

# Fluke 437 Series II 400 Hz Power Quality Monitor and Energy Analyzer



## Key features

The Fluke 437-II series helps you locate, predict, prevent and troubleshoot Power Quality Issues – 50Hz, 60Hz and 400Hz

- 400 Hz operation for use in avionic and military applications
- Shipboard power measurement system analyzes according to MIL-STD 1399 to automatically give a full evaluation of voltage, current and power
- Advanced Power Quality Health— At-a-glance power quality health data in real-time so you have the data you need, when you need it

## Product overview: Fluke 437 Series II 400 Hz Power Quality Monitor and Energy Analyzer

If you're dealing with aviation systems measuring key power quality parameters at 400Hz is a must. The Fluke 437-II provides that capability (and measures at 50 and 60Hz too) and is designed for users who need to quickly get to the source of the power quality problem, so they can minimize expensive downtime. The integrated shipboard power measurement system analyzes according to MIL-STD 1399 to automatically give a full evaluation of voltage, current and power according to the standard. This evaluation makes measurement and analysis as easy as can be. The measurement process, and the way the 437-II displays data has been optimized to provide to the most important information as quickly as possible. Multiple parameters are measured simultaneously and are displayed in formats that quickly describe overall power quality health while giving you the detailed information you need to make better maintenance decisions. Data can be quickly accessed as simple digital values, viewed as trend graphs that give you fast insight into changes over time, or viewed as

waveforms and phasor diagrams or analyzed. Data can also be organized into tabular format for viewing events where the magnitude, duration and time stamp enable rapid correlation to the problems you are experiencing.

### Locating, Predicting, Preventing and Troubleshooting Power Quality Issues—Up to 400Hz

Higher power frequencies mean smaller and lighter transformers and motors – a critical factor in avionic and military transport applications where weight is a primary concern. The Fluke 437 Series II Power Quality and Energy Analyzer can show you the cost of energy waste due to poor power quality and is ideal for characterizing power quality, conducting load studies and capturing hard-to-find voltage events over a user-defined period of time. Designed for capturing power quality measurements in avionic and military systems, Fluke 437 Series II is the must-have 400 Hz quality analyzer.

- 400 Hz operation according to MIL-STD 1399 for use in avionic and military applications
- Shipboard power measurement system analyzes according to MIL-STD 1399 to automatically give a full evaluation of voltage, current and power
- Get at-a-glance power quality health data in real-time so you can make better maintenance decisions
- Measure all three phases and neutral with the included flexible current probes
- Quickly see how much money you're losing due to energy waste in terms of real dollars
- Easily see how motor startups are affecting motor drive performance
- Highest safety rating in the industry: 600 V CAT IV/1000 V CAT III rated for use at the service entrance
- Fluke Connect® compatible\* – view data locally on the instrument, via Fluke Connect mobile app and PowerLog 430-II desktop software

**Advanced Power Quality Health**—At-a-glance power quality health data in real-time so you have the data you need, when you need it



Power wave data capture

The Fluke 437-II Power Quality Monitor and Energy Analyzer utilizes an integrated Power Quality Health summary that gives you an at-a-glance view of a complete range of power quality issues in real time. With a simple graphical presentation, complete with tolerance limits, you can quickly discover which power quality problems may be present on your electrical system. If you don't know where to start or what problems might exist, the advanced Power Quality Health summary will simplify the task and serves as a comprehensive starting point for further troubleshooting.

**PowerWave Data Capture**—Quickly identify how motor and generator startups are impacting electrical system performance

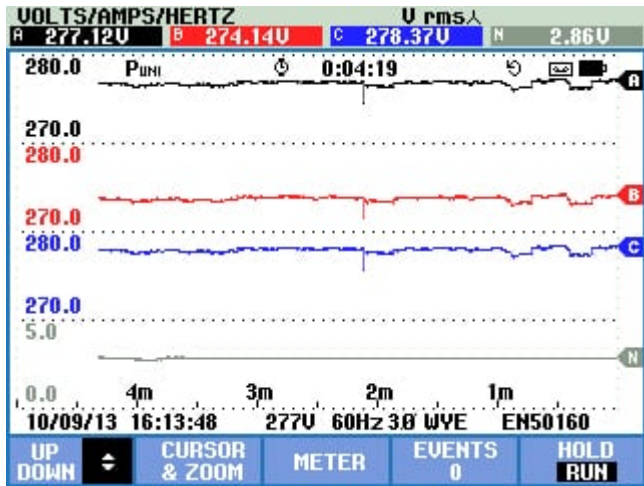
With PowerWave data capture you can capture three-phase high resolution voltage and current waveforms for up to five minutes along with detailed RMS voltage and current values. By analyzing the interaction of these values over time you can correlate the effects of voltage, current and frequency during the critical startup of motors and generators. PowerWave even goes beyond the standard power quality measurements allowing you to record half cycle rms values on 8 channels, frequency and instantaneous power ( $V_{rms1/2}$ ,  $A_{rms1/2}$ , W, Hz and scope waveforms for voltage, amps and watts)



### Power Inverter Efficiency

Power inverters take DC current and transform it into AC current, or vice versa. But, what percentage of that power going into the inverter comes out as usable current? The Fluke 437-II Power Monitor and Energy Analyzer has an integrated power inverter efficiency mode that allows users to better understand power inverter performance. Nothing is ever 100% efficient, and a power inverter’s efficiency will vary depending on how much power is being used at the time (with the efficiency generally being greater when more power is being used). Inverters can also lose performance over time and need to be checked. By comparing the input power with the output power, you can determine the system efficiency. With the Power Inverter Efficiency feature you can discover just how good your inverter is at converting your DC power to AC (or visa versa). Poor power efficiency may occur when the inverter is wrongly sized for the load.

### AutoTrend—Quickly see the trend



AutoTrend capability shows changes over time

With a unique AutoTrend feature you can get fast insight into changes over time. Every displayed reading is automatically and continuously recorded without having to set up threshold levels or having to manually start the process so you can quickly view trends in voltage, current, frequency, power, harmonics or flicker on all three phases plus neutral.

## Specifications: Fluke 437 Series II 400 Hz Power Quality Monitor and Energy Analyzer

Product Specifications				
Volt	Model	Measurement Range	Resolution	Accuracy
Vrms (ac+dc)		1 V to 1000 V phase to neutral	0.01 V	± 0.1% of nominal voltage****
Vpk		1 Vpk to 1400 Vpk	1 V	5% of nominal voltage
Voltage Crest Factor (CF)		1.0 > 2.8	0.01	± 5 %
Vfund			0.1 V	± 0.1% of nominal voltage
<b>Amps (accuracy excluding clamp accuracy)</b>				

Amps (ac+dc)	<b>i430-Flex 1x</b>	5 A to 6000 A	1 A	± 0.5% ± 5 counts
	i430-Flex 10x	0.5 A to 600 A	0.1 A	± 0.5% ± 5 counts
	1mV/A 1x	5 A to 2000 A	1A	± 0.5% ± 5 counts
	1mV/A 10x	0.5 A A to 200 A (ac only)	0.1 A	± 0.5% ± 5 counts
Apk	<b>i430-Flex</b>	8400 Apk	1 Arms	± 5 %
	1mV/A	5500 Apk	1 Arms	± 5 %
A Crest Factor (CF)		1 to 10	0.01	± 5 %
Amps <sup>½</sup>	<b>i430-Flex 1x</b>	5 A to 6000 A	1 A	± 1% ± 10 counts
	i430-Flex 10x	0.5 A to 600 A	0.1 A	± 1% ± 10 counts
	1mV/A 1x	5 A to 2000 A	1A	± 1% ± 10 counts
	1mV/A 10x	0.5 A A to 200 A (ac only)	0.1 A	± 1% ± 10 counts
Afund	<b>i430-Flex 1x</b>	5 A to 6000 A	1 A	± 0.5% ± 5 counts
	i430-Flex 10x	0.5 A to 600 A	0.1 A	± 0.5% ± 5 counts
	1mV/A 1x	5 A to 2000 A	1A	± 0.5% ± 5 counts
	1mV/A 10x	0.5 A A to 200 A (ac only)	0.1 A	± 0.5% ± 5 counts
<b>Hz</b>				
<b>Fluke 437 @ 50 Hz nominal</b>		42.500 Hz to 57.500 Hz	0.001 Hz	± 0.01 Hz
Fluke 437 @ 60 Hz nominal		51.000 Hz to 69.000 Hz	0.001 Hz	± 0.01 Hz
Fluke 437 @ 400 Hz nominal		340.0 Hz to 460.0 Hz	0.1 Hz	± 0.1 Hz
<b>Power</b>				
Watts (VA, var)	<b>i430-Flex</b>	max 6000 MW	0.1 W to 1 MW	± 1% ± 10 counts
	1 mV/A	max 2000 MW	0.1 W to 1 MW	± 1% ± 10 counts
Power Factor (Cos j/DPF)		0 to 1	0.001	± 0.1% @ nominal load conditions
<b>Energy</b>				
kWh (kVAh, kvarh)	<b>i430-Flex 10x</b>	Depends on clamp scaling and V nominal		± 1% ± 10 counts
Energy Loss	<b>i430-Flex 10x</b>	Depends on clamp scaling and V nominal		± 1% ± 10 counts Excluding line resistance accuracy
<b>Harmonics</b>				
Harmonic Order (n)		DC, 1 to 50 Grouping: Harmonic groups according to IEC 61000-4-7		
Inter-Harmonic Order (n)		OFF, 1 to 50 Grouping: Harmonic and Interharmonic subgroups according to IEC 61000-4-7		

Volts %	<b>f</b>	0.0 % to 100 %	0.1 %	$\pm 0.1\% \pm n \times 0.1\%$
	r	0.0 % to 100 %	0.1 %	$\pm 0.1\% \pm n \times 0.4\%$
	Absolute	0.0 to 1000 V	0.1 V	$\pm 5\% *$
	THD	0.0 % to 100 %	0.1 %	$\pm 2.5\%$
Amps %	<b>f</b>	0.0 % to 100 %	0.1 %	$\pm 0.1\% \pm n \times 0.1\%$
	r	0.0 % to 100 %	0.1 %	$\pm 0.1\% \pm n \times 0.4\%$
	Absolute	0.0 to 600 A	0.1 A	$\pm 5\% \pm 5$ counts
	THD	0.0 % to 100 %	0.1 %	$\pm 2.5\%$
Watts %	<b>f or r</b>	0.0 % to 100 %	0.1 %	$\pm n \times 2\%$
	Absolute	Depends on clamp scaling and V nominal	—	$\pm 5\% \pm n \times 2\% \pm 10$ counts
	THD	0.0 % to 100 %	0.1 %	$\pm 5\%$
Phase Angle	-360° to +0°	1°	$\pm n \times 1^\circ$	
<b>Flicker</b>				
Plt, Pst, Pst (1min) Pinst	0.00 to 20.00	0.01	$\pm 5\%$	
<b>Unbalance</b>				
Volts %	0.0 % to 20.0 %	0.1 %	$\pm 0.1\%$	
Amps %	0.0 % to 20.0 %	0.1%	$\pm 1\%$	
<b>Mains Signaling</b>				
Threshold Levels	Threshold, limits and signaling duration is programmable for two signaling frequencies	—	—	
Signaling Frequency	60 Hz to 3000 Hz	0.1 Hz		
Relative V%	0 % to 100 %	0.10 %	$\pm 0.4\%$	
Absolute V3s (3 second avg.)	0.0 V to 1000 V	0.1 V	$\pm 5\%$ of nominal voltage	
<b>General Specifications</b>				
Case	Design Rugged, shock proof with integrated protective holster Drip and dust proof IP51 according to IEC60529 when used in tilt stand position Shock and vibration Shock 30 g, vibration: 3 g sinusoid, random 0.03 g 2 /Hz according to MIL-PRF-28800F Class 2			
Display	Brightness: 200 cd/m <sup>2</sup> typ. using power adapter, 90 cd/m <sup>2</sup> typical using battery power Size: 127 mm x 88 mm (153 mm/6.0 in diagonal) LCD Resolution: 320 x 240 pixels Contrast and brightness: user-adjustable, temperature compensated			
Memory	16GB Wi-Fi SD card for standard models or 8GB SD card for /INTL models (SDHC compliant, FAT32 formatted), up to 32GB optionally. Screen save and multiple data memories for storing data including recordings (dependent on memory size).			
Real-Time Clock	Time and date stamp for Trend mode, Transient display, System Monitor and event capture			
<b>Environmental</b>				

Operating Temperature	0 °C ~ +40 °C; +40 °C ~ +50 °C excl. battery
Storage Temperature	-20 °C ~ +60 °C
Humidity	+10 °C ~ +30 °C: 95% RH non-condensing +30 °C ~ +40 °C: 75% RH non-condensing +40 °C ~ +50 °C: 45% RH non-condensing
Maximum Operating Altitude	Up to 2,000 m (6666 ft) for CAT IV 600 V, CAT III 1000 V Up to 3,000 m (10,000 ft) for CAT III 600 V, CAT II 1000 V Maximum storage altitude 12 km (40,000 ft)
Electro-Magnetic-Compatibility (EMC)	EN 61326 (2005-12) for emission and immunity
Interfaces	Mini-USB-B, Isolated USB port for PC connectivity SD card slot accessible behind instrument battery
Warranty	Three years (parts and labor) on main instrument, one year on accessories
<a href="#">View full family specifications »</a>	
*	± 5 % if ≥ 1 % of nominal voltage ± 0.05 % of nominal voltage if < 1% of nominal voltage
**	50Hz/60Hz nominal frequency according to IEC 61000-4-30
***	400Hz measurements are not supported for Flicker, Mains Signaling and Monitor Mode
****	For nominal voltage 50 V to 500 V

## Ordering information



### Fluke 437 Series II 400Hz

Fluke 437 Series II 400 Hz Power Quality Monitor and Energy Analyzer with current probes

Includes:

- BC430 Power Adapter
- International Plug Adapter Set
- BP290 (Single Capacity Li-ion Battery) 28 Wh (7 hours or more)
- TLS430 Test Lead and Alligator Clip Set
- WC100 Color Coding Clips and Regional Decals
- i430flex-TF, 24 inch (61 cm) Length, 4 Clamps
- 16GB Wi-Fi SD card
- PowerLog on CD (includes operator manuals in PDF format)
- USB Cable A-B Mini

### Fluke 437 Series II 400Hz Basic

Fluke 437 Series II 400 Hz Power Quality Monitor and Energy Analyzer without current probes

Includes:

- BC430 Power Adapter
- International Plug Adapter Set
- BP290 (Single Capacity Li-ion battery) 28 Wh (7 hours or more)
- TLS430 Test Lead and Alligator Clip Set
- WC100 Color Coding Clips and Regional Decals
- 16GB Wi-Fi SD card
- PowerLog on CD (includes operator manuals in PDF format)
- USB Cable A-B Mini

### Fluke 430-II motor analyzer upgrade kit

## Fluke 438-II Power Quality and Motor Analyzer/MA

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Includes:

- Firmware upgrade package to add motor analysis capabilities to existing Fluke 434, 435 and 437 Series II Power Quality Analyzers

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### Optional accessories

#### **Fluke BC430 Line Voltage Adapter/Battery Charger**

### Description

Provides power cord operation and charging for Fluke 430 Series Power Quality Analyzers.

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#### **Fluke BP291 4800 mAh High Capacity Li-Ion Battery**

#### **Fluke EBC290 External Battery Charger for BP290 and BP291**

#### **Fluke AC285 SureGrip™ Alligator Clips**

SureGrip™ accessories are designed to improve steadiness in slippery hands.

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