

FLUKE®

Power Quality



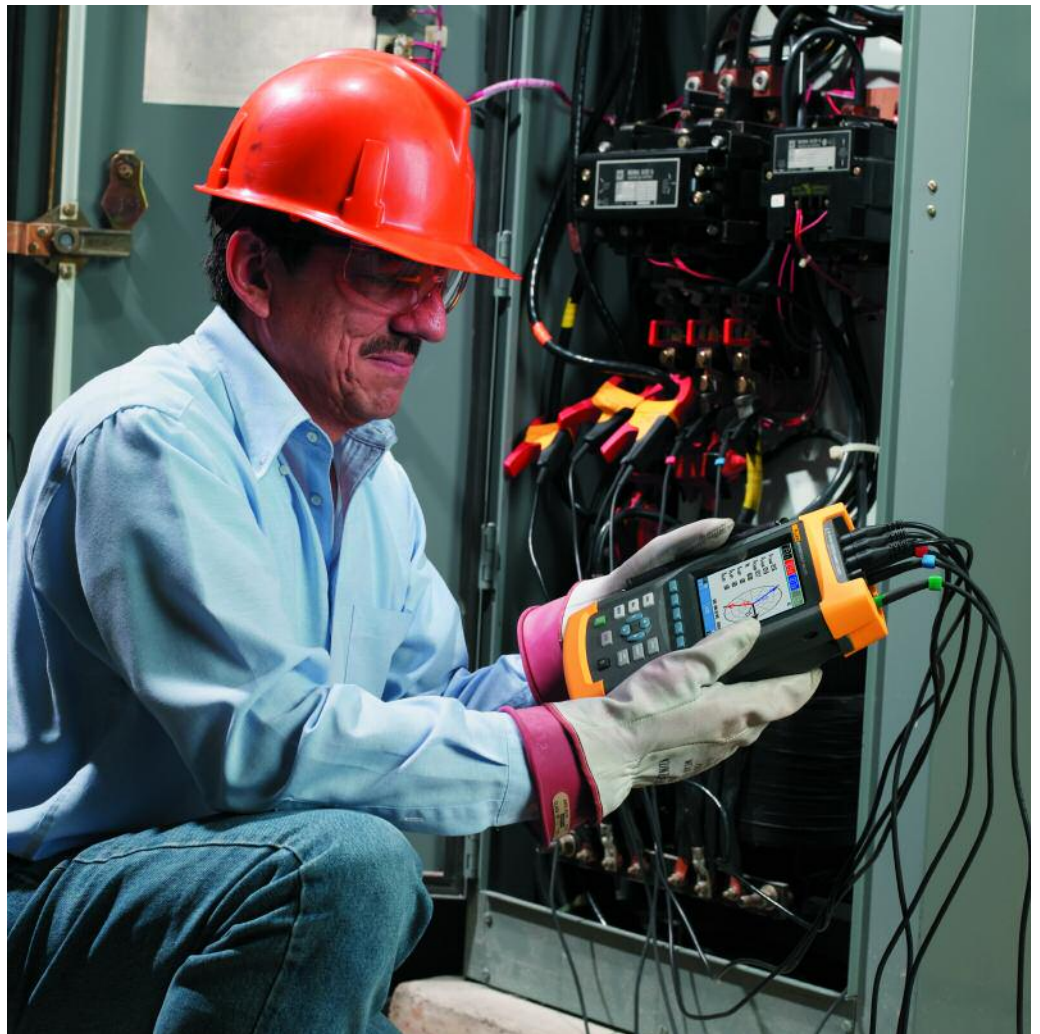
The 5-Star Solution

Pinpoint power quality problems faster
Fluke 430 Series Three-Phase Power Quality Analyzers

The Fluke 430 Series Three-Phase Power Quality Analyzers



**Locate,
predict,
prevent
and
trouble-
shoot
power
problems**



Measure all power parameters, find events and anomalies in seconds

In industry, healthcare, and business, in fact wherever electrical and electronic equipment is indispensable, power quality plays a critical role in maintaining uptime. 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.

Discover the 3-phase, 4-channel, 5-star power quality analyzers from Fluke to help you maintain efficient power systems. These tools give you the power to analyze every parameter, power-related event or anomaly faster, easier, safer and in more detail than ever before.

Analyze your power network quickly and easily.

Analyze details individually or monitor everything simultaneously.

- **Complete three-phase troubleshooting tool: Measure everything!**
Measure virtually every power system parameter. The 430 measures voltage, current, frequency, power, power consumption (energy), unbalance and flicker, tracks harmonics, inter-harmonics and captures events like dips and swells, transients, interruptions, rapid voltage changes and inrush.
- **Highest safety rating**
First on the market that meets the stringent CAT IV 600 V and CAT III 1000 V safety standard required for measurements at the service entrance.
- **AutoTrend: Don't waste time setting up recordings!**
Ever look at measurement data and wonder how it changes over time? Just press a single button to get a trend overview. No need to start a separate measurement since every measurement you see is always automatically recorded. Instantly zoom in on details and use cursors to analyze while recording continues.
- **Automatic transient display: Don't miss an event**
Capture up to 40 dips, swells, interruptions or transients automatically. When an event occurs, voltage and current waveform data are stored for all three phases and neutral allowing you to analyze timing relationships and perform a cause and effect analysis.
- **Four current and four voltage channels**
Four voltage inputs allow you to measure phase-to-phase, phase to neutral, and neutral to ground. Four current inputs allow measurements on three phases and neutral. This instrument also supports all common wiring schemes.
- **System-Monitor: Simultaneously check all power quality parameters**
One comprehensive overview gives immediate insight into your power system's quality, checking conformity to limits specified in EN50160 or to your own custom limits. Instantly see which parameters fall outside the limits and drill down into detailed event tables and trend graphs.
- **Fast and easy to use**
Menu-driven interface on the high-resolution color screen simplifies operation. The screen refreshes 5-times faster than any other power quality analyzer at 200 ms intervals.

Pinpoint power quality problems faster, easier, safer and in greater detail



The Fluke 430 Series Three-Phase Power Quality Analyzers

One tool to do the job

Locate, predict, prevent and troubleshoot.

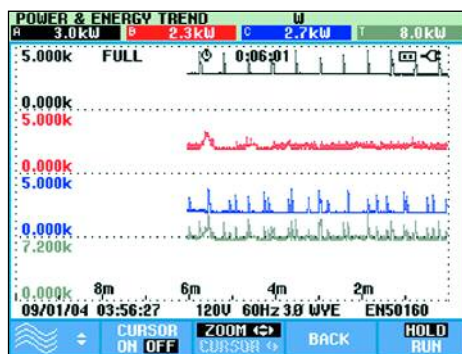
Highest safety rating

Designed to help protect you and your equipment against electrical shock and fire, the Fluke 430 Series analyzers, accessories and charger are all certified to meet the stringent safety standards for use in CAT IV 600 V and CAT III 1000 V environments. They are the first tools of their kind to carry the CAT IV rating so it can be used at virtually all power connections and outlets in low-voltage power distribution systems.



VOLTS / AMPS / HERTZ				
	A	B	C	N
Vrms	119.7	118.9	119.9	0.3
Vpk	131.7	130.6	155.9	0.4
CF	1.1	1.1	1.3	1.2
Hz	59.99			
Amp				
	A	B	C	N
A rms	432	412	360	46
A pk	562	494	648	87
CF	1.3	1.2	1.8	1.9

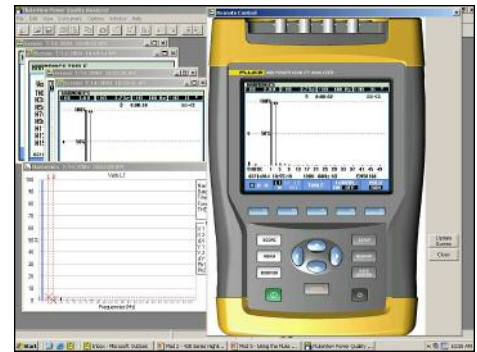
09/01/04 09:02:59 120V 60Hz 3Ø WVE ENS0160*



AutoTrend automatically records all displayed parameters in the background. Toggle between data and trend view and use cursors and zoom to analyze measurements without interrupting the recording.

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.



Perform custom analysis and create reports with FlukeView® Power Quality software. Measurement data can also be exported to common spreadsheet programs.

Extensive data analysis possibilities

The Fluke 430 Series provides three ways to analyze measurements. Cursors and zoom can be used 'live' while taking measurements, or 'offline' on stored measurement data. The stored measurements can also be transferred to a PC with FlukeView® software. This software's 'view' mode allows cursors and zoom to be used on stored datasets as if actually working with the instrument.

Reporting your findings

Use FlukeView® Power Quality Analyzer software, included as standard equipment with the 434, to collect screen captures, trend plots, or datasets when it's time to write a report.

Automatic transient display

Every time an event or distortion on the voltage waveform is detected, the instrument triggers and automatically stores voltage and current waveforms on all three phases and neutral.

- Capture up to 40 dips, swells, interruptions and transients.
- See voltage transients as high as 6 kV and as fast as 5 microseconds.

System-Monitor: Multi-parameter power quality health check on one display

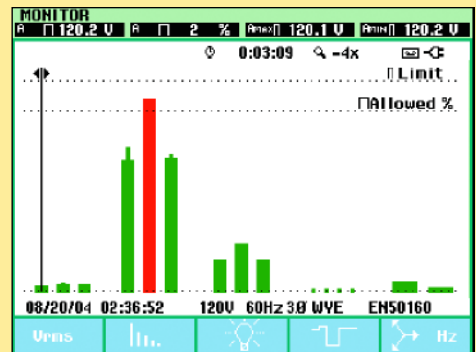
A single push of the MONITOR button brings up a single dashboard display of rms voltage, harmonics, flicker, interruptions, rapid voltage changes, swells, unbalance and frequency. The dashboard is updated live, showing compliance of each parameter to EN50160 limits or your own limits. Color-coded bars clearly show which parameters are inside (pass) or outside limits (fail). During a Monitor session, you can easily drill down to more detail of any parameter and view and capture its trend for a report.

Handheld unit delivered as a complete package

The Fluke 430 series includes:

- Four dual range 40 A and 400 A clamps and
- Five voltage test leads and clips
- Line adapter/battery charger
- Hard case for storage

Take it out of the box to start tackling your most challenging power quality problems immediately. The rugged construction and 7-hour battery operation make it ideal for demanding field work.



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.

MONITOR EVENTS URMS

START 09/01/04 07:51:38 EVENT 8 / 8

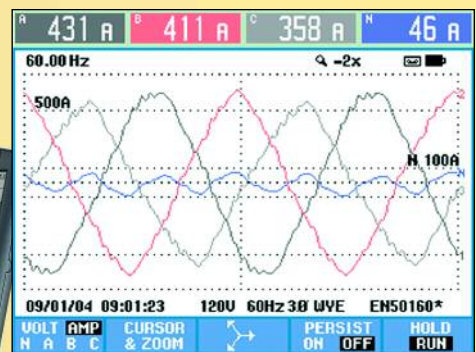
1:20:25

DATE	TIME	TYPE	LEVEL	DURATION
09/01/04	08:34:38:098	H21	0.5 %	0:00:10:000
09/01/04	08:36:38:098	H21	0.5 %	0:00:10:000
09/01/04	08:51:38:098	H21	0.5 %	0:00:10:000
09/01/04	08:53:38:098	H21	0.5 %	0:00:10:000
09/01/04	08:55:28:098	H21	0.5 %	0:00:10:000
09/01/04	09:02:58:098	H21	0.5 %	0:00:10:000
09/01/04	09:04:58:098	H21	0.5 %	0:00:10:000
09/01/04	09:08:38:098	H21	0.5 %	0:00:10:000

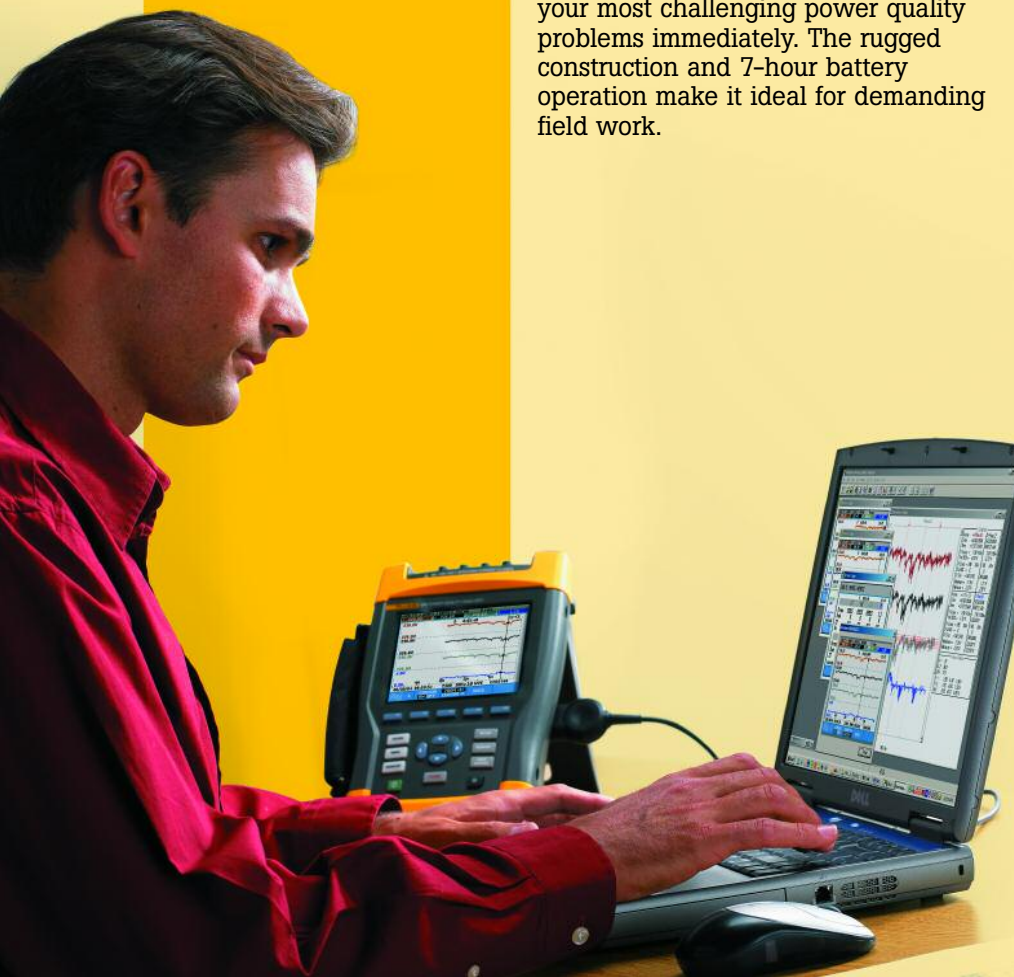
09/01/04 09:12:03 120V 60Hz 3Ø WYE EN50160

SELECTED ALL NORMAL DETAIL TREND BACK

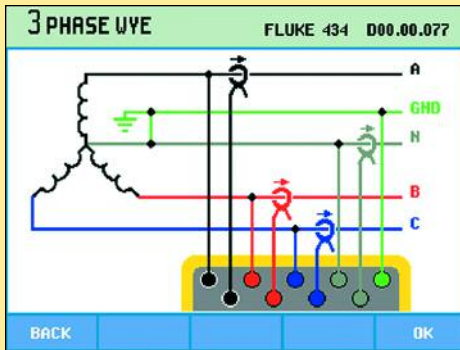
A detailed list is given of all events falling outside the set limits. By scrolling through the event list and selecting an event, the event can be analyzed in detail.



All relevant parameters are recorded so each event can be analyzed in detail. Cursors are automatically positioned at the selected event to easily view timing relationships.



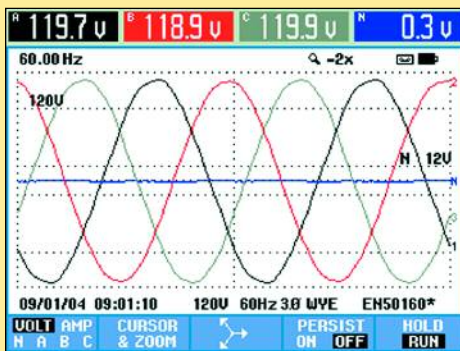
The Fluke 430 Series Three-Phase Power Quality Analyzers



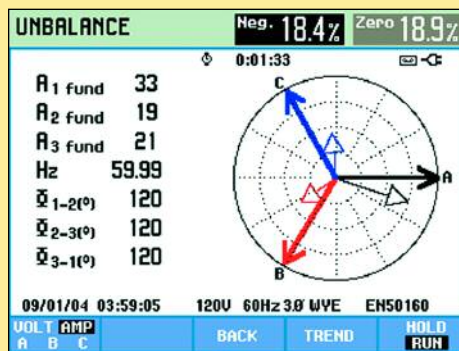
The full color display uses region specific industry-standard color-coding (user selectable) to correlate measurements with actual wiring.



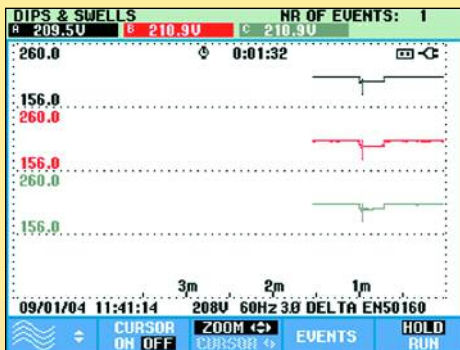
Simple menu structure with logical function grouping gives fast access to key measurements.



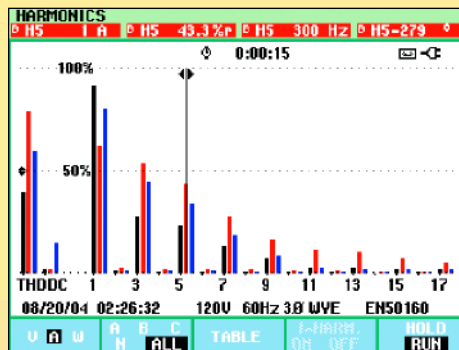
Scope view shows voltage and current waveforms for all three phases. You can toggle to a phasor diagram at any time.



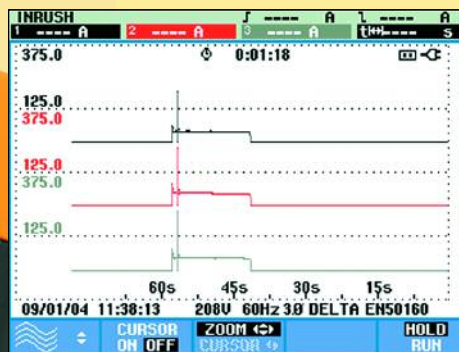
Phasor diagram shows voltage and current unbalance, and helps verify connections.



Record dips and swells as short as one half-cycle with min/max/avg readings.



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



Inrush function automatically triggers off of current and captures start up measurements on motors and other devices to help determine trip levels.



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

More power quality testing solutions

Fluke 43B power quality analyzer

Combines the capabilities of a power quality analyzer, a 20 MHz scope and a multimeter in one handheld tool.



- Measure power (W, VA, VAR) and power factor (PF, DPF)
- Calculate power and power factor on balanced 3-phase loads
- Measure voltage, current and power harmonics
- Measure dips and swells on a cycle-by-cycle basis for up to 24 hours
- Dual-channel, 20 MHz bandwidth digital oscilloscope
- Measure resistance, continuity and capacitance, and test diodes
- Measure temperature with optional temperature probe



Fluke VR101S

The smart tool for system voltage event monitoring

Detect dips, swells, transients down to 1 μ s, outages and frequency variations on single-phase mains. Featuring user-selectable capture limits that are downloaded from a PC using Fluke EventView™ software and optical interface cable (both supplied), the VR101S is simply plugged into the outlet under test.



Fluke offers a full suite of power quality test tools to locate, predict, prevent and troubleshoot power problems.

- Handheld troubleshooters for instant analysis
- Ready-to-use event loggers
- Full Disclosure power analyzers
- Power calibrators and standards backed by Fluke metrology expertise

The Fluke power quality set of products offer the highest level of performance and maintains the Fluke promise of rugged and reliable test tools.

Choose the right tool



Another solution to help reduce your maintenance costs.

Use the Raytek ThermoView Ti30 during power quality audits as part of a preventive maintenance program to improve your uptime.

ThermoView Ti30 thermal imager - the first affordable thermal imager specifically designed for predictive maintenance, with just what maintenance professionals need to do preventative maintenance and troubleshooting.

- Radiometric capabilities
- Fast target scanning
- Full-featured software for analysis and reporting
- Free 2-day training taught by Snell Infrared

Go to www.raytek.com
www.raytek.com for more information.

	434	433
Application	Three-phase	
Inputs	4 voltage and 4 current (for 3 phases and ground)	
Measurements		
Vrms, Arms, Hz, W, VAR, VA, PF, Cos φ (DPF), Crest Factors	•	•
Harmonics and THD (V,A,W), k-factor	•	•
Inter-harmonics	•	Optional*
kWh and kVARh (forward and reverse), kVAh, demand interval	•	Optional*
Flicker (Plt, Pst, PF5)	•	•
Unbalance	•	•
Recorder/AutoTrend	•	•
System-Monitor	•	•
Real time scope/Phasor diagrams	•	•
Dips and swells/Half cycle based	•	•
Transient display	•	Optional*
Inrush current	•	Optional*
EN50160 compliance	•	•
IEC61000-4-30 compliance	•	•
Memory (screens/data)	50/10	25/5 standard 50/10 Optional*
FlukeView software and interface cable	•	Optional*
Safety rating (Meets EN61010 European standards)	CAT IV 600 V/CAT III 1000 V	
Battery life	Up to 7 hours/charge	

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

Add the 434 functionality to the 433 with the Fluke 433UGK Upgrade Kit

- Advanced functions upgrade (Inter-harmonics, energy, transient display and inrush current, data memory extension)
- FlukeView® software SW43W
- USB Optical Cable

Fluke. Keeping your world up and running.

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Fluke Europe B.V.

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Eindhoven, The Netherlands

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In Europe/M-East/Africa (31 40) 2 675 200 or

Fax (31 40) 2 675 222

In Canada (800) 36-FLUKE or

Fax (905) 890-6866

From other countries (425) 446-5500 or

Fax (425) 446-5116

Web access: <http://www.fluke.com>

Ordering information

- | | |
|--------------|--------------------------------------|
| Fluke 433 | Power Quality Analyzer (three-phase) |
| Fluke 434 | Power Quality Analyzer (three-phase) |
| Fluke 433UGK | Upgrade Kit for Fluke 433 |