



Datasheet



0370 330 6021
www.sunbeltrentals.co.uk

Power Quality Analyzers

Analyze your power network quickly

Features

	435	434	43B
Application	Three-phase		Single-phase
Inputs	4 voltage and 4 current (for 3 phases and neutral)		1 voltage and 1 current
Measurements			
Vrms, Arms, Hz, W, VAR, VA, PF, Cos ϕ (DPF), Crest Factors	●	●	●
Harmonics and THD (V,A,W), k-factor	●	●	●
Inter-harmonics	●	●	-
kWh and kVARh, kVAh, demand interval	●	●	-
Flicker (Pit, Pst, PF5)	●	●	-
Unbalance	●	●	-
Mains signaling	●	Optional*	-
Recorder/AutoTrend	●/●	●/●	●/-
Logger	●	Optional*	-
System-Monitor (EN50160 compliance)	●	●	-
Real time scope/Phasor diagrams	●/●	●/●	●/-
Dips and swells/Half cycle based	●/●	●/●	●/-
Transient display	●	●	●
Inrush current	●	●	●
IEC61000-4-30, -4-7, -4-15 compliance	Class A	Class B	-
Built-in general purpose Scope and DMM	-	-	●
Memory (screens/data)	50/10	50/10	20 for screens and data
Memory size	16MB**	8 MB**	-
FlukeView software and interface cable	●	●	Depending on configuration
Power Log Software	●	Optional*	-
EN61010 safety rating	600 V CAT IV/1000 V CAT III		600 V CAT III
Current clamps included	4 x i430 Flex	4 x i400S	i400S

* Optional functionality can be added with Logger upgrade kit. For details see ordering information.

** Logger uses user-configurable shared memory.

Fluke 43B

A choice of three configurations

	43Basic	43B	43Kit
i400s Current Clamp	●	●	●
SW43W FlukeView Software		●	●
OC4USB Serial Interface Adapter Cable (USB)		●	●
C120 Hard Case	-	●	●
VPS40 Voltage Probe		●	
Fluke 61 IR Thermometer		●	
VR101S Voltage Event Recorder			●

All configurations are delivered with test leads, probes, clips, battery pack, banana-to-BNC adapter and line voltage adapter/battery charger.

Check the Fluke web site for Technical Specifications and Application Notes with the Fluke power quality analyzers.

Fluke. *Keeping your world up and running.™*

Fluke (UK) Ltd.
52 Hurricane Way
Norwich
Norfolk
NR6 6JB
United Kingdom
Tel.: (020) 7942 0700
Fax: (020) 7942 0701
E-mail: industrial@uk.fluke.nl

Visit us on the worldwide web at:

www.fluke.co.uk

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

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

For more information call:
In the U.S.A. (800) 443-5853
or Fax (425) 446 -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) 446 -5500
or Fax +1 (425) 446 -5116

Visit us on the worldwide web at:

www.fluke.com



In industry, healthcare, and business – in fact wherever electrical and electronic equipment is indispensable – power quality plays a critical role in maintaining continuity. Non-linear loads, switching, load changes and equipment problems can result in poor power quality. Poor power quality is not only costly in terms of wasted energy and unnecessary downtime, it's also dangerous and increases risk of equipment failure.

Fluke has an unrivalled range of power quality analyzers to help you maintain high-quality power systems. The tools give you the power to analyze every parameter, power-related event or anomaly faster, safer and in more detail than ever before.

430 Series Three-phase Power Quality Analyzers

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Fluke 435



Fluke 434

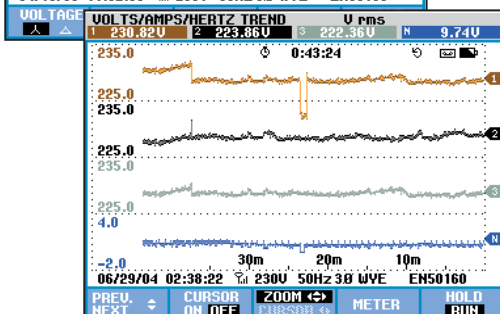


On all inputs



True RMS

Volts/Amps/Hertz				
	L1	L2	L3	N
V _{rms}	230.80	223.86	222.38	9.74
V _{pk}	324.8	326.0	316.0	17.3
CF	1.41	1.46	1.42	1.78
Hz	49.994			
	L1	L2	L3	N
A _{rms}	286	275	282	2.2
A _{pk}	427	421	424	4.0
CF	1.49	1.53	1.50	1.79



Pinpoint power quality problems faster, safer and in greater detail

The Fluke 435 and 434 three-phase power quality analyzers help you locate, predict, prevent and troubleshoot problems in power distribution systems. These easy-to-use handheld tools have many innovative features to give you the details to pinpoint problems faster and safer.

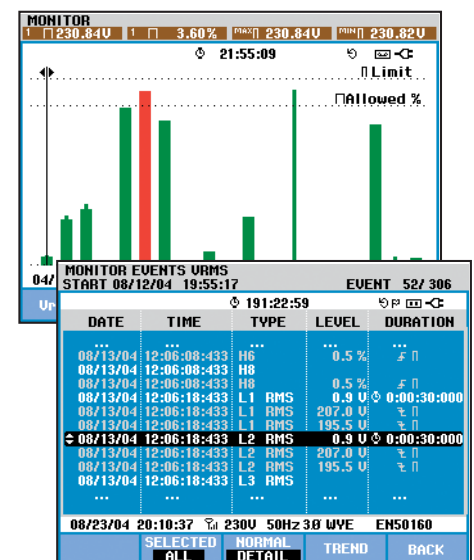
- Complete three-phase troubleshooting tool: measures virtually every power system parameter: voltage, current, frequency, power, power consumption (energy), unbalance and flicker, harmonics and inter-harmonics. Captures events like dips and swells, transients, interruptions and rapid voltage changes.
- The Fluke 435 features 0.1 percent voltage accuracy making it fully compliant with the IEC 61000-4-30 Class A standard
- Logger: record the detail you need Detailed, user-configurable long-time recording gives you the MIN, MAX and AVG readings of up to 100 parameters on all 4 phases with selectable averaging time down to 0.5 seconds. Enough memory is available to record 400 parameters with 1 minute resolution for up to a month.
- Four channels: simultaneously measures voltage and current on all three phases and neutral.
- AutoScaling: easier trend analysis with automatic scaling of the vertical axis you will always use the full display to view the waveforms.
- Automatic transient display: captures up to 40 dips, swells, interruptions or transients automatically.
- Meets the stringent 600 V CAT IV, 1000 V CAT III safety standard required for measurements at the service entrance.
- Rugged, handheld instrument operates for more than 7 hours on included rechargeable NiMH battery pack. Menu-driven interface simplifies operation.
- Extensive data analysis possibilities. Cursors and zoom can be used 'live' while taking the measurements, or 'offline' on stored measurement data. The stored measurements can also be transferred to a PC with FlukeView software (included with Fluke 435 and 434).
- The Fluke 435 comes with Power log software to analyse recorded data and to create reports.
- Complete package includes everything to get started: 4 current clamps, 4 flex clamps with Fluke 435, 5 voltage test leads and clips, line adapter/battery charger and hard case.
- Complies with IEC 61000-4-30 measurement standards.

AutoTrend - Quickly see the trend

Unique AutoTrend gives you fast insight into changes over time. Every displayed reading is automatically and continuously recorded without having to set up threshold levels or interval times, or having to manually start the process. You can quickly view trends in voltage, current, frequency, power, harmonics or flicker on all three phases plus neutral. And you can analyze the trends using the cursors and zoom function - even while background recording continues.

SystemMonitor - Check performance against EN50160 with ease

With a single push of a button, the unique System-Monitor gives you an overview of power system performance, and checks the compliance of incoming power to EN50160 limits or to your own custom specifications. The overview is shown on a single screen, with color-coded bars clearly indicating which parameters fall outside the limits.

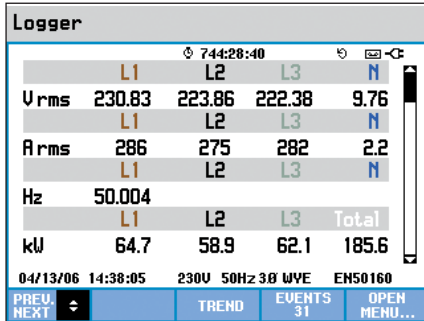


The System-Monitor overview screen gives instant insight into whether the voltage, harmonics, flicker, frequency and the number of dips and swells fall outside the set limits. A detailed list is given of all events falling outside the set limits.

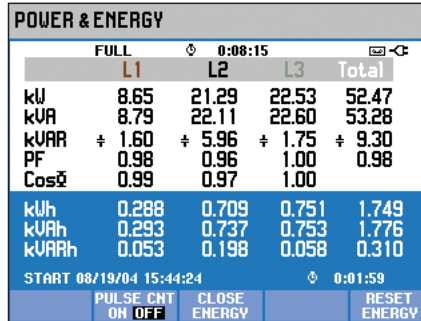
AutoTrend automatically records all displayed parameters in the background.

430 Series Three-phase Power Quality Analyzers

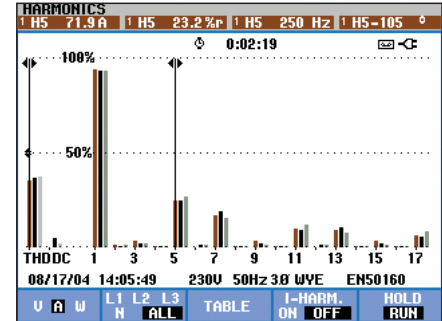
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Logging function allows you to customize measurement selections and provides instantaneous analysis of user-selectable parameters.



Measure and record power (W), VA and VARs. The 434 adds the ability to record energy consumption.



Track harmonics up to the 50th, and measure and record THD in accordance with IEC61000-4-7 requirements



Fluke 435 with flex clamps

Included Accessories

Hard carrying case C430 (434)/ Water-tight hard case with rollers C435 (435)
4 current clamps, i400s, CAT IV 600 V
4 current clamps, i430-Flex-4pk, CAT IV 600 V (435)
5 Test leads, 4black, 1 green
Battery Charger Eliminator, BC430
FlukeView Software, SW43W
Power Log Software (435)
Optical Cable for USB, OC4USB
Color localization set, WC100
Getting Started printed
User Manual (CD-ROM)

Ordering information

Fluke 435	Power Quality Analyzer (three-phase) with Logger Function
Fluke 434	Power Quality Analyzer (three-phase)
Fluke 434Kit	Logger Upgrade Kit: Adds the Logger Function of the 435 to the 434
OC4USB	Serial Interface Adapter/Cable (USB)
I5SPQ3	Set of 3, 5A AC current clamp
I430-flex-4pk	set of 4, 3000 A flexclamps
PM9080	Serial Interface Adapter/Cable (RS232)
SW43W	FlukeView Software
GPS430	GPS sync module for 430 Series

Specifications

(Check the Fluke web for detailed specifications)

Inputs		Number of inputs	4 voltage and current (3 phases + neutral)
		Maximum input voltage	1000 Vrms (6kV Peak)
		Maximum sampling speed	200 kS/s on each channel simultaneously
Volt/Amps/Hertz		Measurement range	Accuracy
		Vrms (AC+DC)	1...1000 V ± 0.1% of nominal voltage
		Vpk	1...1400 V ± 5% of Vnom
		Crest factor, voltage	1.0 ... > 2.8 ± 5%
		Arms (AC+DC)	0...20,000 A ± 0.5% ± 5 counts
		Apeak	0 - 5500 A ± 5%
		Crest factor, A	1 ... 10 ± 5%
		Hz	50Hz nominal ± 0.01Hz
		50Hz nominal	42.50 ... 57.50 Hz
		Dips and swells	Vrms (AC+DC) ² 0.0% ... 100% of Vnom ± 0.2% of nominal voltage
		Arms (AC+DC) ²	0 ... 20,000 A ² ± 1% ± 5 counts
		Harmonics	Harmonic (interharmonic) (n) DC, 1.50; (Off, 1.49) measured according to IEC 61000-4-7
		Vrms	0.0 ... 1000 V ± 0.05% of nominal voltage
		Arms	0.0 ... 4000 mV x clamp scaling ± 5% ± 5 counts
		Watts	depends clamp scaling and voltage ± 5% ± n x 2% or reading, ± 10 counts
		DC voltage	0.0 ... 1000 V ± 0.2% of nominal voltage
		THD	0.0 ... 100.0 % ± 2.5% V and A (± 5% Watt)
		Hz	0 ... 3500 Hz ± 1 Hz
		Phase angle	-360° ... +360° ± n x 1.5°
		Power and Energy	Watt, VA, VAR 1.0 ... 20.00 MVA ¹ ± 1% ± counts
		kWh, kVAh, kVARh	00.00 ... 200.0 GVAh ¹ ± 1.5% ± 10 counts
		Power Factor/ Cos φ / DPF	0...1 ± 0.03
		Flicker	Pst (1min), Pst, Plt, PFS 0.00 ... 20.00 ± 5%
		Unbalance	Volts 0.0 ... 5.0% ± 0.5%
		Current	0.0 ... 20% ± 1%
		Transient capture	Volts ± 6000 V ± 2.5% of Vrms
		Minimum detect duration	5 μs (200 kS/s sampling)
		Inrush mode	Arms (AC+DC) 0.000 ... 20.00 kA ¹ ± 1% of meas ± 5 counts
		Inrush duration (selectable)	7.5 s ... 30 min ± 20 ms (Pnom = 50 Hz)
		AutoTrend recording	Sampling 5 readings/sec continuous sampling per channel
		Memory	1800 min, max and avg points for each reading
		Recording time	Up to 450 days
		Zoom	Up to 12x horizontal zoom
		Memory	Screens & data 50, shared memory divided between logging, screens and data sets
		Standards	Measurement methods used IEC61000-4-30 class A; EN50160; IEC 61000-4-15; IEC 61000-4-7

The advanced functions Interharmonics, Energy, Transients and Inrush are optional for the Fluke 433 and standard available on the Fluke 434.

¹ depending clamp scaling

² Value is measured over 1 cycle, commencing at a fundamental zero crossing, and refreshed each half-cycle

Battery life: > 7 hours with rechargeable NiMH (installed); **Battery charging time:** 4 hours typical

Safety: EN61010-1 (2nd edition) pollution degree 2; 1000 V CAT III / 600 V CAT IV

Case: Rugged, shock proof with integrated protective holster, IP51 (drip and dust proof)

Shock: 30 g; Vibration: 3g according to MIL-PRF-28800F Class 2

Operating temperature: 0°C to +50°C

Size (HxWxD): 256 mm x 169 mm x 64 mm; **Weight:** 1.1 kg

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Sunbelt Rentals UK Test & Monitoring

242-252 London Road, Staines, London TW18 4JQ

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REDCAR

Sunbelt Rentals UK Test & Monitoring

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