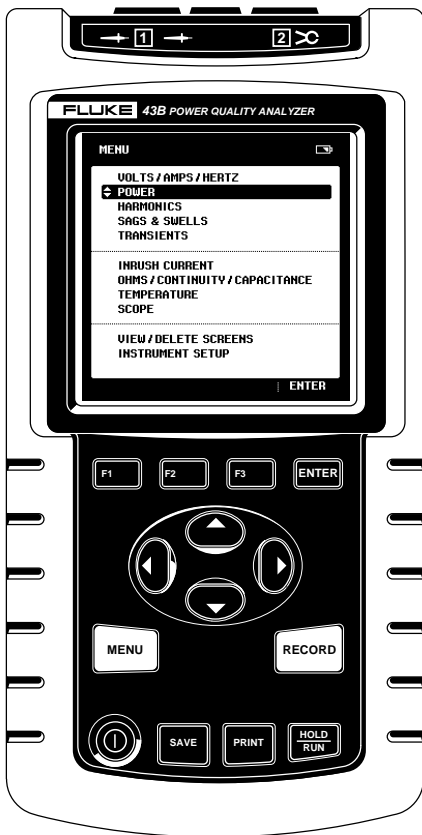


Fluke 43B Power Quality Analyzer

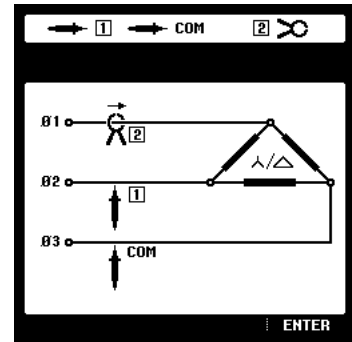
Maintain power systems, troubleshoot power problems, diagnose equipment failures



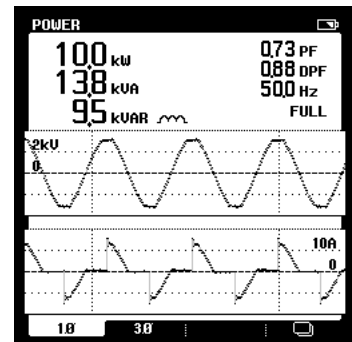
The Fluke 43 Power Quality Analyzer performs the measurements you need to maintain power systems, troubleshoot power problems and diagnose equipment failures. It combines a power quality analyzer, 20 MHz oscilloscope, a multimeter and a recorder in a single tool.

- Measures power (W, VA, VAR) and power factor (PF, DPF)
- Calculates power and power factor on balanced 3-phase loads
- Voltage, current and power harmonics up to the 51st.
- Measure sags and swells on a cycle-by-cycle basis for up to 24 hours
- Automatically capture up to 40 transients as fast as 40 ns
- Measure motor inrush and analyze using cursors
- Covers broad fundamental frequency range (10 to 400 Hz)
- Dual-channel scope
- Up to 20 MHz bandwidth with FREE VPS40 Voltage Probe (Fluke 43B only)
- "Connect and View" automatic triggering for an instant stable waveform display
- Measures resistance, continuity and capacitance, and tests diodes
- Measures temperature with optional temperature probes (Fluke 61 IR Thermometer supplied for FREE with Fluke 43B only)
- Records up to 2 parameters for up to 16 days
- All parameters measured can be recorded including V/A/Hz, all aspects of power and harmonics and all scope measurements
- Stores up to 4000 voltage events with the VR101S (Fluke 43Kit)
- Get immediate insight in your power system by simply clicking through the most commonly used power quality modes with just a simple keystroke
- Just choose the application from the menu and it sets-up automatically
- 20 memories for storage of screens and data

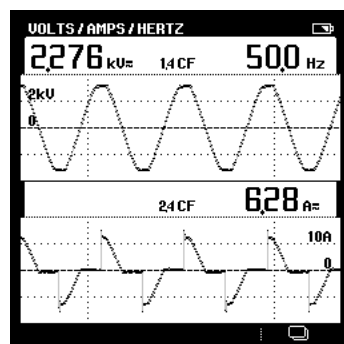
Technical Data



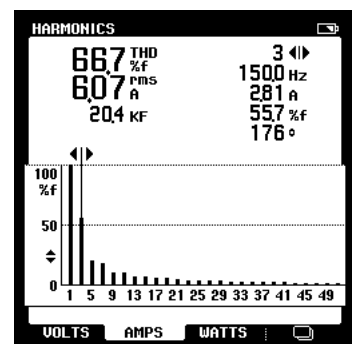
- On screen graphics show you how to set up 3 phase power measurements



- Watts, power factor, displacement power factor (Cos ϕ), VA and VAR
- Voltage and current waveforms



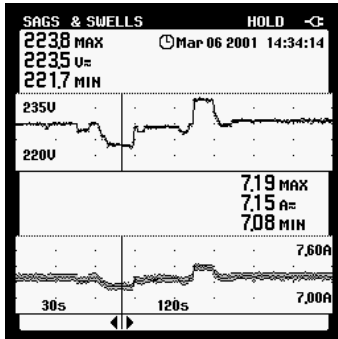
- Voltage and current waveforms
- True-rms voltage and current
- Frequency



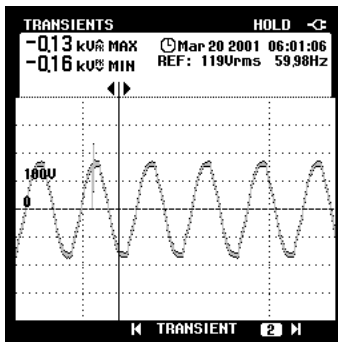
- Voltage, current, and power harmonics
- Up to 51st harmonic
- Total harmonic distortion (THD)
- Phase angle of individual harmonics

Specifications Fluke 43B Power Quality Analyzer

The Fluke 43B Power Quality Analyzer is optimized for industrial measurements on the 50 Hz fundamental frequency. Since its usable fundamental frequency range extends from 10 Hz to 400 Hz, the 43B is ideal for industrial, aviation, marine and railway applications.



- Continuously measure volts and amps on a cycle-by-cycle basis for up to 16 days
- Use cursors to read time and date of sags and swells



- Catch voltage transients and waveform distortion
- Catch and save up to 40 transients
- Correlate the cause of transients with time and date stamps

Mode	Usable bandwidth	Harmonics on 400 Hz fundamental	Typical accuracy for 400 Hz fundamental
Volt Amp Hz	10 Hz ... 3.5 kHz	9th harmonic	5%
Power	20Hz ... 2 kHz	5th harmonic	10%
Harmonics	10 Hz ... 3.5 kHz	9th harmonic	10% Channel 1 50% Channel 2

Note: Current harmonics measurements can be done via channel 1 with improved accuracy

Accuracies are stated as \pm (percentage of reading + counts) without probes unless otherwise noted. Specifications are valid for signals with a fundamental between 40 and 70 Hz.

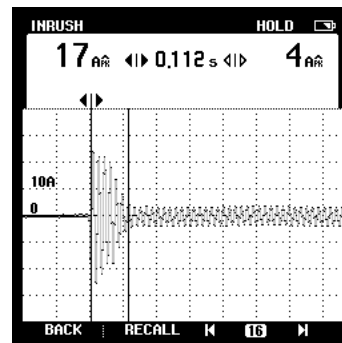
Input Characteristics	Ranges	Accuracy
Input impedance	1 M Ω , 20 pF	
Voltage rating	600 Vrms, CAT III	
Volt / Amps / Hertz		
True-rms voltage (AC+DC)	5.000 V, 50.00 V, 500.0 V, 1250 V*	\pm (1 % + 10 counts)
True-rms current (AC+DC)	50.00 A, 500.0 A, 5.000 kA, 50.00 kA, 1250 kA	\pm (1 % + 10 counts)
Frequency	10.0 Hz to 15.0 kHz	\pm (0.5 % + 2 counts)
CF Crest Factor	1.0 to 10.0	\pm (5% + 1 count)
Power		
W, VA, VAR Reactive Power 1-phase and 3-phase, 3 conductor balanced loads	250 W 2.50 kW, 25.0 kW, 250 kW, 2.50 MW, 25 MW, 250 MW, 625 MW, 1.56 GW	\pm (2 % + 6 counts) Total Power \pm (4 % + 4 counts) Fundamental Power
PF Power Factor	0.00 to 1.00	\pm 0.04
DPF Displacement Power Factor	0.00 to 0.25 0.25 to 0.90 0.90 to 1.00	not specified \pm 0.04 \pm 0.03
Hz Frequency Fundamental	40.0 to 70.0 Hz	\pm (0.5 % + 2 counts)
Harmonics		
Volts, Amps, Watts	Fundamental	V,A \pm (3 % + 2 counts), W \pm (5 % + 2 counts)
	2 to 31st Harmonic	V,A \pm (5 % + 3 counts), W \pm (10 % + 10 counts)
	32 to 51st Harmonic	V,A \pm (15 % + 5 counts), W \pm (30 % + 5 counts)
Frequency of fundamental	40 Hz to 70 Hz	\pm 0.25 Hz
Phase	Volt & Amps (between Fund. & Harmonic)	2nd (\pm 3°) ... 51st (\pm 15°)
	Watts (between Volt Fund. & Amps Harmonic)	Fund (\pm 5°) ... 51st (\pm 15°)
K-Factor (Amps & Watts)	1.0 to 30.0	\pm 10 %
THD	0.00 to 99.99	\pm (3% + 8 counts)
Sags & Swells		
Recording times (selectable)	4 min to 16 days	
Vrms Actual, Vrms max, min (AC + DC)	5.000 V, 50.00 V 500.0 V, 1250 V*	Readings \pm (2% + 10 counts) Cursor readings \pm (2% + 12 counts) Cursor Readings Average \pm (2% + 10 counts)
Arms Actual, Arms max, min (AC + DC)	50.00 A, 500.0 A, 5.000 kA, 50.00 kA	
Recording		
Recording times (selectable)	4 min to 16 days	
Parameters	Choose one or two parameters from one of the groups below	
V/A/Hz	Line Voltage, Current, Frequency	
Power	Watts, VA, VAR, PF, DPF, Frequency	
Harmonics	THD, Volt(Fund. & Harmonic), Amps(F&H) Watts(F&H) Freq.(H), % (H) of total, Phase(H), KF	
Ohms	Ohms, Diode, Continuity, Capacitance	
Temperature	$^{\circ}$ C or $^{\circ}$ F	
Scope	DC Voltage, DC Current, AC Voltage, AC Current, Frequency, Pulse Width + or -, Phase, Duty cycle + or -, Peak max, Peak min, Peak min-max, Crest Factor	
Transients		
Minimum pulse width	40 ns	
Useful bandwidth input 1	DC to 1 MHz (with test leads TL24)	
Number of transients	40	
Voltage threshold settings	20%, 50%, 100%, 200% above or below reference signal	
Reference signal	After START, the Vrms and frequency of the signal are measured. From these data a pure sinewave is calculated as reference for threshold setting.	
Vpeak min, Vpeak max at cursor	10 V, 25 V, 50 V, 125 V, 250 V, 500 V, 1250 V	\pm 5% of full scale

*Rated 600V CAT III

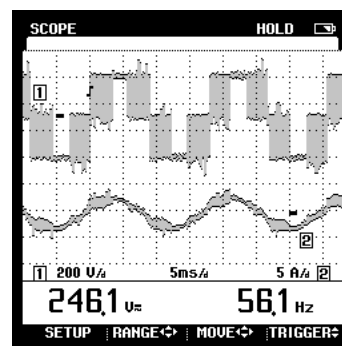
Inrush Current	Ranges	Accuracy
Current ranges (selectable)	1 A, 5 A, 10 A, 50 A, 100 A, 500 A, 1000 A	
Inrush times (selectable)	1 s, 5 s, 10 s, 50 s, 100 s, 5 min	
Cursor readings	A peak max at cursor 1 and cursor 2	± 5% of full scale
Time between cursors**	4 to 235 pixels	± (0.2% + 2 pixels)
Scope, dual channel scope with measurement reading		
Input Impedance		
Input 1	1 MΩ/12 pF; with BB120: 20 pF	± 2 pF; with BB120 ±3 pF
Input 2	1 MΩ/10 pF; with BB120: 18 pF	± 2 pF; with BB120 ±3 pF
Vertical		
Voltage ranges	50 mV/div to 500V/div	± (1% + 2 pixels)
Vertical sensitivity, resolution	5 mV/div to 500V/div, 8 bit (256 levels)	
Bandwidth channel [1] (voltage)	DC to 20 MHz at inputs, or with BB120 and VPS40 (standard with Fluke 43B); 1 MHz with TL24 Leads	
Bandwidth channel [2] (current)	DC to 15 kHz at inputs 10 kHz with supplied current clamps	
Coupling	DC, AC (10 Hz -3 dB)	
Horizontal		
TimeBase modes	Normal, roll, single	
TimeBase ranges	60 s/div to 20 ns/div	± (0.4% + 1 pixel)
Sampling rate	25 MS/s	
Record length (min / max samples)	512 per channel	
Trigger source	Input 1 or Input 2 or Automatic selection	
Trigger Mode	Automatic Connect-and-View™, Free Run, Single Shot.	
Connect-and-View™	Advanced automatic triggering that recognizes signal patterns and automatically adjusts triggering, timebase and amplitude. Automatically displays stable pictures of complex and dynamic signals like motor drive and control signals.	
Pre-trigger	Up to 10 divisions	
Measurement readings, per channel selectable	Volts & Amps (DC, AC, AC + DCrms, Peak max, Peak min, Peak min / max), Frequency, Duty cycle + or - , Phase, Pulse Width + or - , Crest factor	
Ohms, Diode, Continuity, Capacitance		
Ohms	500.0 Ω 5.000 kΩ, 50.00 kΩ, 500.0 kΩ, 5.000 MΩ, 30.00 MΩ	± (0.6% +5 counts)
Diode voltage	0 to 3.000 V	± (2% +5 counts)
Continuity, shorts > 1 ms	Beeper on at < 30Ω ± 5Ω,	
Capacitance	50.00 nF, 500.0 nF, 5.000 μF, 50.00 μF, 500.0 μF	±(2% +10 counts)
Temperature***	-100.0 °C to 400.0 °C, -200.0 °F to 800.0 °F	±(0.5% +5 counts)
Max current, max open circuit volt.	0.5 mA, < 4 V (all functions above)	
Memory		
Number of screens	20	
Optical Isolated RS-232 Interface		
To printer	Supports HP LaserJet, DeskJet, Epson FX/LQ and Postscript printers with optional PAC91 Printer Adapter Cable	
To PC	FlukeView® Power Quality Analyzer software with PM9080 Interface Adapter included with 43B and 43Kit	
FlukeView® Power Quality Software		
Hardware requirements	PC or 100% compatible with Windows 95, 98, Me, 2000, NT4.0.	

** 1 pixel = inrush time/250

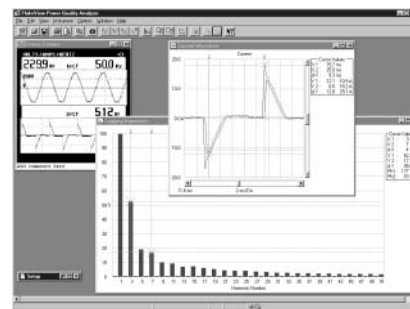
*** Requires optional temperature accessory



- Inrush current up to 500 A with 80i500s and up to 200 A with i200s
- Use cursors to measure inrush current timing



- Connect-and-View™ scope for quick waveform display
- View voltage and current channels simultaneously
- Up to 20 MHz bandwidth with VPS40 10:1 voltage probe (standard with Fluke 43B)



- FlukeView® Power Quality Analyzer software (included with 43B and 43Kit)
- Capture measurement screens for professional-looking reports
- Log readings to your computer disk drive
- Works with Windows word processing, spreadsheet and analysis software
- Windows 95 / 98 / Me / 2000 / NT 4.0

Power	
Line voltage adapter/battery charger included	
Installed battery	Rechargeable NiCd pack (4 to 6 Vdc)
Operating time	4 hours
Charging time	4 hours (unit OFF) 12 hours (unit ON)
Refresh Cycle	8 to 14 hours (to keep NiCd battery capacity optimal)
Environmental	
Temperature	0°C to 50°C (32°F to 122°F)
Environmental	MIL 28800E, Type 3, Class III, Style B
Enclosure	IP51 (dust, drip water proof)
Mechanical Data	
Size (H x W x D)	232 x 115 x 50 mm (9.1 x 4.5 x 2 inches)
Weight	1.1 kg (2.5 lbs.) incl. battery pack
Safety	
For measurements on 600 Vrms Category III installations, Pollution Degree 2 in accordance with EN61010-1 (1993) (IEC1010-1) ANSI/ISA S82.01-1994 CAN/CSA-C22.2 No. 1010.1-92 UL3111-1	
Surge protection	6 kV on input 1 and 2
Floating measurements	600 Vrms from any terminal to ground
Warranty	3 years parts and labor on Fluke 43B, 1 year on accessories

Ordering Information

Fluke 43Basic Power Quality Analyzer

Fluke 43B Power Quality Analyzer

Fluke 43Kit Power Quality Analyzer

Standard available in all models	43Basic	43B	43Kit
Fluke 43B Power Quality Analyzer	●	●	●
BP120 NiCd Battery Pack (installed)	●	●	●
PM 8907 Battery Charger/Line Voltage Adapter	●	●	●
TL24 Test Leads	●	●	●
AC20 Industrial Test Clips	●	●	●
TP4 Slim Reach Test Probe Set (4 mm)	●	●	●
BB120 Banana-to-BNC Adapter Plug	●	●	●
Model difference			
i200s AC Current Clamp (200 A)	●		
80i500s AC Current Clamp (500 A)		●	●
SW43W FlukeView® Software for Windows		●	●
PM 9080 Serial Interface/Adapter Cable		●	●
C120 Hard Case		●	●
TP1 Slim Reach Test Probe Set (flat blade)		●	●
AC85 Large Jaw Alligator Clips		●	●
Power Quality Video		●	●
Users Manual / Application Guide		●	
Manual CD 43B	●		●
Promotional Model Numbers			
VPS40 Voltage Probe		●	
Fluke 61 IR Thermometer		●	
Fluke VR101S Voltage Event Recorder System			●

Optional Accessories

C789 Soft Meter Case

80i110s AC/DC Current Clamp (100 A)

i1000s AC Current Clamp (1000 A)

i2000sflex AC Current Clamp (2000 A)

i3000s AC Current Clamp (3000 A)

80TK Thermocouple Module (Type K)

80T-IR Infrared Temperature Probe

80T-150U Universal Temperature Probe

PAC91 Printer Adapter Cable

TL76 All-in-one Test Lead Set

TL910 Electronic Test Probe Set

TL220 SureGrip Industrial Test Lead Kit

TP220 SureGrip Test Probe Set

AC220 SureGrip Alligator Clip Set

AC280 SureGrip Hook Clip Set

AC283 SureGrip Pincer Clip Set

AC285 SureGrip Alligator Clip Set

Specifications Fluke 41B Power Harmonics Analyzer



Ordering Information
Fluke 41B Power Harmonics Analyzer

Included Accessories
80i-500s AC Current Probe
TL24 Test Leads
AC20 Test Clips
TP20 Test Probes, Operator's manual
Isolated RS-232 Cable, FlukeView
Software, Software Manual

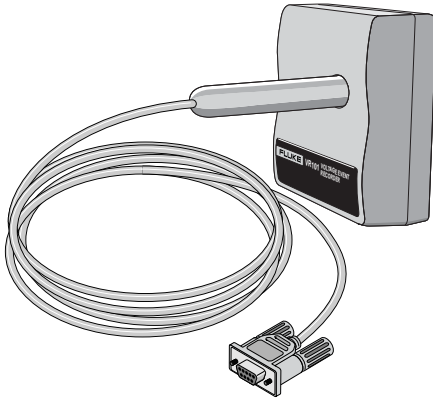
Function	Ranges	Accuracy
Volts		
True rms voltage (ac + dc)	5.0V to 600V rms (933V peak)	±(0.5% + 2 digits) (Add 2 digits if <15V rms)
Current (1 mV/A isolated input)		
True rms current (ac + dc)	1.00A to 1000A rms (2000A peak)	±(0.05% + 3 digits) + probe specs
Watts/Volts-Amps (1 mV/A isolated input)		
Active W (VA) (ac + dc)	0.0W (VA) to 600kW (kVA) (2000kW peak)	±(1%+4 digits)+ probe specs
Harmonics (harmonic level >5% using smooth 20)		
Volts	Fundamental to 13th harmonic At 31st	±(2% + 2 digits) ±(8% + 2 digits)
Amps or watts	Fundamental to 13th harmonic At 31st	±(3% + 3 digits) + probe specs ±(8% + 3 digits) + probe specs
Other		
Frequency	Fundamental 6.0 Hz to 99.9 Hz	± 0.3 Hz
Input Bandwidth	DC, 6 Hz to 2.1 kHz	
Crest Factor (CF)	1.00 to 5.00	±4%
Power Factor (PF)	0.00 to 1.00	± 0.02
COS Δ (DPF)	0.00 to 1.00	± 0.04 to ±0.03 (0.30 to 0.89) ± 0.02 (0.90 to 1.00)
Phase	-179° to 180°	
K-factor (KF)	1.0 to 30.00	± 10%
% THD-F	0.00% to 99.9%	±(0.03 reading + 2.0%)
% THD-R	0.00% to 99.9%	±(0.03 reading + 2.0%)

Power	
Battery type/life	4 Alkaline C cells ANSUNEDA -14A, IEC-ER 14 / 48 hr typical (continuous)
Mechanical	
Size / Weight	234mm 1x100mm Wx 64 mmD /0.9 kg
Enviremental	
Shock & Vibration	Per MEL-T-28800, Class 3
Case	Drip-proof and Dorst-Proof per IEC, IP 52
Safety	
	IEC 1010-1 Installation category III, Material Group II, 600V, Tested in UL 1244
Warranty	1 year

Features Fluke 41B Power Harmonics Analyzer

- Direct 3Ø readout from simple single-phase measurement
- True-rms voltage from 5.0V to 600V
- True-rms current from 1A to 500A (1000A with optional probe)
- Peak, DC, and Crest Factor
- Total harmonic distortion (% THDF and % THDR)
- Active power from 10W to 300kW (600kW with optional probe)
- Apparent power (VA) & Reactive Power (VAR)
- Total power factor (PF)
- Displacement power factor (DPF) Cos Ø
- K-factor
- Frequency from 6Hz -99.9Hz (fundamental)
- Harmonics to 31st
- Phase angle of fundamental and harmonics
- Waveform and spectrum displays
- Record mode - MIN, MAX and AVG
- Zoom mode on harmonics bargraph
- Handheld, 1 kg (2 lb)
- Surge protection, 6kV per IEC 1010-1 CAT III - 600V
- Marks - CE, TUV/GS
- Includes 500A current clamp and video
- Memory for 8 complete data sets
- Optically isolated RS-232 interface
- FlukeView™ PC Software on Windows and DOS incl.

Specifications Fluke VR101S Voltage Event Recorder System



Ordering Information

(Note: At least one VR101S is required for proper operation)
 VR101S Voltage Event Recorder System
 VR101 Voltage Event Recorder

Computer Hardware Requirements for EventView software

IBM PC or 100% compatible, with Windows® 3.1 or Windows 95 installed and operating
 At least one free RS-232 serial port
 A pointing device (recommended)
 2 MB hard drive space
 4 MB RAM (8 MB for Windows 95)

Included Accessories VR101S

VR101 Voltage Event Recorder, Optical interface cable, 9-to-25 pin adapter, EventView Software on two 3 1/2 inch floppies, Users Manual

Included Accessories VR101

VR101 Voltage Event Recorder, Instruction Sheet

Electrical			
(voltage versions, plug style, and manual languages are determined by country)			
Voltage Version	Operating range	Nominal frequencies	Power consumption
120 V	70 V to 140 V	50 Hz or 60 Hz	2 W
230 V	140 V to 270 V	50 Hz or 60 Hz	3 W
Sags, Swells and Outage Measurements			
Voltage Version	Range	Accuracy	Resolution
120 V Hot-to-neutral	0 to 200 V rms	±2 V rms	1 V rms
Neutral-to-ground	3 to 200 V rms	±2 V rms	1 V rms
230 V Hot-to-neutral	0 to 400 V rms	±4 V rms	2 V rms
Neutral-to-ground	3 to 120 V rms	±2 V rms	1 V rms
Transient Measurements			
	Range	Accuracy	Resolution
Hot-to-neutral	100 to 2500 V peak	±(10% reading + 10 V)	10 V
Neutral-to-ground	50 to 2500 V peak	±(10% reading + 10 V)	10 V
Phase angle	20° to 180°	±1°	1°
	200° to 360°		
Minimum pulse width: 1 µs			
Frequency Measurements			
	Range	Accuracy	Resolution
	45 to 65 Hz	±0.1 Hz (3 cycles min)	0.1 Hz
Time Measurements: Events < 1 second			
	Accuracy	Resolution	
Hot-to-neutral	±0.5 cycles	0.5 cycles	
Neutral-to-ground	±1 cycle	1 cycle	
Events ≥ 1 second (time stamp)			
	Accuracy	Resolution	
	±(2 sec/day + 8 sec)	8 sec	

General Specifications	
Memory size	4000 events
Power	
Battery type	3.5V lithium (non-replaceable)
Battery life	7 years
Mechanical	
Physical size	85 mm x 68 mm x 35 mm
Weight	120g
Environmental	
Operating temperature	-40 to 70°C
Relative Humidity	0 to 95% (non-condensing)
Safety	
	CSA Certification pending, CSA-NRTL (to UL 3111) certification pending, Complies with requirements of EN61010-1:1993
Warranty	1 year

Fluke Corporation
 P.O. Box 9090
 Everett, WA USA 98206

Fluke Europe B.V.
 P.O. Box 1186
 5602 BD Eindhoven
 The Netherlands

Fluke (UK) Ltd
 Industrial Sales
 The Metro Centre
 Dwight Road, Watford
 WD1 8HG
 United Kingdom
 Tel.: 020 794 20 700
 Fax: 020 794 20 701
 E-mail: industrial@uk.fluke.nl

For more information call:
 In the U.S.A. (800) 443-5853
 or Fax (425) 456-5116
 In Europe/M-East/Africa
 +31 (0)40 2 675 200
 or Fax +31 (0)40 2 675 222
 In Canada (905) 890-7600
 or Fax (905) 890-6866
 From other countries
 +1 (425) 456-5500
 or Fax +1 (425) 456-5116

Visit us on the world wide web at:
<http://www.fluke.com>

© Copyright 2001 Fluke Corporation.
 All rights reserved.
 Printed in the Netherlands 06/03.
 Data subject to alteration without notice.
 Pub_ID: 10630-eng
 Rev. 01

Visit us on the world wide web at:
<http://www.fluke.co.uk>