

Datasheet



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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, powerrelated event or anomaly faster, safer and in more detail than ever before.

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 (Plt, 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.™

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430 Series Three-phase Power Quality Analyzers

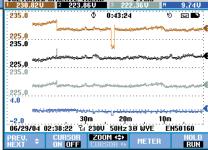


Fluke 435



Volts/Amps/Hertz

		4:15		9 🔤	Þ
	L1	L2	L3	N	
Vrms	230.80	223.86	222.38	9.74	
Vpk	324.8	326.0	316.0	17.3	
CF	1.41	1.46	1.42	1.78	
Hz	49.994				
	L1	L2	L3	N	
Arms	286	275	282	2.2	
Apk	427	421	424	4.0	
CF	1.49	1.53	1.50	1.79	
04/13/06	11:02:05 T	å 230V-50H	z 3.0' WYE	EN50160	
	VULISTHE	PS/HERTZ		Vrms	
	1 230.820	2 223.		222.36V	N
	235.0		© 0:43	:24	- 19



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.

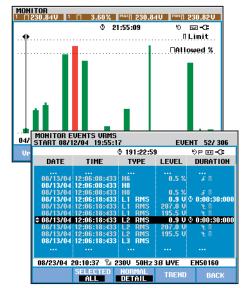
- Complete three-phase troubleshooting tool: measures virtually every power system parameter: voltage, current, frequency, power, power consumption (energy), unbalance and flicker, harmonics and inter-harmonics. Captures events like dips and swells, transients, interruptions and rapid voltage changes.
- 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.

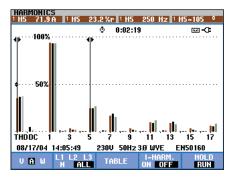
AutoTrend automatically records all displayed parameters in the background.

Logger				
			:40	୬ ଇ-ଫ
	L1 -	L2	L3	N 🕋
Vrms	230.83	223.86	222.38	9.76
	L1	L2	L3	N
Arms	286	275	282	2.2
	L1 -	L2	L3	N
Hz	50.004			
	L1 -	L2	L3	Total
ĸ₩	64.7	58.9	62.1	185.6
04/13/06	14:38:05	230V 50H	z 3.0' WYE	EN50160
PREU.		TREND	EVENT 31	S OPEN Menu

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

POWER & ENERGY				
	FULL	© 0:08:		⊡- ⊡
	L1	L2	L3	Total
kU kVA kVAR PF Cos¤	8.65 8.79 + 1.60 0.98 0.99	21.29 22.11 \$ 5.96 0.96 0.97	22.53 22.60 † 1.75 1.00 1.00	52.47 53.28 † 9.30 0.98
k⊍h kVAh kVARh	0.288 0.293 0.053	0.709 0.737 0.198	0.751 0.753 0.058	1.749 1.776 0.310
START 08	3719704 15:4		•	0:01:59
	PULSE CNT ON OFF	CLOSE ENERGY		RESET ENERGY

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

(Check the Fluke web for detailed specifications)

Specifications



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

Vpk 11400 V 5% of Vnom Crest factor, voltage 1.0 > 2.8 \pm 5% Arms (AC+DC) 020,000 A \pm 0.5% \pm 5 count Apeak 0 - 5500 A 5% Crest factor, A 1 10 \pm 5% Hz S0Hz nominal 42.80 57.50 Hz \pm 0.01 Hz Dips and swells Vrms (AC+DC) ² 0.0% 100% of Vnom \pm 0.2% of nominal Harmonics Harmonic (interharmonic) [n] DC, 1.50; (0ff, 1.49) measured according to IEC 61000-4-7 Vrms 0.0 1000 V \pm 0.05% \pm 5 counts Arms 0.0 1000 V \pm 0.05% \pm 1 counts Matts depends clamp scaling and voltage \pm 5% \pm n x 2% o Vms 0.0 1000 V \pm 0.2% of nomina \pm 1.6% \pm 10 counts DC voltage 0.0 1000 V \pm 0.2% of nomina \pm 1.5% \pm 10 counts DC voltage 0.0 1000 V \pm 0.2% of nomina \pm 1.6% \pm 2.6% V and A [\pm Hz 0 3500 Hz \pm 1 Hz \pm 1.5% \pm 10 counts \pm 0.000 2000 GVAh' \pm 1.5% \pm 10 counts W	Inputs	Number of inputs	4 voltage and current (3 phases + neutral)		
Volt/Amps/HertzVrms (AC+DC)Measurement rangeAccuracyVolt/Amps/HertzVrms (AC+DC)11000 V $\pm 0.1\%$ of nominaUpk11400 VS% of VnomCrest factor, voltage1.0>2.8 $\pm 5\%$ Arms (AC+DC)020,000 A $\pm 0.5\% \pm 5$ countApeak0 - 5500 AS%Crest factor, A1 10 $\pm 5\%$ HzSOHz nominal42.505750 Hz $\pm 0.01Hz$ Dips and swellsVrms (AC+DC) 2020,000 A' $\pm 1.0\% \pm 5$ countsHarmonicsHarmonic (interharmonic) (n)DC, 1.50; (0f, 1.49) measured according to IEC 61000-4-7Vrms0.0 1000 V $\pm 0.05\%$ of nominaArms0.0 4000 mV x clamp scaling $\pm 5\% \pm 5$ countsWattsdepends clamp scaling and voltage $\pm 5\% \pm 5$ countsDC voltage0.0 1000 V $\pm 0.2\%$ of nominaTHD0.0 1000 V $\pm 0.2\%$ of nominaHz0 3500 Hz ± 1 HzPower and EnergyWatt, VA, VAR1.02000 MVA' $\pm 1\% \pm 5\%$ Power and EnergyWatt, VA, VAR1.0 20.00 MVA' $\pm 1\%$ to countsFlickerPst (1min), Pst, Pt, PF50.00 2000 $\pm 5\%$ $\pm 0.5\%$ Power SartorCurrent0.0 2000 $\pm 1.5\%$ $\pm 1.0\%$ Transient captureVolts $\pm 6000 V$ $\pm 2.5\%$ of VrmsTransient captureVolts $\pm 10\%$ of meas ± 5 Minimum detect duration $5 \text{ ps} (200 \text{ K}^3 \text{ sampling})$ Imush modeInrush modeArms (AC+DC) 7.5% .	-	Maximum input voltage			
Volt/Amps/Hertz Vrms (AC+DC) 11000 V \pm 0.1% of nomina Vpk 11400 V 5% of Vnom Crest factor, voltage 1.0>2.8 \pm 5% Arms (AC+DC) 02.80 \pm 5% Arms (AC+DC) 020000 A \pm 0.5% \pm 5 count Apeak 0 - 5500 A \pm 5% Crest factor, A 110 \pm 5% Hz S0Hz nominal 42.5057.50 Hz \pm 0.01Hz Dips and swells Vrms (AC+DC) ² 0900% of Vnom \pm 0.2% of nomina Harmonics Harmonic (interharmonic) [n] DC, 1.50; (Df, 1.49] mesured according to IEC 61000-4-7 Vrms 0.00000 V \pm 0.05% of nomina Arms 0.00000 V \pm 0.05% of nomina Watts depends clamp scaling and voltage \pm 5% \pm 5 counts Watts depends clamp scaling and voltage \pm 1% \pm 2% on \pm 10 counts DC voltage 0.01000 V \pm 0.2% of nomina Marts depends clamp scaling and voltage \pm 1 Hz Phase angle -360° 4360° \pm 1 nx 1.5°		Maximum sampling speed	200 kS/s on each channel simultaneou	ısly	
Vpk11400 V 5% of VnomCrest factor, voltage $1.0 \dots > 2.8$ $\pm 5\%$ Arms (AC+DC) $\dots20,000$ A $\pm 0.5\% \pm 5$ countApeak $0 - 5500$ A 5% Crest factor, A $1 \dots 10$ $\pm 5\%$ HzSOHz nominal $42.80 \dots 57.50$ Hz ± 0.01 HzDips and swellsVrms (AC+DC) 2 $0.0\% \dots 100\%$ of Vnom $\pm 0.2\%$ of nomineArms (AC+DC) 2 $020,000$ A' $\pm 1\%$ HarmonicsHarmonic (interharmonic) (n)DC, 1.50 ; (0ft, 1.49) measured according to IEC 61000-4-7Vrms $0.0 \dots0000$ W' x clamp scaling and voltage $\pm 5\% \pm n$ x 2% of 10 countsArms $0.0 \dots0000$ mV x clamp scaling and voltage $\pm 5\% \pm n$ x 2% of 10 countsDC voltage $0.0 \dots1000$ W $\pm 0.2\%$ of nomineTHD $0.0 \dots1000$ W $\pm 2.5\%$ V and A [Hz 03000 Hz ± 1 HzPower and EnergyWatt, VA, VAR $1.0 \dots20,000$ MVa' $\pm 1.5\% \pm 10$ countsKWh, kVAh, kVARh $0.0 \dots2000$ $\pm 5\%$ UnbalanceVolts $0.0 \dots2000$ $\pm 5\%$ Volts $0.0 \dots2000$ $\pm 1\%$ $\pm 1\%$ Inrush duration (selectable) $7.5 \dots30\%$ $\pm 1\%$ of meas $\pm 5\%$ Inrush unde (AC+DC) $\pm 5\%$ $1.0 \dots2000$ $\pm 2.5\%$ for msArms $0.0 \dots2000$ $\pm 1.5\%$ $\pm 1.5\%$ Intrush unde tect duration $5 \text{ ps} (200 KS/s sampling)$ $\pm 1.5\%$ Invash duration (selectable) $7.5 \dots30\%$ $\pm 1.5\%$ of meas $\pm 5\%$ Invash unatio			Measurement range	Accuracy	
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Apeak0 - 5500 A5%Crest factor, A1 10 \pm 5%HzSOHz nominal42.50 57.50 Hz \pm 0.01 HzDips and swellsVrms (AC+DC) 2 0.0% 100% of Vnom \pm 0.2% of nominalArms (AC+DC) 2 0 20,000 A ¹ \pm 1% \pm 5 countsHarmonicsHarmonic (interharmonic) (n)DC, 1.50; (DK, 1.49) measured according to IEC 61000-4.7Vrms0.0 1000 V \pm 0.05% of nominalArms0.0 1000 V \pm 0.05% of nominalMattsdepends clamp scaling and voltage \pm 5% \pm 5 countsDC voltage0.0 1000 V \pm 0.2% of nominalTHD0.0 1000 V \pm 0.2% of nominalTHD0.0 1000 V \pm 0.2% of nominalWattsdepends clamp scaling and voltage \pm 5% \pm 10 countsTHD0.0 1000 W \pm 0.2% of nominalDC voltage0.0 1000 W \pm 0.2% of nominalPower and EnergyWatt, VA, VAR1.0 20.00 MVa ¹ \pm 1 hzHz0.0 2000 W \pm 0.2% of nominalPower factor / Cos q / DPF01 \pm 0.03Power and EnergyWatt, VA, VAR1.0 20.00 MVa ¹ \pm 1 1% ± 10 countsFlickerPst (1min), Pst, Pt, PFS0.00 20.00 \pm 0.5%UnbalanceVolts \pm 0.000 20.00 \pm 0.5%UnasianceVolts \pm 0.000 20.00 KA ¹ \pm 1% of meas ± 1%Minimum detect duration5 µs (200 KS/s sampling)Imush duration (selectable)AutoTrend recordin		Crest factor, voltage	1.0 > 2.8	± 5%	
Crest factor, A 1 0 1		Arms (AC+DC)	020,000 A	± 0.5% ± 5 counts	
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Arms [AC+DC] $^{\pm}$ 0 20,000 A' \pm 1% \pm 5 counts Harmonics Harmonic [interharmonic] [n] DC, 1.:50; [0ff, 1.:49] measured according to IEC 61000-4-7 Vrms 0.0 1000 V \pm 0.05% of nomin Arms 0.0 4000 mV x clamp scaling \pm 5% \pm 5 counts Watts depends clamp scaling and voltage \pm 5% \pm 5 counts DC voltage 0.0 1000 V \pm 0.2% of nomine THD 0.0 1000 V \pm 2.2% of nomine Hz 0 3500 Hz \pm 1 Hz Phase angle -360° $+360^{\circ}$ \pm n x 1.5° Power and Energy Watt, VA, VAR 1.0 20.00 MVA' \pm 1% \pm 5 to counts Flicker Pst [1min], Pst, Ph, PF5 0.00 20.00 MA' \pm 1% \pm 10 court Power and Energy Volts 0.0 20.00 MA' \pm 1% \pm 5% \pm 10 court Flicker Pst [1min], Pst, Ph, PF5 0.00 20.00 MA' \pm 1% \pm 5% of Vrms Transient capture Volts \pm 0.00 20.00 \pm \pm 1% of rmma ± 2.5% of Vrms Minimum detect duration S ps [200 KS/s sampling] \pm 1% of meas \pm 5 <th< td=""><td></td><td>Hz 50Hz nominal</td><td>42.50 57.50 Hz</td><td>± 0.01Hz</td></th<>		Hz 50Hz nominal	42.50 57.50 Hz	± 0.01Hz	
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Arms 0.0 4000 mV x clamp scaling $\pm 5\% \pm 5$ counts Watts depends clamp scaling and voltage $\pm 5\% \pm 1$ counts $\pm 5\% \pm 1$ counts DC voltage 0.0 1000 V $\pm 0.2\% \circ 1$ nomine $\pm 5\% \pm 1$ counts THD 0.0 1000 V $\pm 0.2\% \circ 1$ nomine THD 0.0 1000 % $\pm 2.5\% \lor 1$ and A (Power and Energy Watt, VA, VAR 1.0 20.00 MVA' ± 1 Hz Phase angle -360° $+360^{\circ}$ ± 1 kJ $\pm 0^{\circ}$ counts kWh, kVAR, kVAR 1.0 20.00 MVA' $\pm 1\% \pm 20^{\circ}$ counts Power and Energy Watt, VA, VAR 0.0200.0 GVA' $\pm 1.5\% \pm 10$ court Power Factor/Cose ϕ / DPF 01 ± 0.03 $\pm 5\%$ Unbalance Volts 0.02000 $\pm 5\%$ Unbalance Volts $\pm 6000 V$ $\pm 2.5\%$ of Vrms Minimum detect duration 5 µs [200 KS's sampling] $\pm 1\%$ of meas ± 5 Inrush duration (selectable) 7.8 s 30 min ± 20 ms (Fnom = AtoTrend recording Sampling 5 readings/sec continous sampling per channel	Harmonics	Harmonic (interharmonic) (n)	DC, 150; (Off, 149) measured according to IEC 61000-4-7		
Watts depends clamp scaling and voltage $\pm 5\% \pm n x 2\% o \pm 10 counts$ DC voltage 0.0 1000 V $\pm 0.2\% o f nomins$ THD 0.0 1000 % $\pm 2.5\% V$ and A (Hz 0 3500 Hz ± 1 Hz Phase angle -360° $\pm n S.5\%$ Phase angle -360° $\pm n S.5\%$ Power and Energy Watt, VA, VAR 1.0 20.00 MVA [†] ± 1 Hz Power 7 and Cos ϕ / DPF 01 ± 0.03 $\pm 0.3\%$ Power 7 and Cos ϕ / DPF 01 ± 0.03 $\pm 5\%$ Unbalance Volts 0.0 200.0 $\pm 5\%$ Unbalance Volts 0.0 200% $\pm 1\%$ Transient capture Volts $\pm 6000 V$ $\pm 2.5\%$ of Vrms Minimum detect duration 5 µs (200 kS/s sampling) $\pm 2.5\%$ of Vrms Inrush duration (selectable) 7.5 s 30 min ± 20 ms (Pnom = AutoTrend recording Sampling 5 readings/sec continous sampling per channel Memory 1800 min, max and avg points for each reading Recording time Up to 450 d		Vrms	0.0 1000 V	± 0.05% of nominal voltage	
DC voltage 0.0 1000 V ± 0.2% of nomine THD 0.0 100.0 % ± 2.5% V and A [: Hz 0		Arms	0.0 4000 mV x clamp scaling		
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Hz D 3500 Hz ± 1 Hz Phase angle -360° +360° ± n x 1.5° Power and Energy Watt, VA, VAR 1.0 20.00 MVA' ± 1% ± counts kWh, kVAh, kVARh 00.0 200.0 GVA' ± 1.5% ± 10 court Power Pactor/Cos q/ DPF 01 ± 0.03 Power Pactor/Cos q/ DPF 01 ± 0.03 Power Pactor/Cos q/ DPF 0.00 2000 ±5% Unbalance Volts 0.0 20% ± 0.5% Transient capture Volts 0.0 20% ± 1% Minimum detect duration 5 µs [200 KS/s sampling] ± 1% of meas ± 5 Inrush duration (selectable) 7.5 s 30 min ± 20 ms [Pnom = AttoTrend 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 450 days Zoom Up to 12x horizontal zoom 50. shared memory divided between logging.		DC voltage	0.0 1000 V	± 0.2% of nominal voltage	
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Power and Energy Watt, VA, VAR 1.0 20.00 MVA ¹ ± 1% ± counts kWn, kVAh, kVAR 00.00 200.0 GVAh ¹ ± 1.5% ± 10 court Power Pactor/Cos q / DPF 01 ± 0.03 Flicker Pst (1min), Pst, Plt, PP5 0.00 20.00 ±5% Current 0.0 5.0% ± 0.5% Current 0.0 5.0% ± 1% of meas ± 5 Minimum detect duration 5 µs (200 kS/s sampling) ± 1% of meas ± 5 Inrush mode Arms (AC+DC) 0.000 20.00 kA ¹ ± 1% of meas ± 5 AutoTrend recording Sampling 5 readings/sec continous sampling per channel Memory 1800 min, max and avg points for each reading Recording time Up to 450 days Zoom Zoom Up to 12x horizontal zoom 50. shared memory divided between logging.		Hz		± 1 Hz	
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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) ± 2.5% of Vrms Inrush mode Arms (AC+DC) 0.00020.00 kA ¹ ± 1% of meas ± 5 Inrush duration (selectable) 7.5 s30 min ± 20 ms (Fnom = AutoTrend recording Sampling 5 readings/sec continous 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 50. shared memory divided between logging.		Power Factor/ Cos φ / DPF		± 0.03	
Current 0.0 20% ± 1% Transient capture Volts ± 6000 V ± 2.5% of Vms Minimum detect duration 5 µs (200 kS/s sampling) ± 1% of meas ± 5 Inrush mode Arms (AC+DC) 0.000 20.00 kÅ' ± 1% of meas ± 5 Inrush duration (selectable) 7.5 s 30 min ± 20 ms (Fnom = AutoTrend recording Sampling 5 readings/sec continous sampling per channel Memory 1800 min, max and avg points for each reading Recording time Up to 450 days Zoom Zoom Up to 12x horizontal zoom Screens & data 50, shared memory divided between logging.	Flicker	Pst (1min), Pst, Plt, PF5	0.00 20.00 ±5%		
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Zoom Up to 12x horizontal zoom Memory Screens & data 50, shared memory divided between logging.		Memory	1800 min, max and avg points for each reading		
Memory Screens & data 50, shared memory divided between logging.		Recording time			
		Zoom	Up to 12x horizontal zoom		
screens and data sets	Memory	Screens & data	50, shared memory divided between logging, screens and data sets		

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 Three Years Warranty

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