devices with high voltage interlock
- Visual and audible alarms
- Leakage current adjustable on front-panel from 0.3 to 12.3 mA
- One-second or continuous testing
- Automatic failure shutdown
- Recessed high-voltage connections

Catalog No.	Model	Applied Test Voltage	Adjustable Leakage Current Trip Level
ME/230315	AC	0-3 kV ac	0.3 to 12 mA
ME/230415	AC	0-4 kV ac	0.3 to 12 mA
ME/230425	AC/DC	0-4 kV ac 0-5 kV dc	AC: 0.3 to 12 mA DC: 0.43 to 17 mA

230415



## Megger® Digital Low Resistance Ohmmeters

**NEW**

### DLRO-10

- Accurate results in under three seconds
- Auto current reversal cancels standing emfs
- Fuse protected to 600 V
- NiMH battery reduces weight
- 250 mW power limit avoids heating the test sample
- Autoranging with high/low limits (DLRO 10X)

Range	Resolution	Current
1.9999 mΩ	0.1 μΩ	10 A
19.999 mΩ	1 μΩ	1 A
199.99 mΩ	10 μΩ	100 mA
1999.9 mΩ	100 μΩ	10 mA
19.999 Ω	1 mΩ	1 mA
199.99 Ω	10 mΩ	0.1 mA
1999.9 Ω	100 mΩ	0.1 mA

Test Leads & Battery Charger Included

ME/DLRO-10	DLRO with LED display
ME/DLRO-10X	DLRO with LCD display
ME/DLRO10HD	Heavy Duty DLRO (LCD display)

### DLRO10HD

- Delivers up to 10A into 250mΩ (25W)
- Operates from rechargeable battery or line power
- Input protected to 600V
- Heavy duty IP65 case
- 5 test modes, including auto-start on connection
- Simple to use rotary switches

Range	Resolution	Current
250.00 mΩ	10 mΩ	10 A
2500.0 mΩ	100 mΩ	1 A
2500.0 μΩ	0.1 μΩ	10A
25.000 mΩ	1 μΩ	1 A
250.00 mΩ	10 μΩ	100 mA
2500.0 mΩ	100 μΩ	10 mA
25.000 Ω	1 mΩ	1 mA
250.00 Ω	10 mΩ	0.1 mA
2500.0 Ω	100 mΩ	0.1 mA

DLRO10HD



### DLRO 200

- Test currents from 10A to 200A DC
- Filtered DC output eliminates magnetic transients
- 0.1μΩ best resolution
- Full QWERTY keyboard
- On board memory for up to 300 test results and notes
- RS232 port to download stored results or for real time output to a printer

Measurement Range: 0.1μΩ to 999.9mΩ  
 Test Modes: Normal, Continuous, Auto. Use continuous mode for long duration tests, Auto mode for rapid sequential testing.  
 Test Time: 10 seconds  
 Display: Large backlit LCD  
 Dimensions: 16.4" x 9.9" x 10.7" (410x250x270mm)  
 Weight: 32 lbs (14.5kg)  
 Power: 100-130VAC, 50/60Hz

DLRO 200



Supplied with 16 ft. (5m) test leads and download software. A variety of C-clamp, Kelvin clips, fixed point and spring point leads are available in various lengths.

ME/DLRO200-115E	High Current Digital Low Resistance Ohmmeter
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## Megger® Handheld Micro-ohmmeter

**NEW**

- Battery operated
- Auto range: 1  $\mu\Omega$  to 1000 m $\Omega$
- Test current up to 220 Amps
- Safe test – DualGround™
- Stores up to 190 test records
- Bluetooth® PC communication
- Ultra capacitor technology (patent pending)

**MOM2**


The MOM2 Micro-ohmmeter is a lightweight, handheld unit designed to deliver up to 220 Amps and measure the resistance of circuit breaker contacts, bus-bar joints and other high-current links. Measurements are made using the DualGround™ method, where the test object is grounded on both sides throughout the test for a safer, faster and easier workflow. The conventional test method, with one side grounded, is also supported (optional cable kit required).

### SPECIFICATIONS

Application:	High-voltage substations & industrial environments	
Resistance Ranges:	Autorangeing from 0 - 1000 m $\Omega$	
Resolution:	0 - 999 $\mu\Omega$	1 $\mu\Omega$
	1.0 - 9.99 m $\Omega$	0.01 m $\Omega$
	10.0 - 99.9 m $\Omega$	0.1 m $\Omega$
	100 - 1000 m $\Omega$	1 m $\Omega$
Accuracy:	0 - 1999 $\mu\Omega$	$\pm 1$ % of reading $\pm 1$ digit
	2 - 1000 m $\Omega$	$\pm 2$ % of reading $\pm 1$ digit
Pass / Fail:	Settable from 1 $\mu\Omega$ to 1999 m $\Omega$	
Output Current:	Selectable minimum of 50 A or 100 A (100A valid at resistance <2m $\Omega$ )	
Output Voltage:	2.5 V DC max	
Output Duration:	Selectable: 0.1 s, 0.6 s, 3 s	
Recovery Time:	10-130 sec	
Voltage In:	$\pm 3$ V DC	
Trigger In:	Threshold 8 V DC	
DC Power In:	12 - 24 V DC, 2 A max	
Operating Temp.:*	-20°C to +50°C (-4°F to +122°F)	
Relative Humidity:	5%-95%, non condensing	
Battery:	Five AA, 2700 mAh NiMH cells	
Capacity:	Typ. 2200 measurements at 50 A and 0.1 s from fully charged batteries	
Battery Charger:	100-250 V AC, 50/60 Hz, 60 W	
Recharge Time:	< 12 hr; < 3 hr typical at 25°C	
Real-time Clock:	Battery life >10 years	
Audible Feedback:	Different buzzer sounds	
User Presets:	3	
Data Logger:	Label, Timestamp, I max, I min, I Limit, Resistance, Meas. time, P/F limit	
Data Capacity:	190 measurements	
Wireless:	Bluetooth headset & PC communication	
Encapsulation:	IP54	
Dimensions:	8.5"H x 3.6"W x 2.8"D, excl. binding posts (217 x 92 x 72 mm)	
Weight:	1.0 kg (2.2 lbs) instrument only	

\*Battery operation temperature 0°C to +50° (32°F to +122°F)

\*Battery charging temperature +10°C to +40° (50°F to +104°F)

Transport case, charger, rubber holster, carrying strap, belt clip, PC software included.

## Megger® High Current Loop Tester


**LT300**

- Single and 3 phase testing
- 16 Hz to 400 Hz operation
- Simple 2 wire operation
- CAT IV 300V applications
- 0.01 $\Omega$  resolution on 20 $\Omega$  range

The LT300 offers high current loop testing over a wide range of frequencies and supply voltages with simple, fast, two wire operation.

### SPECIFICATIONS

Voltage Measure:	0-550V (400V @ 16 Hz); Accuracy 5% $\pm 2$ V
Frequency:	Supply frequency indicated upon connection (16, 50/60, 400 Hz). Test frequency automatically set
Loop Resistance:	0-19.99 $\Omega$ and 0-199.9 $\Omega$ ; Accuracy 5% $\pm 5$ d
Test Current:	3-27A on 20 $\Omega$ range, 0.3-2.7A on 200 $\Omega$ range
Operating Temp.:	-10°C to 60°C, < 90% RH @ 40°C
Power:	Eight standard AA alkaline batteries
Dimensions:	8"H x 5.8"W x 3"D (203 x 148 x 78 mm)

## Megger® Cable Height Meter


**CHM600**

- Measures the height of up to six overhead cables
- Dramatically reduces measuring time
- No physical connection to cables or wires
- Designed for portability & ease-of-use
- Readout in feet/inches or meters

The CHM Series utilize ultrasonic techniques to determine the height of up to the six overhead cables and wires. The meter displays the height of the lowest cable and the spacings between the next five cables.

### SPECIFICATIONS

Min. Cable Size:	CHM2000: 0.125" @ 7-32 ft, 0.5" @ 35 ft. (@ 68° F)
	CHM600: 0.125" @ 10-32 ft, 0.5" @ 50 ft.
	CHM600E: 0.5" @ 10-50 ft, 1" @ 75 ft.
Resolution:	1/4 in. (5 mm) if < 10 m 1/2 in. (10 mm) if > 10 m
Accuracy:	Typically less than 0.5% error $\pm 2$ digits
Power Source:	9 volt alkaline battery (included)
Operating Temp.:	14° F to 104° F (-10° C to 40° C), reading compensated over the full range
Battery Life:	> 50,000 measurements
Dimensions:	3"H x 4"W x 8.5"D (70 x 100 x 205 mm)

### ORDERING INFORMATION

ME/BD-59090	MOM2 Micro-ohmmeter with 2 x 1.3 m (4 ft) test cables Kelvin probes (one with trig button)
ME/BD-59092	MOM2 Micro-ohmmeter with 1.3 m (4 ft) test cable red & Kelvin clamp 3 m (10 ft) test cable black with Kelvin clamp (Cat #GA-90001)
ME/GA-00384	15 meter Cable Kit
ME/LT300-EN-00	High Current Loop Tester with red/green leads & carry case
ME/LT300-EN-FS	High Current Loop Tester with fused leads & carry case
ME/CHM2000	Telecom Cable Height Meter; 6 lines; 7-35 ft.
ME/659600	CHM600 Power Cable Height Meter, 6 lines; 10-50 ft.
ME/659600E	CHM600E Power Cable Height Meter, 6 lines; 10-75 ft.

## Altek Process Calibrators

### Milliamp Calibrator

- Source and Read 0-24mA
- Simulate 2-wire Transmitters
- Quik-Chek Pushbuttons

Use the PocketCal 134-2 to simultaneously power and measure two-wire transmitters up to 12V. Simulate the transmitter in circuits from 3 to 45V.



#### MILLIAMP CALIBRATOR SPECIFICATIONS

Ranges	0.00 to 24.00mA, -25.0 to 125.0% of 4 to 20mA
Accuracy	0.03mA
Burden	0.9V @4mA, 1.9V @24mA
Drive	700Ω @20mA with fresh batteries
Battery Life	40hr simulate, 20hr source from 9V batteries (supplied)

134-2

### Loop Calibrator

- Source to 24mA, Read to 52mA
- Measure to ±99.9V DC
- Quickly Simulate 2-wire Transmitters

The versatile 334A will check, calibrate and troubleshoot all the signals in a 4-20mA process control loop. Simultaneously power and measure two-wire transmitters up to 27V. Simulate the transmitter in circuits from 3 to 45V. Overload protected to 135VAC.



#### LOOP CALIBRATOR SPECIFICATIONS

Source/Simulate	0.00 to 24.00mA, -25.0 to 125.0% of 4 to 20mA
Read	0.00 to 52.00mA, -25.0 to 300.0% of 4 to 20mA
Accuracy	0-24mA: ±0.05% of reading ± 1 digit Quik-Chek: ±0.03% of reading ± 0.01mA
Drive	1200Ω @20mA with fresh batteries
Battery Life	100hr simulate, 20hr source from 9V batteries (supplied)

334A



820E

#### MULTIFUNCTION CALIBRATOR SPECIFICATIONS

FUNCTION	RANGE	ACCURACY
mA Source/Measure	0.00 to 24.00mA, -18.8 to 125.0% of 4 to 20mA	±0.05% of FS ± 1d
mV	0.00 to 110.00mV DC (20mA max source/sink)	±0.05% of FS ± 1d
V	0.00 to 10.25V DC (20mA max source/sink)	±0.05% of FS ± 1d
V (measure only)	0.0 to 200.0V DC	±2% of FS ± 1d
VAC (measure only)	0.0 to 250.0V AC TRMS	±2% of FS ± 1d
TC	J, K, T, E	±2% typical
RTD	100Ω Pt, 385 alpha (2mA max)	±1°C
Ohms	0 to 400.0Ω source, 0 to 1000.0Ω measure	±0.06Ω
Frequency	1-1000 CPM, 1-1000 Hz, 0.01-10.00 kHz	±0.05% of FS ± 1d
Simulate Range	3 to 45V	
ma Compliance	25V (max 1.9V burden at 24mA)	
Transmitter Drive	1200Ω @20mA typical, Power & Measure mode	
Battery Life	50hr simulate, 20hr source (AA batteries supplied)	

### Multifunction Calibrator

- Calibrate Milliamps, Volts & Frequency
- Check Thermocouple & RTD Sensors
- Use in Place of a DMM for ACV & Ohms
- Simulate 2-Wire Transmitters

The deluxe Model 820E combines the functions of the 111, 322-1, 334A and voltage calibration in one compact unit. It also performs frequency calibration and extended voltage measurements.

#### ORDERING INFORMATION

(Batteries & three year warranty included)

AL/134-2	PocketCal Milliamp Calibrator
AL/334A	Milliamp Loop Calibrator with Carrying Case
AL/820E	TechChek Multifunction Calibrator with Carrying Case
AL/3331E	Carrying Case with Belt Clip for 134-2

## Altek Temperature Calibrators

### RTD Calibrators

- Source and Read Pt RTDs
- 8 RTD Types Plus Ohms (Model 211)
- 0.1° and 0.01Ω Resolution
- °C/°F Display
- Easy Dial Setting
- Small and Lightweight

111



The Model 111 simulates and measures 3-wire, 100Ω Platinum RTDs over the full industrial temperature range. The Model 211 handles multiple RTD types in either 3 or 4 wire configurations, plus extended ohms range.

### Thermocouple Calibrators

- Source and Read Modes
- 0.1° and 0.001mV Resolution
- °C/°F Display
- Easy Dial Setting
- Small and Lightweight

322-1



Simulate and measure the most popular thermocouple types with the Model 322-1. Use the Model 422 with 14 different types. Three output memories for each TC type facilitate repetitive testing. Each model accepts miniature thermocouple connectors and direct thermocouple wires.

### SPECIFICATIONS

#### MODEL 111

RTD Type	100Ω Pt (DIN/IEC/JIS), 385 alpha	
Accuracy	-200.0 to 200.0°C (-328.0 to 212.0°F)	±0.5°C (±0.9°F)
	200.0 to 700.0°C (212.0 to 750.0°F)	±0.6°C (±1.0°F)
	700.0 to 850.0°C (750.0 to 1562.0°F)	±0.7°C (±1.2°F)

#### MODEL 211

RTD Type	Alpha	Range
Pt100 (DIN/IEC/JIS)	3850	-200.0 to 850.0°C (-328.0 to 1562.0°F)
Pt100 (JIS 1981)	3916	-200.0 to 648.9°C (-328.0 to 1200.0°F)
Pt100 (Burns)	3902	-195.6 to 648.9°C (-320.0 to 1200.0°F)
Pt100 (US lab)	3926	-200.0 to 862.0°C (-328.0 to 1584.0°F)
Pt1000 (HVAC)	3750	-184 to 275°C (-300 to 527°F)
Cu10 (Minco)	4274	-200 to 260°C (-328 to 500°F)
Ni120	6720	-80.0 to 273.0°C (-112.0 to 524.0°F)
Ni110	5801	-106.7 to 315.6°C (-160.0 to 600.0°F)
Accuracy (typical)	Pt100	±0.15°C (±0.25°F)
	Pt1000, Ni	±0.10°C (±0.2°F)
	Cu10	±1.1°C (±2.0°F)

#### MODEL 111 & 211

Ohms	0.00 to 410.00	±0.2Ω accuracy
	0.0 to 2010.0	±0.5Ω accuracy (211 only)
Excitation Current	0.09 to 5.80 mA source, 1mA read	
Temperature Drift	<0.01%/°C change in ambient	
Battery Life	Approx. 50 hrs from 9V alkaline battery (supplied)	
Size	5.2" x 2.6" x 2.5" (130x67x64 mm)	

### SPECIFICATIONS

Input/Output (322-1)	Type J, K, T, E and mV
Input/Output (422)	Type J, K, T, E, R, S, B, N, G, C, P, L, U, D and mV
Ranges	J: -210.0 to 1200.0°C (-346.0 to 2192.0°F)
	K: -230.0 to 1371.1°C (-382.0 to 2500.0°F)
	T: -260.0 to 400.0°C (-436.0 to 752.0°F)
	E: -240.0 to 1000.0°C (-400.0 to 1832.0°F)
	R, S: -18.3 to 1767.8°C (-1.0 to 3214.0°F)
	B: 315.6 to 1820.0°C (600.0 to 3308.0°F)
	N: -230.0 to 1300.0°C (-382.0 to 2372.0°F)
	G: 100.0 to 2320.0°C (212.0 to 4208.0°F)
	C, D: -1.1 to 2320.0°C (30.0 to 4208.0°F)
	P: -217.8 to 1395.0°C (-360.0 to 2543.0°F)
	mV: ±99.999mV
	Accuracy
Cold Junction Effect	<0.05°/°C change in ambient
Battery Life	Approx. 40 hrs from 9V alkaline battery (supplied)
Size	5.2" x 2.6" x 2.5" (130x67x64 mm)

### ORDERING INFORMATION

(Batteries, carrying case and three year warranty included)

AL/111	RTD Calibrator (100Ω Pt, 385)
AL/211	RTD Calibrator (8 types)
AL/322-1	Thermocouple Calibrator (type J, K, T, E)
AL/422	Thermocouple Calibrator (14 types)

## Yokogawa Calibrators

### CA11E Voltage/Current Calibrator

- Source and Measure Voltage and Current
- 4-20mA and 1-5V DC Step-up/down Function
- 20mA SINK Function
- Sweep Function
- 0.05% Basic Accuracy



#### SPECIFICATIONS

##### Source/Measure Functions

Range	Span
30V	0 to 30.00V DC
10V	0 to 11.000V DC
1-5V (source only)	1/2/3/4/5V DC
1V	0 to 1.1000V DC
100mV	0 to 110.00mV DC
20mA	0 to 24.000mA DC
4-20mA (source only)	4/8/12/16/20mA
20mA SINK (source only)	0.1 to 24.000mA

### CA71/SP1 Multi-function Calibrator

- Simultaneous Source & Measure Capability
- Separate Source & Measure Switches for Easy Setup
- Autostep, Sweep & Memory Functions
- 0.025% Measure Accuracy (DCV)



Each CA71/SP1 includes: 120VAC adapter, source & measure cables, terminal adaptor for temperature measurements, input fuse, magnetic instrument case, accessory case for input cables, carrying case, 9 pin RS232 communications cable & data logging software.

#### SPECIFICATIONS

SOURCE FUNCTIONS	RANGES	BEST RESOLUTION	BEST ACCURACY
DCV	100mV/1V/10V/30V	10mV	0.02%+15µV
DCA	20mA/4-20mA	1µA	0.025%+3µA
mA sink	20mA	1µA	0.05%+3µA
Resistance	400Ω	0.01Ω	0.02%+0.1Ω
RTD	Pt100 (-200 to +850°C)	0.1°C	0.025%+0.3°C
TC	J K T E L U N	0.1°C	0.02%+0.5°C
TC	R S B	1°C	0.02%+1.5°C
Frequency	500/1000/10kHz	0.2Hz	0.2Hz
Pulse	99999 cycles	1	--

MEASURE FUNCTIONS	RANGES	BEST RESOLUTION	BEST ACCURACY
DCV	100mV/1V/10V/100V	10mV	0.025%+20µV
DCA	20mA/4-20mA	1mA	0.025%+4µA
Resistance	400Ω	0.01Ω	0.05%+0.1Ω
ACV	1/10/100/300V	1mV	0.5%+5 digits
RTD	Pt100 (-200 to +850°C)	0.1°C	0.05%+0.6°C
TC	J K T E L U N	0.1°C	0.05%+1.5°C
TC	R S B	1°C	0.05%+2°C
Frequency	100/1000/10kHz	0.01Hz	2 digits
Pulse	99999 counts/min, /hr	1	--

### CA12E Temperature Calibrator

- Simulate Thermocouples and RTDs
- Multi-range RTD Thermometer
- °C/°F Selection
- Built-in Sensor for Reference Junction Compensation
- 0.05% Basic Accuracy
- Binding Post Terminal Adapter



#### SPECIFICATIONS

##### Source/Measurement Functions

Selection	Source/Measure
Type K	-200.0 to 1372.0°C -328 to 2498°F
Type E	-200.0 to 1000.0°C -328 to 1832°F
Type J	-200.0 to 1200.0°C -328 to 2192°F
Type T	-200.0 to 400.0°C -328 to 752°F
Type N	-200.0 to 1300.0°C -328 to 2372°F
Type R, Type S	0 to 1768°C 32 to 3214°F
Type B	600 to 1800°C 1112 to 3272°F
Type L	-200 to 900°C -328 to 1652°F
Type U	-200 to 400°C -328 to 752°F
RTD Pt100 (3 wire)	-200.0 to 850.0°C -328 to 1562°F
100mV	-10.00 to 110.00mV
400Ω	0 to 400.0Ω

### CA150/SP1 Multi-function Calibrator

- Simultaneous Source & Measure Capability
- Large LCD Display
- Step, Linear & Programmed Sweeps
- Loop Power Supply
- DC Voltage and Current Generation
- Settings and Data Memory
- 0.02% Measure Accuracy (DCV)



Each CA150/SP1 includes: 120VAC adapter, source & measure cables, terminal adaptor for temperature measurements, input fuse, NiMH battery, accessory case for input cables & carrying case

#### SPECIFICATIONS

SOURCE FUNCTIONS	RANGES	BEST RESOLUTION	BEST ACCURACY
DCV	100mV/1V/10V/30V	1µV	0.02%+10µV
DCA	20mA	1µA	0.02%+3µA
mA sink	20mA	1µA	0.025%+6µA
Resistance	500/5k/50kΩ	0.01Ω	0.02%+1.5Ω
RTD	Pt100 (-200 to +850°C)	0.1°C	0.025%+0.3°C
TC	J K T E L U N	0.1°C	0.02%+0.4°C
TC	R S B	1°C	0.02%+1.2°C
Frequency	100/1000/10k/50kHz	0.01Hz	0.05Hz
Pulse	1100 CPM	0.1 CPM	0.5 CPM

MEASURE FUNCTIONS	RANGES	BEST RESOLUTION	BEST ACCURACY
DCV	500mV/5V/35V	10µV	0.02%+50µV
DCA	20mA/100mA	1µA	0.025%+4µA
Resistance	500/5k/50kΩ	0.01Ω	0.055%+0.075Ω
RTD	Pt100 (-200 to +850°C)	0.1°C	0.05%+0.6°C
TC	J K T E L U N	0.1°C	0.05%+1.5°C
TC	R S B	1°C	0.05%+2°C
Frequency	100/1000/10kHz	0.01Hz	2 digits
Pulse	100000 CPM, CPH	1	--

# Martel Beta Process Calibrators

## Multi-Function

**MC-1200**



- Measure and source T/Cs, RTDs, Ohms, current, voltage, frequency; source pulse trains
- Isolated mA/V read-back for complete transmitter calibration
- Pressure module communication port
- Built-in 24 V supply drives 4-20mA loops
- Direct entry of custom RTD coefficients
- All source modes can be programmed with setpoints to speed linearity tests
- Highest accuracy in class (to 0.015% rdg.)

### SPECIFICATIONS

Read and Source	Voltage	Current (mA)	
Source	0.000 to 20.000 VDC	0.000 to 24.000 mA	
Read Isolated	0.000 to 30.000 VDC	0.000 to 24.000 mA	
Read Non-isolated	0.000 to 20.000 VDC	0.000 to 24.000 mA	
Accuracy	±0.015% of rdg ±2 µV	±0.015% of rdg ±2 µA	
Frequency (1-20 V amplitude)		Thermocouple mV	
CPM Source & Read	2.0 to 600.0 CPM	Read & Source	
Hz Source & Read	1.0 to 1000.0 Hz	Accuracy	
kHz Source & Read	1.0 to 10.00 kHz	Ohms	
Pulse Source (1-20 V amplitude)		Source	
Pulses	1 to 30,000.0	5.0 to 4000Ω	
Rate	2 CPM to 10 kHz	Read	
		0.00 to 4000.0Ω	
Read and Source	Range (Accuracy) °C	Read and Source	Range (Accuracy) °C
J	-200.0 to +1200.0 (0.2)	Ni120 (672)	-80.0 to +260.0 (0.2)
K	-200.0 to +1370.0 (0.3)	Pt100 (385)	-200.0 to +800.0 (0.2)
T	-200.0 to +400.0 (0.2)	Pt100 (3926)	-200.0 to +630.0 (0.2)
E	-200.0 to +950.0 (0.2)	Pt100 (3916)	-200.0 to +630.0 (0.2)
R	-20.0 to +1750.0 (1.2)	Pt200 (385)	-200.0 to +630.0 (0.8)
S	-20.0 to +1750.0 (1.2)	Pt500 (385)	-200.0 to +630.0 (0.4)
B	+600.0 to +1800.0 (1.2)	Pt1000 (385)	-200.0 to +630.0 (0.2)
C	0 to +2316.0 (0.6)	Cu10	-100.0 to +260.0 (1.4)
XK	-200.0 to +800.0 (0.2)	YSI400	+15.00 to +50.00 (0.1)
BP	0 to +2500.0 (0.9)	Cu50	-180 to +200 (0.4)
L	-200.0 to +900.0 (0.2)	Cu100	-180 to +200 (0.3)
U	-200.0 to +400.0 (0.25)	Pt385-10	-200 to +800.0 (1.4)
N	-200.0 to +1300.0 (0.4)	Pt385-50	-200 to +800.0 (0.4)
Operating Temperature:	-10 °C to +50 °C		
Stability:	±0.005% of reading/ °C outside 18-28 °C		
Dimensions	8.7" x 4.2" x 2.3"		

## Universal Temperature

**PTC-8001**



- Calibrate thermocouples and RTDs with one unit
- Works with smart (pulsed) transmitters
- Direct keyboard entry or scroll control
- 9 user-defined setpoints for each type
- Rugged NEMA 4X case
- High accuracy ±0.4°C J T/C, ±0.3°C 4w RTD
- Auto step function

### SPECIFICATIONS

Read & Source	Range	Ni120 (672)	-80.0 to 260.0
J	-200.0 to 1200.0	Pt 100 (385)	-200.0 to 800.0
K	-200.0 to 1370.0	Pt 100 (3926)	-200.0 to 630.0
T	-200.0 to 400.0	Pt 100 (3916)	-200.0 to 630.0
E	-200.0 to 950.0	Pt 200 (385)	-200.0 to 630.0
R	-20.0 to 1750.0	Pt 500 (385)	-200.0 to 630.0
S	-20.0 to 1750.0	Pt 1000 (385)	-200.0 to 680.0
B	600.0 to 1800.0	Cu10	-100.0 to 250.0
L	-200.0 to 900.0	YSI400	15.0 to 50.0
U	-200.0 to 400.0	Ohms	0.0 to 400.0, 400 to 3200
N	-200.0 to 1300.0		
mV	-10.0 to 75.00	plus Pt 392, JIS, Ni120	
Connectors:	Standard mini-plug for T/C, banana jack for RTDs		
Operating Temp.:	-10 to +50 °C		
Dimensions:	8.7" H x 4.2" W x 2.3" D		

### ORDERING INFORMATION

MA/MC-1200	Multi-Function Calibrator with test leads, 4 AA batteries, NIST certificate
MA/PTC8001	Universal Temperature Calibrator with test leads, 4 AA batteries, NIST certificate
MA/IVC-222	HP11 Voltage/Current Calibrator with test leads, carrying case, 9V battery, NIST certificate
MA/TC-100	Thermocouple Calibrator with 9V battery, NIST certificate
MA/LC-100	Loop Calibrator with test leads, 9V battery, NIST certificate
MA/CC572	Carrying Case for PTC8001, MC-1200

A variety of temperature probes are available.

## Loop Calibrator



**LC-100**

- Simulates, powers & measures two-wire transmitters
- Five preset outputs (4, 8, 12, 16, 20 mA)
- 0.001 mA resolution
- Adjustment level knob
- % Error function eliminates manual calculation
- Measures loop power & Hart devices

### SPECIFICATIONS

Current Source & Measure	
Range:	0.000 to 24.000 mA, -25 to +125 %
Voltage (Reading):	0 to 28 VDC
Input Protection:	Fuseless, up to 250 VAC
Drive Capability:	1200Ω without Hart, 950Ω with Hart
Loop Supply:	24 VDC
Range Select:	Decade Incremental to 0.001 mA steps
Resolution:	1 µA
Accuracy:	±0.015% of reading ± 2 µA
Operating Temp.:	-10 to +55 °C
Dimensions:	5.7" x 3.15" x 1.43"

## Thermocouple Calibrator



**TC-100**

- 10 T/C types plus mV
- ±0.3°C accuracy (type J)
- Accepts T/C mini-plug & bare T/C wires
- 3 setpoints for each T/C type
- MIN/MAX recall in measure mode
- Input protection to 240 VAC

### SPECIFICATIONS

Voltage Source & Measure	
Range:	-10 to +75.000 mV
Resolution:	1 µV
Accuracy:	±0.007% of reading, ±10 µV
Output Impedance:	≤1 Ω
Input Impedance:	>1 MΩ
Thermocouple Source/Measure	
Types:	J, K, T, E, R, S, B, L, U, C
Resolution:	0.1°C or °F source
	0.01°C or °F measure
Operating Temp:	-10 °C to +55 °C
Dimensions:	5.7" x 3.15" x 1.43"

## Voltage/Current Calibrator



**IVC-222HP11**

- 0.015% of reading accuracy
- 200 mV, 2 V, 20 V and 24 mA ranges
- 24 V supply can drive 4-20 mA loops
- 2 stored setpoint values
- Intuitive, easy-to-use controls

### SPECIFICATIONS

Resolution	
Voltage:	0.01 mV, 0.0001 V, 0.001V
Current:	0.001 mA
Accuracy:	±0.015% of reading, ±2 count; 18 °C to 28 °C
Temp. Stability:	±0.005% FS/°C
Load Capability	
Voltage:	±1 mA for rated accuracy
Current:	1kΩ
Output Protection:	Current limited internal RESET
Operating Temp:	-10 °C to +55 °C
Dimensions:	1.43" x 3.15" x 5.7"

## Fluke Process Loop Calibrators

### Fluke 705 Loop Calibrator

- Simultaneous mA and % Readout
- Fast “Span Check”
- Selectable Slow Ramp, Fast Ramp & Step
- 24V Internal Loop Supply

### Fluke 707 Loop Calibrator

705 Features, Plus:

- Output Adjustment Dial
- HART™ Mode
- 0.015% Accuracy

### Fluke 787 Process Meter

- DMM and Loop Calibrator
- Backlit LCD
- 1000V Overload Protection on V, Ohms, Frequency

### Fluke 789 Process Meter

787 Features, Plus:

- 24V Loop Power Supply
- HART™ Mode
- Fast “Span Check”

### Fluke 715 Volt/mA Calibrator

- Measure loop Currents and Process Voltages
- Source Loop Currents to 24mA
- Source Voltage to 10V

787 ▼

SPECIFICATIONS				
Functions	Fluke 705 and 707	Fluke 715	Fluke 787 and 789	
<b>Voltage measurement</b>				
Range	0-28 V dc	0-100 mV 0-10 V	0-1000 V ac or dc	
Resolution	0.001V	10 $\mu$ V 1 mV	0.1mV to 1.0V	
Accuracy	705: 0.025% Rdg + 1 LSD 707: 0.015% Rdg + 2 LSD	0.02% Rdg + 2 LSD	0.1% Rgd + 1 LSD (VDC)	
<b>Current measurement</b>				
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	705: 0.02% Rdg + 2 LSD 707: 0.015% Rdg + 2 LSD	0.015% + 2 LSD	0.2%+2 LSD	0.05%+2 LSD
<b>Current sourcing</b>				
Range	0-20 mA or 4-20 mA <sup>1</sup>	0-20 mA or 4-20 mA <sup>1</sup>	0-20 mA or 4-20 mA <sup>1</sup>	
Accuracy	705: 0.025% Rdg + 2 LSD 707: 0.015% Rdg + 2 LSD	0.015% Rdg + 2 LSD	0.05% of span	
Drive capability	705: 1000 $\Omega$ @ 24 mA 707: 1200 $\Omega$ @ 24 mA	1000 $\Omega$ @ 24 mA	787: 500 $\Omega$ @ 24 mA 789: 1200 $\Omega$ @ 24 mA	
Loop power while measuring mA	24V	24V	24V (789 only)	
Voltage sourcing	N/A	0-100 mV or 0-10V	N/A	
Resistance measurement	N/A	N/A	to 40M $\Omega$ , 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	789 only	

<sup>1</sup>Will over-range to 24 mA



705 ▲



## Fluke Temperature Calibrators



712 ▶



### 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 $\Omega$ to 3200 $\Omega$	0.1 $\Omega$	0.1 $\Omega$ to 1 $\Omega$	
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 $\mu$ V	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	-10 to 75 mV	0.01 mV	0.025% mV + 1 count	

## Simpson Analog VOM

- Industry Standard Model 260
- Mirrored Scale
- 10A AC (260-95)
- 36 Measurement Ranges
- CAT III-600V (260-95)
- 1000V AC/DC Max (260-8)

### ORDERING INFORMATION

(Test Leads Included)			ACCESSORIES		
Cat. #	Model #	Description	Cat. #	for Model	Description
SI/12388	260-8	General Purpose, Phenolic Case	SI/00043	260-8, 8P	Probe Set, threaded w/clips
SI/12391	260-8P	Relay Protected	SI/00125	260-8XI, 8XPI	Probe Leads w/Screw-On Alligator Clips
SI/12389	260-8RT	Roll Top Case			
SI/12392	260-8PRT	Relay-Protected, w/Roll Top Case	SI/00834	Any 260-8	Black nylon padded case
SI/12395	260-8XI	Yellow ABS Plastic Case	SI/00805	Any 260-8	Black Leatherette case
SI/12396	260-8XPI	Yellow Case, Relay-Protected	SI/00541	260-8XI, 260-8XPI, 9S, 9SP	250A AC Clamp
SI/12397	260-9S	Safety VOM Orange, with Case	SI/00545	260-8, 8P, 8RT, 8PRT, 95, 95P	250A AC Clamp
SI/12398	260-9SP	Safety VOM Protected, with Case	SI/00425	260-8X, 9	Screw-on alligator Clips



▲ 260-8

▼ 260-9S



## Triplet Analog VOM

- 58 Ranges & Functions (Model 60-NA)
- Withstands 5 Foot Drop
- 3 Year Warranty
- Mirrored Scale

60 ▶



### ORDERING INFORMATION

TR/3145	Model 60 VOM (Orange Case)	<b>Test Leads</b>
TR/3151	Model 60-NA (Gray Case)	TR/79-373 Miniature Clip Leads (female jack)
<b>Carrying Cases</b>		TR/79-374 48" Test Leads w/ Screw-On Alligator Clips (female jack)
TR/10-823	639 Carrying Case (Top Opening)	<b>AC Amps Clamp-On</b>
TR/10-2739	639-A Carrying Case (Snap back Cover)	TR/3264 Model 101-G Line Separator
TR/4152	639-C Padded Cordura Carrying Case	TR/60-211 Model 10 Clamp-On AC AMP Adaptor (60, 60-NA)
		TR/79-417 6' Attachment Leads (60/ 60-NA to Model 10)

## Weschler Columbia AC/DC Clamp-On Tong Test Ammeters

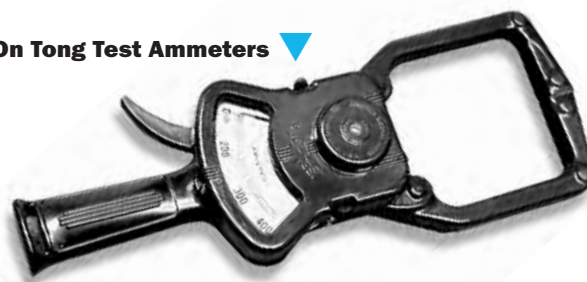
Ideal for verifying current in plating tanks, coating systems, welding equipment, motors, generators & transformers

- Instant Readings
- One Hand Operation
- No Transformers or Shunts Needed

The Tong Test Ammeter reads the true RMS (heating) value, regardless of wave shape. It contains no batteries, rectifiers, switches or electrical windings to overheat or burn out. Currents in lines up to 2300V can be measured if the cables are properly insulated. DC accuracy is 5% of full scale, AC accuracy (25-100Hz) is 2%, except 5% on ranges above 500A. Add 1% for 100-400Hz.

Plug-in Range modules: 0-100A, 0-150A, 0-200A, 0-300A, 0-400A, 0-500A, 0-600A, 0-800A, 0-1000A. The effective range can be lowered by winding two or more turns of the conductor around the tongs.

▼ Clamp-On Tong Test Ammeters



### ORDERING INFORMATION

Columbia AX	for conductors up to 1 1/2" dia.
Columbia C	for conductors up to 2 1/2" dia.
Columbia D	for conductors up to 3" dia. or bus bars to 4"x1" or 4 1/2"x 1/2"

Specify range model(s) when ordering.

## Yokogawa Test Standards

### Decade Resistance Boxes

#### 2793 6-Dial Decade Resistance Box

- Resistance value ranges:  
0.100 to 1111.210 $\Omega$  (2793 01)  
0 to 111.1110M $\Omega$  (2793 03)
- Accurate, highly stable
- High reproducibility
- Resolution 0.001 $\Omega$
- Well-suited for resistance temperature detector calibration (2793 01)
- Well-suited for insulation resistance tester calibration (2793 03)

#### 2786 Decade Resistance Box

- Resistance ranges: 0.1 to 111,111 $\Omega$  (2786 10)  
1 to 1,111,110 $\Omega$  (2786 20)
- Small temperature coefficient, little temporal variation
- Small residual resistance
- Metal casing resists external influences



### Wheatstone Bridges

#### 2768 Precision Wheatstone Bridge

- Measurement range 0.1 $\Omega$  to 111M $\Omega$
- High precision  $\pm 0.01\%$
- Does not require accessories
- Built-in power source, current detector; external plug
- Highly stable measurement over long periods
- Also functions as a variable resistor

#### 2755-97 Portable Wheatstone Bridge

- Measurement range 1 $\Omega$  to 10M $\Omega$
- Does not require accessories
- Simple operation
- Current detector with built-in protection circuit
- Compact, light-weight



### Double Bridges

#### 2752 Precision Double Bridge

- Measurement range 0.1 $\Omega$  to 111M $\Omega$
- High precision  $\pm 0.03\%$
- Stable over long periods
- Standard resistor built-in
- Allows testing of cylindrical resistors using clamp device

#### 2769 Portable Double Bridge

- Measurement range 0.1 $\Omega$  to 110M $\Omega$
- Rapidly performs reliable, accurate measurements
- Easy to handle and store
- Does not require accessories
- Built-in high sensitivity current sensor



### Portable Meters

#### Portable AC Ammeters and Voltmeters

- Superior product line
- Highly reliable, incorporating 80 years of meter manufacturing technology
- Low friction, withstands impact, tautband technology
- Compact, light-weight

#### Miniature Portable Ammeters and Voltmeters

- Superior product line
- Highly reliable, incorporating 80 years of meter manufacturing technology
- Low friction, withstands impact, tautband technology



## Monarch Optical Tachometers

- Operating Range up to 25 Feet
- Accepts Remote Contact Assembly (optional)
- Accepts Remote Sensors (optional)
- TTL Pulse Output
- Auto Ranging or Fixed Decimal
- English and Metric Rates
- Tripod Mounting Bushing
- On-Target and Low Battery Indicators
- Rugged Rubberized Housing
- N.I.S.T. traceable Certificate of Calibration

**PLT200** ▶



PLT200 SPECIFICATIONS	
Display:	5 digit alpha-numeric LCD
Optical Range:	5 to 200,000 RPM
Contact Range*:	0.5 to 20,000 RPM (other ranges: inches, yds, miles, cm, m per hour or per second)
Optical Accuracy:	±0.01% of reading
Contact Accuracy*:	±0.05% of reading (RPM)
Resolution:	0.001 to 10 RPM (range dependent)
Operating Range:	2 inches to 25 feet
Light Source:	Class 3R visible laser
Memory:	Maximum, Minimum and Last
Power:	(2) AA batteries
Environmental:	5° to 40°C (0° to 100°F) 80% RH up to 31°C (88°F)
Dimensions:	6.92 "H x 2.4"W x 1.6"D
Weight:	7 oz. (210 g)

\* with optional Remote Contact Assembly (RCA).

PLT200 is a 32 function Laser Tachometer and Ratemeter/Totalizer/Counter/Timer (stopwatch). The unit is program-able in both English and Metric rates. Support is built-in for the optional Remote Contact Assembly (RCA) and plug-in remote sensors. A TTL compatible pulse output can trigger devices like data collectors or stroboscopes. The ergonomic design allows safe, direct line-of-sight viewing of both the target and the display at the same time. The case has a non-slip rubber surface for single hand operation.

PT99 SPECIFICATIONS	
Display:	5 digit alpha-numeric LCD
Range:	5 to 99,999 RPM
Accuracy:	0.01% of reading or ±1 Digit
Resolution:	Autoranging: 0.001 to 1.0 RPM Fixed: 1 RPM
Operating Range:	2 to 36 inches
Light Source:	Red LED
Memory:	Maximum, Minimum & Last
Power:	(2) AA 1.5 VDC batteries
Environmental:	5° to 40°C (0° to 100°F) 80% RH up to 31°C (88°F)
Dimensions:	6.92 "H x 2.4"W x 1.6"D
Weight:	7 oz. (210 g)

**PT99** ▶



- Non-Contact Optical Measurement
- Operating Range up to 36 Inches
- Rugged, Ergonomic Rubberized Housing
- Tripod Mounting for Hands Free Operation
- Autoranging or Fixed Decimal

Direct line-of-sight viewing of both the rotating target and the display at the same time.

### ORDERING INFORMATION

Catalog No.	MODEL	DESCRIPTION
MN/6125-010	PLT200	Pocket Laser: Tachometer/Timer/Totalizer with N.I.S.T. traceable certificate of calibration and 12" of reflective tape.
MN/6125-011	PLT200 KIT	Pocket Laser Tachometer Kit includes: Tach, RCA, Carrying Case, N.I.S.T. certificate and 5 ft roll of T-5 reflective tape.
MN/6109-010	PT99	Pocket Tachometer with 12" of reflective tape
<b>Accessories for PLT200</b>		
MN/6180-057	ROS-P	Remote Optical Sensor with 8-foot cable, mounting bracket and 12" of reflective tape.
MN/6180-057-25	ROS-P-25	Remote Optical Sensor with 25-foot cable, mounting bracket and 12" of reflective tape.
MN/6180-017	MT-190P	Magnetic trigger Sensor/Amplifier with 8 foot cable
MN/6180-020	IRS-P	Infrared Sensor with 8 foot cable, 3.5 mm plug and mounting bracket
MN/6180-028	EC-25P	25 foot extension cable for all sensors
MN/6280-037	CA-4044-6	6 foot input/output cable, 1/8 inch mono phone plug to BNC connector
MN/6180-074	RCA	Remote Contact Assembly includes contact tips (concave and convex) and 10 cm linear contact wheel.
MN/6580-010	CTE	Rubber concave, convex tips and 10 cm contact wheel
MN/6580-011	12" Contact Wheel	Linear Contact Wheel with 12-inch circumference for use with RCA.
<b>Accessories for both models</b>		
MN/6180-047	CC-10	Padded Pouch
MN/6180-048	CC-11	Latching Plastic Carrying Case.
MN/6180-070	T-5	Reflective Tape 5 foot roll, 0.5" wide

# Monarch LED Stroboscopes

**NEW**

## Nova-Strobe

- Brightest portable LED strobes available
- For diagnostic inspection and RPM checks
- Digital LCD backlit display (DBL, PBL models)
- Lightweight design with tripod mount bushing (¼-20) in handle
- 12 button keypad for quick entry of flash rates (DBL, PBL)
- NIST certificate included with DBL and PBL models
- Continuous, 24/7 operation (PBL)



**Nova-Strobe DBL**

NOVA-STROBE SPECIFICATIONS			
	BBL Basic	DBL Deluxe	PBL Phaser
Flash Range (FPM/RPM):		30-500,000	
Display:	6 digit numeric and 5 digit alphanumeric LCD		
Accuracy/Resolution:	0.002% of setting or ±1 least significant digit/ 0.01 FPM		
Light Output:	3000 Lux @ 6000 FPM, 8 inches (20cm), 2% duty cycle		
Flash Duration:	Adjustable to 14 degrees /3000µsecs max		
Light Source:	12 LED Array		
Color Temperature:	6300°K		
External Triggers in/out:	N/A	TTL (24Vdc Max) Input. Provides 3.3 Vdc TTL output	
Tachometer Mode:	N/A	0-500,000 RPM (Use with optional remote sensor)	
Programmable Memory:	N/A	Yes	
Internal Phase Shift:	N/A	Yes	
Phase Delay - Degrees:	N/A		0.1 to 359.9 degrees
Time Delay (milliseconds):	N/A		0.01 to 1000 msec.
Virtual RPM (Slow Motion):	N/A		0-200 VRPM
Operating Time (AC power):	N/A		continuous
Operating Time (battery power):	8-10 hours typical @ 1800 FPM		
Batteries:	Internal NiMH rechargeable (120/240V charger included)		
Size (L x W x H)/Weight:	Body: 9" x 3.66" x 3.56" (229 x 93 x 90 mm); Reflector Housing: 4.8" (122mm) dia.; Handle: 4.254" (108 mm long) / 1.9 Lbs (860g)		

Nova-Strobe industrial stroboscopes provide a bright, uniform light output. The twelve LED source is extremely efficient, which means long battery life & continuous cool operation. A wide operating range of 30-500,000 flashes per minute covers all applications. The Basic BBL is designed for simple stop motion inspection and RPM measurements. The Deluxe DBL adds internal phase shifting, memory for 5 preset flash rates, NIST calibration certificate and tachometer mode for speed measurements up to 500,000 RPM using optional remote sensors or TTL pulse input. The top of the line Phaser PBL has all the features of the DBL plus external phase delay, time delay & virtual RPM mode. The PBL will also run continuously with the power supply/recharger.

## Pocket LED Strobe

- Intuitive one hand operation
- Extremely bright, uniform light
- Quiet/Cool operation
- Digital LCD backlit display
- Compact size, long battery life
- Tripod mounting bushing (¼-20)
- No lamp replacements
- NIST Certificate included



ORDERING INFORMATION		
Catalog No.	MODEL	DESCRIPTION
MN/6230-010	Nova-Strobe BBL	BBL Strobe, universal 115/230 recharger with interchangeable wall plugs & manual
MN/6230-011	Nova-Strobe BBL Kit	Same as above with plastic latching carry case
MN/6231-010	Nova-Strobe DBL	DBL Strobe, universal 115/230 recharger with interchangeable wall plugs, manual & NIST Cert
MN/6231-011	Nova-Strobe DBL Kit	Same as above with plastic latching carry case
MN/6232-010	Nova-Strobe PBL	PBL Strobe, 115/230 power supply/recharger with USA and Euro cables, manual & NIST Cert
MN/6232-011	Nova-Strobe PBL Kit	Same as above with Deluxe water tight plastic carry case
MN/6235-010	PLS	Pocket LED Strobe, 115/230 VAC recharger with interchangeable wall plugs, manual & NIST Cert
MN/6235-011	PLS Kit	Same as above with latching carry case
<b>Accessories</b>		
MN/6180-029	ROLS-P	Remote optical laser sensor with 8 ft cable, 1/8" phone plug & 12" reflective tape
MN/6280-048		Protective rubber cover for Nova-Strobes
MN/6280-040		Standard latching carry case for Nova-Strobes
MN/6280-073		Protective carry pouch with belt hook for PLS
MN/6180-070	T-5	Reflective Tape 5 foot roll, 0.5" wide

PLS SPECIFICATIONS	
Light Source:	7 LED Array
Avg. Light Output:	1800 Lumens at 6000 FPM 8" from lens
Color Temp:	5600°K
Power:	Li-Ion rechargeable batteries 3.6Vdc
Run Time:	5-6 hours typical at 6000 FPM
Charge Time:	4-5 hours typical with supplied charger
Memory:	5 user settable memory locations
Flash Duration:	Adjustable 0.5 to 2500 µsec or 0.1 to 18 deg. of rotation (auto adjusts with flash rate)
<b>Internal Mode:</b>	
Flash Range:	30-300,000 FPM (Flashes per minute), 0.5 to 5000Hz
Accuracy:	0.005% of setting or ± last digit
Resolution:	0.01 to 1 FPM (menu selectable), 0.1 FPM resolution above 9,999.99 FPM, 1 FPM resolution above 99,999.9
<b>External Modes:</b>	
Flash Range:	0-300,000 FPM, 0 to 5000Hz
Tachometer Mode:	30 to 300,000 RPM
Accuracy:	±0.005% of reading or ± last digit
Display Update:	0.5 second typical above 120 RPM
Trigger to Flash:	~15 µsec delay
External Input:	2.5-12V peak pulse, 500ns min pulse width, pos. or neg. edge triggered (menu selectable)
Pulse In to Out Delay:	<0.2µsec
Output Pulse:	3V pulse. One pulse per flash in internal mode. Mimics input pulse in external mode
LCD Display:	6 digit numeric plus 5 digit alpha-numeric
Indicators:	Battery level, On Target, Select, TACH, EXT icons
Dimensions:	7.75" x 2.75" x 2.3" (197 x 70 x 58 mm)

TEST EQUIPMENT

## Extech Tachometers

### Combination Laser Tach & IR Thermometer

- Built-in laser thermometer measures surface temperature of moving parts
- Fixed 0.95 emissivity, 6:1 distance to target ratio
- Non-contact photo tach measures to 6.5ft (2m)
- Contact tach for RPM & linear speed
- Min/Max/Last memory
- Complete with tips/wheel, AA batteries, reflective tape, carrying case

**RPM10** ▶


### Contact/Laser Photo Tachometer

- Laser guided non-contact measurements to 6.5ft (2m)
- Characters on display reverse for easy reading (photo/contact mode)
- Hold button stores last reading for 5 minutes
- Min/Max memory
- Complete with wheels, AA batteries, reflective tape, carrying case

**461995** ▶


### SPECIFICATIONS

Display	99999 counts
Range	
rpm	10 to 99999 photo 0.5 to 20000 contact
ft/min	0.2 to 6560
m/min	0.05 to 1999.9
Accuracy	±0.05% ±1d
Resolution	0.1 rpm
Laser	-4 to 650 °F / -20 to 315 °C (RPM10 only)
Dimensions	8.5 x 6.1 x 1.5" (216x66x38mm)

### ORDERING INFORMATION

EX/RPM10	Combination Tachometer + IR Thermometer
EX/461995	Contact/Laser Tachometer
EX/461937	Reflective Tape 10pcs 1/4"x23"
EX/461990	Contact Wheels (cone tip, flat tip)

## Extech Light Meters



#### Model EA30 Wide Range Light Meter

- Measures up to 40,000Fc & 400,000Lux
- Large display with bargraph
- Relative function for zero or difference from reference value
- Peak captures light pulses to 100ms
- Data hold & Min/Max store
- Complete with AAA batteries, light sensor and protective cover with 39" (1m) cable, built-in stand, protective holster & carrying case



#### Model EA31 EasyView® Big Digit Light Meter

- Measures up to 20,000Fc/20,000 Lux
- 0.01Fc /0.01Lux resolution
- 2000 count display with bargraph
- Data hold & Min/Max store
- Complete with AAA batteries, light sensor and protective cover with 39" (1m) cable, built-in stand, protective holster & carrying case



#### Model 407026 Heavy Duty Light Meter with PC Interface

Enhance accuracy by selecting one of four lighting types plus PC interface

- % displays differential from reference point
- "ZERO" Re-Calibration
- Selectable lighting type Tungsten/Daylight, Fluorescent, Sodium, Mercury
- Data hold, Min/Max/Avg readings
- Auto power off
- Optional Data Acquisition software (407001) and Datalogger (380340)
- Complete with 9V battery, light sensor and protective cover with 3.8ft 1.2m cable, and protective holster with stand. Optional 117V or 220V AC adaptors.

### SPECIFICATIONS

Model	EA30	407026
Display counts:	4000 (LCD)	2000 (LCD)
Range: Fc	40, 400, 4000, 40000	200, 2000, 5000
Lux	40, 400, 4000, 40000, 400000	2000, 20000, 50000
Max. Resolution:	0.01Fc/0.01Lux	0.1Fc/Lux
Basic Accuracy:	±3% rdg ±0.5% FS	±4% FS
Cosine & Color Corrected:	Yes	Yes
RS-232 Interface:	—	Optional 407001
Datalogging:	—	Optional 380340
Dimensions:	5.9 x 2.8 x 1.4" (150x72x33mm)	7 x 2.9 x 1.3" (178x74x33mm)

### ORDERING INFORMATION

EX/EA30	Wide Range Big Digit Lightmeter
EX/EA31	Big Digit Lightmeter
EX/407026	Heavy Duty Lightmeter
EX/407001	Data Acquisition Software & Serial Cable for 407026
EX/156119	117VAC Adaptor for 407026
EX/409997	Large Soft Vinyl Pouch Carrying Case for 407026
EX/407001	Data Acquisition Software & PC Serial Cable
EX/380340	Data Logger w/8000 Reading Storage, PC Software, Serial Cable

## Bacharach Combustion Analyzers & Leak Detectors

### Carbon Monoxide Analyzer

- Measures CO with 1ppm resolution
- Highly visible digital display with backlight
- Probe and hose assembly for flue gas testing
- Optional IrDA printer



**Monoxor III** ▶

#### SPECIFICATIONS

Range:	0 - 2000 ppm
Accuracy:	± 5% of reading or 10 ppm, whichever is greater
Probe:	1000°F (538°C) max at 5" insertion
Warm Up:	60 seconds
Display:	Four-digit LCD display w/backlight
Power:	4 AA Alkaline batteries (18 hour life)
Printer Port:	Wireless, IrDA or HP protocol
Size & Wgt:	7.5 x 3.1 x 2.1" (16 oz. with batteries)
Warranty:	2 years, including sensor

### Combustible Gas Leak Detector

- Visual & audible indicators
- 2 sensitivity levels
- 12" probe with plug-in sensor
- Automatic calibration
- UL913 classification



**Leakator Jr.** ▶

#### SPECIFICATIONS

Indicators:	Variable rate flashing red, variable speed audible ticking
Sensitivity:	20ppm in high mode, 50ppm in low mode
Warm-up:	60 seconds, flashes green when ready
Power:	4 AA alkaline batteries (14 hours life)
Temperature:	0-40°C operating
Size & Wgt:	Handheld, 6 x 2 x 1.5" (6oz)
Safety:	UL913 Class I, Div 2, Group A,B,C,D locations

### Refrigerant Leak Detector

- Detects all CFC, HFC & HCFC refrigerants
- Patented heated diode sensor
- Visual & audible indicators
- Automatic zero & background correction
- 2 sensitivity levels



▶ **Tru Pointe**

#### SPECIFICATIONS

Indicators:	Variable intensity audible & visual
Sensitivity:	0.1 oz/yr for R134a (hardest to detect)
Sensor Life:	1 yr of normal use (150 hours)
Probe:	14" flexible, with plug-in sensor
Power:	2 D alkaline batteries (8-13 hr life)
Size & Wgt:	2 x 9.4 x 2.5" (1.2 lbs with batteries)
Approvals:	UL listed to SAE J1627

### Combustion Analyzer

- Measures CO, O<sub>2</sub>, stack temperature, ambient temperature
- Calculates CO<sub>2</sub>, combustion efficiency, excess air, CO free air
- 10 record data storage
- Easy to use, quick sensor replacement
- 2 year warranty (1 year on O<sub>2</sub> probe)



**Fyrite InTech** ▶

#### SPECIFICATIONS

##### Measurement Ranges

Flue Gas:	-4 to 1202°F (-20 to 650°C)
Ambient:	23 to 113°F (-5 to 45°C)
Oxygen:	0.0 to 20.9% O <sub>2</sub>
Carbon Monoxide:	0 to 2000 ppm CO

##### Calculated Ranges

Combustion Efficiency:	0.1 to 99.9%
Carbon Dioxide:	0.1 to a fuel dependent maximum (in %)
CO Air Free:	0 to 9,999 ppm
Excess Air:	0 to 250%

Selectable Fuels:	Natural Gas, Oil #2, Oil #6, Propane, Kerosene
Power:	4 AA alkaline (20 hours life)
Size & Wgt:	8.0 x 3.6 x 2.3" (16 oz. with batteries)

Includes angled probe/hose, batteries & soft carrying case.

### Dual Purpose Leak Detector

- Detects refrigerants & combustible gases
- Swap sensors in seconds
- Sensitivity automatically adjusted
- 0.2" probe tip fits into tight spaces
- Filter prevents moisture contamination
- Dual LED displays for easy viewing
- Optional rubber boot holds flashlight



▶ **Informant 2**

#### SPECIFICATIONS

Indicators:	Audible, sequential LEDs & flashing probe tip
Detection:	All CFC, HCFC & HFC refrigerants, all combustible gases & vapors
Sensor:	Located at probe tip for fast response & quick changeover
Sensitivity:	0.25 oz/yr of R134a (hardest to detect), 50ppm of methane
Warm-up:	10 seconds
Power:	4 AA alkaline batteries (5 hr life)
Size & Wgt:	1.8 x 9.7 x 2.3" with 20" probe
Approvals:	UL listed to SAE J1627, MET lab certified to UL913, intrinsically safe for Class 1, Div. 1, Group D hazardous locations

Includes batteries, refrigerant & gas sensors, sensor tips, filters and carrying case.

#### ORDERING INFORMATION

BA/19-8104	Monoxor III CO Analyzer
BA/24-8511	Fyrite InTech CO, O <sub>2</sub> Combustion Analyzer
BA/19-7075	Leakator Jr. Combustible Gas Leak Detector
BA/19-8038	Informant 2 Dual Detector Contractor Kit
BA/19-8106	Tru Pointe Refrigerant Leak Detector

## Megger® Hand-Held TDR / Cable Length Meter

- Measures length of power, telephony, CATV & LAN cables
- Determines distance to an open or short
- Automatic impedance control (25, 50, 75, 100, 125, 150W)
- Internal library of 39 standard cable types
- Memory for 20 custom cable settings
- Tone generator for cable tracing
- Large, high resolution backlit LCD display

### Additional Features:

Cable Calibration function allows measurement of V.O.P. (Velocity Of Propagation) in a known cable length. Requires at least a 30ft (10m) sample.

Line Voltage Detection feature displays "OUCH" message and stops operation if voltage exceeds 6.5V.



TDR-900

Supplied with soft carrying case and alligator clip adapter.

### SPECIFICATIONS

Range:	12000 ft (3.7km) at 99.9 V.O.P. 9800 ft (3.0km) at 80.0 V.O.P. 8000 ft (2.4km) at 66.0 V.O.P. 6200 ft (1.9km) at 50.0 V.O.P.
Accuracy*:	±2% of rdg ±20" at <300 ft ±2% of rdg at >300 ft
Resolution:	20 inches (50cm)
V.O.P.:	adjustable from 1.0% to 99.9% of the speed of light
Connector:	BNC
Power:	4 AA batteries
Battery Life:	5000 tests
Operating Temperature:	-18°C to 60°C

\* at 20°C for coax cables <8000 ft, telephony cables <6000 ft, wiring <3000 ft

### ORDERING INFORMATION

ME/TDR900 Hand-Held TDR/Cable Length Meter

## Megger® Hand-Held TTR



TTR20

### SPECIFICATIONS

Excitation Voltage:	8 V rms for testing distribution or power transformers & PTs; 0.5, 1.5, or 8 V ac rms for testing CTs (switched automatically if current exceeds a preset value)
Test Frequency:	55 Hz
Excitation Current:	Range 0 to 100 mA, 4-digit resolution
Turns Ratio Range:	0.8 to 10000, 5-digit resolution
Transformer Polarity:	Normal or reversed
Current Accuracy:	2% of reading ±1 digit
Turns Ratio Accuracy:	0.1% (0.8 to 2000) 0.15% (2001 to 4000) 0.25% (4001 to 10,000)
Measuring Time:	Less than 5 seconds
Measurement Method:	ANSI/IEEE C57.12.90
Phase Relationship:	ANSI C57.12.70-1978
Display:	Graphic LCD, adjustable back-lighting
Safety/EMC/Vibration:	IEC-1010-1, CE and ASTM D999.75
Operating Temperature:	-20° C to 55° C (-5° F to 130° F), < 90% RH non-condensing
Power:	Six standard AA alkaline batteries
Battery Life:	12 hours of field operation
Dimensions:	9.5" H x 4.5" W x 1.9" D (240x115x50 mm)

### ORDERING INFORMATION

ME/TTR20	Handheld TTR with 6ft (1.8m) test leads
Optional Accessories	
ME/35942	Test leads, X/H winding, 12ft (3.6m)
ME/36013	Test leads, X/H winding, 20ft (6m)
ME/35755-1	Battery/line power thermal printer with paper, battery pack, charger, interface cable
ME/35788	Semi-hard fabric transport case

- Single- and three-phase transformer testing
- Fully automatic; fast; easy-to-use; robust; lightweight
- Battery powered
- Tests turns ratio, excitation current and polarity
- Simple, one-button operation
- Quick-start guide on front panel

## Extech Sound Level Meters

- Two range meter with backlit LCD display
- Measures 35 to 130dB
- Meets ANSI & IEC 651 Type 2 standards
- Data Hold & Max Hold functions
- NIST certification available

Applications:

- Product noise testing
- Installing audio system
- Meeting OSHA safety issues
- Enforcing community noise ordinances

**407732** ▶



### SPECIFICATIONS

Basic Accuracy	±1.5dB
Display	2000 count backlit LCD
Microphone	0.5" condenser type
Power	9V battery
Dimensions	8.2 x 2.1 x 1.25" (210x55x32mm)

### ORDERING INFORMATION

EX/407732	Digital Sound Level Meter
EX/407732-NIST	Digital Sound Level Meter with NIST Cert

- Easy to use analog meter
- Measures 54 to 126dB in 7 ranges
- Selectable A or C weighting
- Fast or slow response
- Analog output for recorder or datalogger
- Battery check
- Tripod mount

**407730** ▶



CE

### SPECIFICATIONS

Basic Accuracy	±2dB @94db, 1000Hz
Analog Output	AC: 0.707V rms
Microphone	Built-in 0.5" Electret condenser type
Power	9V battery
Dimensions	7.1 x 2.7 x 1.4" (180x68x36mm)

### ORDERING INFORMATION

EX/407703A	Analog Sound Level Meter
EX/407703A-NIST	Analog Sound Level Meter with NIST Cert

## Extech Testers

### Battery Powered Milliohm Meter

- Four terminal Kelvin measurements
- Resolution to 100μΩ
- 20V test voltage
- Large LCD display
- Invalid test indicators
- Auto-Hold and Auto-Off features
- Built-in water resistant case with shoulder strap

Complete with AA batteries, leads with 4 alligator clips, leads with 2 Kelvin alligator clips

▶ **380580**



### SPECIFICATIONS

Range	Resolution	Current	Accuracy
200mΩ	0.1mΩ	100mA	±(0.5% +2d)
2000mΩ	1mΩ	100mA	±(0.5% +2d)
20Ω	0.01Ω	10mA	±(0.5% +2d)
200Ω	0.1Ω	10mA	±(0.5% +2d)
2000Ω	1Ω	100mA	±(0.5% +2d)

Dimensions: 9.8 x 7.5 x 4.3" (250x19x110mm)

### Battery Capacity Tester

- Checks battery condition in seconds while the battery is in service
- Simultaneously measures battery resistance and voltage
- Built-in datalogger stores up to 999 tests

Includes PC interface cable, software, test leads and AAA batteries



▶ **BT100**

### SPECIFICATIONS

Resistance Ranges:	40mΩ, 400mΩ, 4Ω, 40Ω
Resistance Accuracy:	±(1% reading + 8 digits)
Voltage Ranges:	4V, 40V
Voltage Accuracy:	±(0.1% reading + 6 digits)
Display:	4000 count LCD, dual readout
Input Voltage:	50VDC max.
Battery Life:	7 hours
Dimensions:	9.75" x 4" x 1.75" (250 x 100 x 45 mm)

### ORDERING INFORMATION

EX/380580	Battery Powered Milliohm Meter
EX/BT100	Battery Capacity Tester
EX/BT102	120V AC Adapter for BT100

## Amprobe Testers

### SOLAR POWER METER



- Measures Solar Power and Transmission
- Reads up to 2000 W/m<sup>2</sup> or 634 BTU/(ft<sup>2</sup> x h)
- Large Display & Separate Sensor
- Displays Transmission Percentage
- MAX/MIN & Data Hold

◀ **SOLAR-100** CE

Optimize the placement of solar systems and verify window efficiency.

#### SPECIFICATIONS

Measurement Range:	1999 W/m <sup>2</sup> , 634 BTU/(ft <sup>2</sup> x h)
Display:	3½ digits, 2000 counts
Sampling Time:	Approx 0.25 second
Accuracy:	Typically within ±10W/m <sup>2</sup> [±3 BTU/(ft <sup>2</sup> x h)] or ±5%, whichever is greater in sunlight
Angular Accuracy:	Cosine corrected < 5% for angles < 60°
Battery:	9V alkaline included
Operating Temperature:	5-40°C (41-104°F), <80%RH (non-condensing)
Dimensions:	5.2" x 2.4" x 1.5" (132x60x38 mm)

### PSYCHROMETER

- Temperature, RH, Dew Point & Wet Bulb Measurements
- Extended Flex Probe
- Dual Display with Backlight
- MAX/MIN & Data Hold
- Tripod Mountable

CE

▶ **THWD-5**



#### SPECIFICATIONS

Range:	RH: 0 to 100% Temperature: -10 to 60°C (14 to 140°F) DP: -73.4 to 59.9°C (-100 to 139.8°F) WB: -13.4 to 59.9°C (7.88 to 139.8°F)
Accuracy:	RH: ±3% from 10 to 90% at 25°C and ±5% for others Temperature: ±0.6°C (±1°F)
Response Time:	60 seconds
Resolution:	0.1°C / 0.1°F
Temperature:	0 to 50°C (32 to 122°F) operating, up to 100% RH
Battery (Life):	Four AAA (100 hrs w/o backlight, 50 hrs w. backlight)
Dimensions:	6.9" x 2.8" x 1.3" (175x70x33 mm)
Included:	Hard carrying case, batteries, probe

### NON-CONTACT AC VOLTAGE DETECTOR

- Visual & Audible Indication
- Measure to 122kV
- Self-test Verification
- Drop Proof to 6 ft



▶ **TIC 300 PRO** CE

#### SPECIFICATIONS

Voltage Range:	30-1500 VAC 1500- 122,000 VAC (with Hot Stick TIC 410A)
Detection Range (typical):	2.7" @ 30 V, 18" @ 120 V, 28" @ 220 V, 50" @ 500 V, 75" @ 1000 V, 93" @ 1500 V
with Hot Stick:	1' 2" @ 1.5 kV, 2' 5" @ 2 kV, 6' 3" @ 10 kV, 9' 4" @ 25 kV, 14' 8" @ 75 kV, 22' @ 122 kV

174a

## NEW

### SWIVEL CLAMP METERS

- 180° Rotating Head
- Measure to 400A AC, 600V AC/DC
- Resistance, Capacitance, Continuity
- One Hand Operation
- Auto & Manual Ranging
- Non-Contact Voltage Detection



▶ **ACD-20SW**

#### SPECIFICATIONS

DC Volts Ranges:	400mV, 4V, 40V, 400V, 600V
Accuracy:	±(0.5% rdg + 2 dgts)
AC Volts Ranges:	4V, 40V, 400V, 600V (50-500Hz)
Accuracy:	±(1.2% rdg + 5 dgts), [1.5% on 600V range]
AC Current Ranges:	40A, 400A (50-60Hz)
Accuracy:	±(2.0% rdg + 6 dgts)
Resistance Ranges:	400Ω, 4kΩ, 40kΩ, 400kΩ, 4MΩ, 40MΩ
Accuracy:	±(1.0% rdg + 4 dgts) on 400Ω to 400kΩ ranges
Continuity:	Audible indication less than 25Ω
Non-Contact Voltage:	Beeper & red LED for 70V to 600VAC (50-60Hz)
Other Features:	Diode test, display hold, auto power off, noise filter
Display:	3¾ digit LCD, maximum reading 3999
Temperature:	0 to 50°C (32 to 122°F) operating, <70% RH
Power (Life):	2 AAA batteries (alkaline 400 hrs)
Wire Diameter:	1.18" (30mm) max.
Dimensions:	12" x 5.3" x 1.2" (306x135x30 mm)
Rating:	CAT III 600V
Included:	Battery, test leads, carrying case

### CAT IV ANALOG CLAMP METERS

- Measure to 1000A & 600V AC
- Resistance & Continuity
- Pointer Lock for Data Hold
- Operates Down to 5° F
- No Batteries Needed for Volts & Amps



▶ **RS-3 PRO** CE

#### SPECIFICATIONS

Display:	Analog scales with clamping needle
AC Voltage Ranges:	150 / 300 / 600 Vrms
Input Impedance:	1.5 MΩ
AC Amp Ranges:	6 / 15 / 40 / 100 / 600 Arms [1000 A on RS-1007 PRO]
Accuracy:	± 3% of Full Scale for Volts & Amps (50/60 Hz)
Ohms Range:	1000Ω, 25Ω mid-scale
Accuracy:	± 3 degrees of arc
Max. Wire Diameter:	1.64" (41mm) [1.88" (47mm) on RS-1007 PRO]
Power:	One AAA battery for resistance & continuity
Temperature:	-15 to 50°C (-5 to 122°F) operating, <80% RH
Dimensions:	RS-3 PRO: 10.3" x 4.0" x 1.6" (243x102x41 mm)
Safety LVD Rating:	CAT IV 600V AC

#### ORDERING INFORMATION

AB/SOLAR-100	Solar Power Meter
AB/THWD-5	Temperature, RH, Dew Point & Wet Bulb Meter
AB/TIC 300 PRO	Non-Contact AC Voltage Detector
AB/TIC 410A	Hot Stick Accessory for TIC 300 Pro (1.5-122 kV)
AB/ACD-20SW	400A Swivel Clamp Meter
AB/ACD-21SW	400A Swivel Clamp Meter w/ Temperature & Capacitance
AB/RS-3 PRO	CAT IV 600A Analog Clamp Meter
AB/RS-1007 PRO	CAT IV 1000A Analog Clamp Meter

## Hioki Testers

### MULTI-FUNCTION DMMS

- AC/DC Voltage & Current
- Resistance & Continuity
- 9999 count LCD display
- Min/Max, Average & Relative values
- 4-20 mA measurement converts to 0-100% display
- Optional RS-232C package for PC data transfer



#### SPECIFICATIONS

DC Volts:	4 ranges, 999.9mV to 999.9V ( $\pm 0.3\%$ rdg $\pm 2d$ )
AC Volts:	4 ranges, 999.9mV to 999.9V ( $\pm 1.2\%$ rdg $\pm 5d$ ) 40-500Hz
Ohms:	6 ranges, 400.0 $\Omega$ to 40.00M $\Omega$ ( $\pm 0.6\%$ rdg, $\pm 3d$ )
DC Current:	6 ranges, 400.0 $\mu$ A to 10.00A ( $\pm 0.2\%$ rdg, $\pm 3d$ )
AC Current:	6 ranges, 400.0 $\mu$ A to 10.00A ( $\pm 1.2\%$ rdg, $\pm 5d$ ) 50-2kHz
Other Functions:	Capacitance, Data hold, continuity ( $<10\Omega$ ), diode check 3805: TRMS AC, freq to 50kHz, J&K thermocouples
Ranging:	Auto or Manual
Bar Display:	41 segment
Sample Rate:	3/sec (digital), 13/sec (bar)
Dimensions:	3" x 6.6" x 1.3" (76x167x33mm)
Accessories:	Test leads 3851-10, holster, battery

#### ORDERING INFORMATION

HK/3804-50	4-Digit DMM
HK/3805-50	4-Digit TRMS DMM

### PHASE DETECTOR



- LED & Buzzer Indicate Phase Direction
- No Electrical Connection
- Live Wire Check (R-S, S-T)
- Battery Check & Auto Shut Off

#### SPECIFICATIONS

Detection Method:	Electrostatic induction
Voltage Range:	70-600VAC, 50/60Hz
Max. Wire Size:	0.67" (17mm) dia., insulated wire
Standards:	Cat III, 600V
Dimensions:	2.76"W x 2.95"H x 1.18"D
Lead Length:	27" (0.7mm)

#### ORDERING INFORMATION

HK/3120	Voltage Detector, batteries included
HK/3129	Phase Detector, with carrying case & AA batteries
HK/3246	Pencil HiTester, battery included
HK/3280-10	Clamp-On HiTester, with leads, battery & carrying case
HK/3280-20	TRMS Clamp-On HiTester, with leads, battery & carrying case

### VOLTAGE DETECTOR



- Detect AC Voltage in Insulated Wires

#### SPECIFICATIONS

Voltage Range:	70-600VAC, 50/60Hz
Indication:	Red LED and continuous beep
Battery Check:	Green LED
Operating Temperature:	0 to 40 °C, $<80\%$ RH (non-condensing)
Standards:	CAT IV 600V, indoor use
Dimensions:	5.9" L x 0.7" dia (149 x 18.5mm)

### CLAMP-ON HITESTERS



- Slim Body for Easy Clamping in Narrow Spaces
- Independent-opening Double-lever Jaw
- Right or Left Hand Operation
- 4199 Count LCD
- True RMS Measurement (3280-20)

#### SPECIFICATIONS

Function	Range (Accuracy)
AC Amps:	3280-10: 42 / 420 / 1000A (50/60Hz; $\pm 1.5\%$ rdg $\pm 5d$ ), 3280-20: 42 / 420 / 1000A (45-66Hz: $\pm 1.5\%$ rdg $\pm 5d$ ) (40-45Hz or 66Hz-1kHz: $\pm 2.0\%$ rdg $\pm 5d$ )
DC Volts:	420m / 4.2 / 42 / 420 / 600V ( $\pm 1.3\%$ rdg $\pm 4d$ )
AC Volts:	4.2 / 42 / 420 / 600V (50-500Hz, $\pm 2.3\%$ rdg $\pm 8d$ )
Ohms:	420 / 4.2k / 42k / 420k $\Omega$ ( $\pm 2.0\%$ rdg $\pm 4d$ ), 4.2M $\Omega$ ( $\pm 5.0$ rdg $\pm 4d$ ), 42M $\Omega$ ( $\pm 10.0\%$ rdg $\pm 4d$ )
Continuity:	420 $\Omega$ ( $\pm 2.0\%$ rdg $\pm 6d$ ), buzzer $<50\Omega$
Wire Size:	1.3" (33mm) max diameter
Allowable Current:	2000A AC rms max continuous
Overload Protection:	DCV/ACV: 600V DC/AC rms; $\Omega$ /Continuity: 250V DC/AC rms
Operating Temperature:	0 to 40 °C, $<80\%$ RH (non-condensing)
Standards:	CAT III 600V(AC A), CAT II 600V(AC/DC V)
Dimensions:	2.2"W x 6.9"H x 0.6"D

## Hioki Testers

### INFRARED THERMO HITESTER



Also in  
HPK-1 Kit

- Pistol Style with Backlit LCD
- Laser Aiming Marker
- Selectable °F/°C
- Min/Max Function
- Upper/Lower Alarm Settings
- Stores 50 Measurements

◀ **3419-20**

CE

#### SPECIFICATIONS

Measurement Range:	-35 to 500 °C (-31 to 932 °F)
Display Resolution:	0.1 °C (0.2 °F)
Wavelength:	6 to 14 μm
Emissivity:	0.17 to 1.00 by steps of 0.01
Field of View:	8 : 1 distance to spot
Sighting:	Red laser marker, 1 mW (class 2)
Accuracy:	-35.0 to -0.1°C : ± 10 % rdg. ± 2 °C 0.0 to 100.0°C : ± 2 °C 100.1 to 500.0°C : ± 2 % rdg.
Battery (Life):	9V alkaline (80 hrs with laser & backlight off)
Operating Temperature:	0-50°C (32-122°F), <80%RH (non-condensating)
Dimensions:	1.81" × 6.77" × 4.65" (46×172×118 mm)

### LAN TESTER



- Verify Wire Destinations
- Detect Split Pairs
- Measure Cable Length
- Check Wire & Shield Condition

◀ **3665-10**

CE

#### SPECIFICATIONS

Cable Types:	Twisted-pair, 100Ω shielded/unshielded, CAT 3, 4, 5, 5e, 6
Connectors:	RJ-45 plugs
Errors Detected:	Open, short, reversed, transposed, split pairs & miswires
Cable Length:	2-300 m, (6.6-984 ft) with 0.1 m (0.3 ft) resolution
Direction Check:	Up to 21 cables can be identified using the supplied 9690 terminator & optional 9690-01 to 9690-04
Display:	LCD with backlight & beeper
Switch:	Select between meters or feet
Battery (Life):	Two AA (50 hours)
Dimensions:	3.4" × 5.2" × 1.3" (85×130×33 mm)

### PENCIL DMM

CE

▶ **3246**



- Backlit 4199 Count LCD
- Data Hold, Continuity Beeper
- Auto or Manual Ranging
- Pushbutton Penlight

#### SPECIFICATIONS

DC Volts:	420m / 4.2 / 42 / 420 / 600V (±1.3 % rdg ± 4d)
AC Volts (50-500Hz):	4.2 / 42 / 420 / 600V (±2.3 % rdg ±8d)
Ohms:	420 / 4.2k / 42k / 420k / 4.2M / 42MΩ (±2.0 % rdg ±4d), plus diode check
Rating:	CAT III 600 V
Dimensions:	1.2" × 1.0" × 7.2" (31×26×84 mm)

## NEW

### TRMS AC CLAMP METER WITH LEAKAGE



- Measure to 200A TRMS AC
- Leakage with 10μA Resolution
- Recorder/Waveform Output
- Min/Max & Display Hold
- Switchable Filter

◀ **3283**

CE

#### SPECIFICATIONS

AC Amps:	10.00 mA to 200 A, 5 ranges
Accuracy (50/60Hz):	±1.0 % rdg. ±5 dgt. (1.5 % on 200 A range)
Frequency Response:	40 Hz to 2 kHz (on AC Amps)
Frequency Measure:	100.0 or 1000 Hz, 2 ranges (±0.3 % rdg. ±1 dgt.)
Switchable Filter:	180 Hz ±30 Hz /-3 dB
Analog Output:	1 V /f.s, DC or AC mode
Display:	1000 count digital, 35 segment bargraph
Sampling Rate:	2 or 4 times/sec (Slow: 1 time/3 sec)
Crest Factor:	2.5 (1.5 on 200 A range)
Circuit Voltage:	300 V AC rms max. (insulated wire)
Power:	9V battery or AC adapter
Wire Dia.:	Ø 40 mm (1.57") max.
Dimensions:	2.44" × 8.86" × 1.54" (62×225×39 mm)
Rating:	CAT III 300V

### TRMS AC CLAMP METER



- 1000A & 600V TRMS AC
- Ohms, Frequency & Continuity
- Waveform Distortion Check
- Inrush Peak Capture
- Min/Max & Display Hold

◀ **3282**

CE

#### SPECIFICATIONS

AC Amps:	30.00 / 300.0 / 1000 A (±1.0% rdg. ±5 dgt)
AC Volts (50/60Hz):	300.0 / 600 V (±1.0 % rdg. ±3 dgt.)
Frequency Response:	40 Hz to 1 kHz (on AC Amps/Volts)
Frequency Measure:	100.0 or 1000 Hz (±0.3 % rdg. ±1 dgt.)
Resistance Measure:	1k & 10k ranges
Temperature Measure:	-50 to 150 °C (with Probe 9462, sold separately)
Display:	3000 count digital, 35 segment bargraph
Sampling Rate:	2 or 4 times/sec (Slow: 1 time/3 sec)
Crest Factor:	2.5 (1.7 on 1000 A or 600 V range)
Circuit Voltage:	300 V AC rms max. (insulated wire)
Power:	9V battery (45 hours)
Wire Dia.:	Ø 46 mm (1.8") max.
Dimensions:	2.44" × 9.06" × 1.54" (62×230×39 mm)
Rating:	CAT III 1000V, CAT IV 600V

#### ORDERING INFORMATION

HK/3246	Pencil DMM, battery included
HK/3282	TRMS AC Clamp Meter
HK/3283	TRMS AC Clamp Meter & Leakage Tester, with case & strap
HK/3419-20	Infrared Thermo Hitester, with carrying case
HK/3665-10	LAN Tester, with carrying case & 9690 Terminator
HK/HPK-1	HVAC/Electrical Contractor Kit (includes 3120 Voltage Probe, 3280-10 Clamp-on Meter, 3419-20 IR Tester, 3804 DMM)

## Hioki HVAC/Electrical Contractors Kit

**NEW**

- Four Instruments to help with HVAC & Electrical Installations
- Includes Digital Multimeter, Voltage Probe, Clamp-on Meter, Temperature Gun
- Rugged carrying case for storage & protections

**Hioki HPK-1  
HVAC/Electrical  
Contractor Kit**

**Four Instruments  
to help with  
HVAC/Electrical  
Installations**

**3120 Voltage Probe**

- Red Indicator for Voltage Presence
- Green Indicator for Battery Check
- 200 Hours on 2 AAA batteries
- User Replaceable Batteries

**3280-10 Clamp On Meter**

- 1000A AC Current Capable
- Lightweight
- Independent Jaw Opening Design
- Resistance and Continuity

**3419 Temperature Gun**

- 8:1 Optical Resolution
- Measures -20°F to 932°F
- Adjustable Emissivity 0.17 to 1.00
- 80 Hour Operation on AA batteries

**3804 Digital Multimeter**

- AC and DC Voltage and Current Measurement
- Resistance and Continuity
- Rubber Boot
- RS-232C Interface

**HIOKI**

Instrument Descriptions & Specifications on page 175 & 175a.

**ORDERING INFORMATION**

HK/HPK-1 HVAC/Electrical Contractor Kit (includes 3120 Voltage Probe, 3280-10 Clamp-on Meter, 3419-20 IR Tester, 3804 DMM)