FLUKE®

TECHNICAL DATA

Fluke 1736 and 1738 Three-Phase Power Loggers

Dual Rated CAT III and CAT IV

KEY MEASUREMENTS

Automatically capture and log voltage, current, power, harmonics and associated power quality values

FLUKE CONNECT® COMPATIBLE*

View data locally on the instrument, via Fluke Connect mobile app and desktop software or through your facilities' WiFi infrastructure.

CONVENIENT INSTRUMENT POWERING

Power instrument directly from the measured circuit

HIGHEST SAFETY RATING IN THE INDUSTRY

600 V CAT IV/1000 V CAT III rated for use at the service entrance and downstream

*Not all models are available in all countries. Check with your local Fluke representative.

More visibility, reduced uncertainty and better power quality and energy consumption decisions

The Fluke 1736 and 1738 Three-Phase Power Loggers built with Fluke Connect® mobile app and desktop software compatibility give you the data you need to make critical power quality and energy decisions in real-time. The ideal test tools for conducting energy studies and basic power quality logging, the 1736 and 1738 automatically capture and log over 500 power quality parameters so you have more visibility into the data you need to optimize system reliability and savings.

An optimized user interface, flexible current probes, and an intelligent measurement verification function that allows you to reduce measurement errors by digitally verifying and correcting common connection errors makes setup easier than ever and reduces measurement uncertainty. Access and share data remotely with your team via the Fluke Connect® app so you can maintain safer working distances and make critical decisions in real-time, reducing the need for protective equipment, site visits and check-ins. You can also quickly and easily chart and graph measurements to help identify issues and create detailed reports with the included Fluke Energy Analyze Plus software package.

- **Measure all three phases and neutral** with included 4 flexible current probes.
- **Comprehensive logging:** More than 20 separate logging sessions can be stored on the instruments. In fact, all measured values are automatically logged so you never loose measurement trends. They can even be reviewed during logging sessions and before downloading for real-time analysis.
- **Capture dips, swells, and inrush currents:** includes event waveform snapshot and high resolution RMS profile, along with date, timestamp and severity to help pinpoint potential root causes of power quality issues.
- **Bright, color touch screen:** Perform convenient in-the-field analysis and data checks with full graphical display.
- **Optimized user interface:** Capture the right data every time with quick, guided, graphical setup and reduce uncertainty about your connections with the intelligent verification function.
- **Complete "in-the-field" setup through the front panel or Fluke Connect App:** no need to return to the workshop for download and setup or to take a computer to the electrical panel.

- **Fully integrated logging:** Connect other Fluke Connect devices to the Fluke 1738 to simultaneously log up to two other measurement parameters, virtually any parameter available on a Fluke Connect wireless digital multimeter or module.*
- **Energy Analyze Plus application software:** Download and analyze every detail of energy consumption and power quality state of health with our automated reporting.

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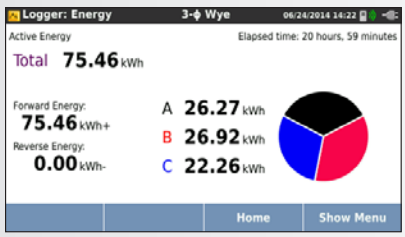
Applications

Load studies: verify electrical system capacity before adding loads

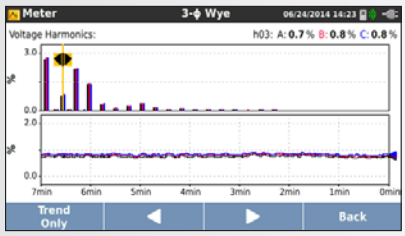
Energy assessments: quantify energy consumption before, and after improvements, to justify energy saving devices



Conduct multiple studies with one instrument; download while studies are in progress via USB stick or Fluke Connect mobile app.

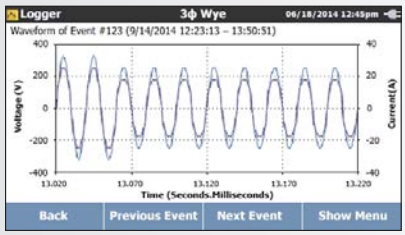
Suitable for NEC 220 load studies

Harmonics measurements: uncover harmonic issues that can damage or disrupt critical equipment



Discover the source of voltage and current distortion that may be affecting your equipment

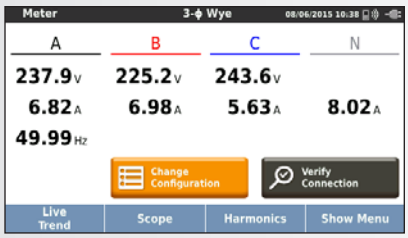
Voltage and current event capture: monitor for dips, swells and inrush currents that cause false resets or nuisance circuit breaker tripping



Capture voltage events and inrush currents with pre-defined thresholds

Log the most common parameters

Designed to measure the most critical three-phase power parameters, the 1736 and 1738 can simultaneously log rms voltage, rms current, voltage and current events, voltage and current THD, voltage and current harmonics up to the 50th harmonic, active power, reactive power, power factor, active energy, reactive energy, and more. With enough memory for more than a year of data logging, the 1736 and 1738 can uncover intermittent or hard-to-find issues that might otherwise have been missed.

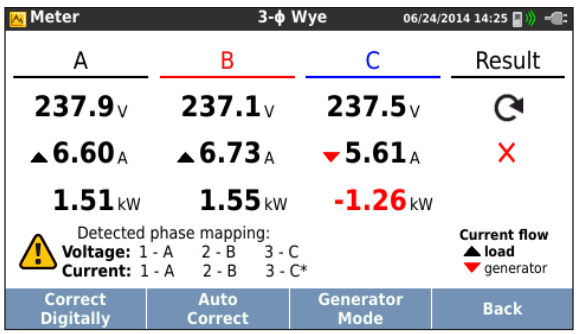


Simple setup means all available measured parameters are automatically selected during logging so you can be sure you have the data you need, even before you know you need it

Easy to use

The four current probes are connected separately; the instrument automatically detects and scales the probes. The thin current probes are designed to easily get through tight conductor spacing and are easily set to 150 or 1500 A for high accuracy in nearly any application. An innovative tangle-free flat voltage lead makes connection simple and reliable and the instrument's intelligent 'Verify Connection' feature automatically checks to make sure the instrument is connected correctly and can digitally correct common connection issues without having to disconnect measurement leads.

The detachable power supply can be conveniently and safely powered directly from the measured circuit—no more searching for power outlets or having to run multiple extension cords to the logging location.



Intelligent verification function that digitally corrects most common measurement connections

Data downloading couldn't be easier or more flexible:

- Download directly to a USB flash drive that plugs directly into the USB port of the instrument
- View measurements remotely via the Fluke Connect mobile app and desktop software, helping you maintain safer working distances and reducing the need for personal protective equipment and unnecessary site visits and check-ins*

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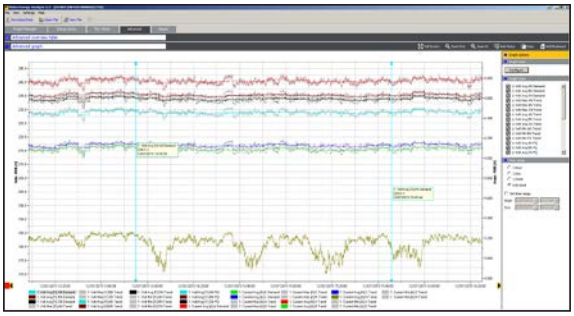
Analysis and Reporting

Capturing logged data is just one part of the task. Once you have the data, you need to create useful information and reports that can be easily shared and understood by your organization or customers. Fluke Energy Analyze Plus software makes that task as simple as possible. With powerful analysis tools and the ability to create customized reports in minutes you'll be able to communicate your findings and quickly solve problems so you can optimize system reliability and savings.



Quickly and easily compare any measured parameter

Specifications

Accuracy				
Parameter		**Range**	**Max. resolution**	**Intrinsic accuracy at reference conditions (% of reading + % of full scale)**
Voltage		1000 V	0.1 V	± (0.2 % + 0.01 %)
Current	i17xx-flex 1500 12″	150 A 1500 A	0.1 A 1 A	± (1 % + 0.02 %) ± (1 % + 0.02 %)
	i17xx-flex 3000 24″	300 A 3000 A	1 A 10 A	± (1 % + 0.03 %) ± (1 % + 0.03 %)
	i17xx-flex 6000 36″	600 A 6000 A	1 A 10 A	± (1.5 % + 0.03 %) ± (1.5 % + 0.03 %)
	i40s-EL clamp	4 A 40 A	1 mA 10 mA	± (0.7 % + 0.02 %) ± (0.7 % + 0.02 %)
Frequency		42.5 Hz to 69 Hz	0.01 Hz	± (0.1 %)
Aux input		± 10 V dc	0.1 mV	± (0.2 % + 0.02 %)
Voltage min/max		1000 V	0.1 V	± (1 % + 0.1 %)
Current min/max		defined by accessory	defined by accessory	± (5 % + 0.2 %)
THD on voltage		1000 %	0.1 %	± 0.5
THD on current		1000 %	0.1 %	± 0.5
Voltage harmonics 2nd ... 50th		1000 V	0.1 V	≥ 10 V: ± 5 % of reading < 10 V: ± 0.5V
Current harmonics 2nd ... 50th		defined by accessory	defined by accessory	≥ 3 % of current range: ± 5 % of reading < 3 % of current range: ± 0.15 % of range
Unbalance		100 %	0.1 %	± 0.2

Intrinsic uncertainty ± (% of reading + % of range)[1]					
Parameter	**Influence quantity**	**iFlex1500-12 150A/1500A**	**iFlex3000-24 300A/3000A**	**iFlex6000-36 600/6000A**	**i40s-EL 4A/40A**
Active Power P Active Energy E_a	PF ≥ 0.99	1.2 % + 0.005 %	1.2 % + 0.0075 %	1.7 % + 0.0075 %	1.2 % + 0.005 %
Apparent Power S Apparent Energy E_{ap}	0 ≤ PF ≤ 1	1.2 % + 0.005 %	1.2 % + 0.0075 %	1.7 % + 0.0075 %	1.2 % + 0.005 %
Reactive Power Q Reactive Energy E_r	0 ≤ PF ≤ 1	2.5 % of measured apparent power			
Power Factor PF Displacement Power FactorDPF/cosϕ	–	± 0.025			
Additional uncertainty in % of range[1]	V_{P-N} > 250 V	0.015 %	0.0225 %	0.0225 %	0.015 %

[1]Range = 1000 V x Irange

Reference conditions:

- **Environmental:** 23 °C ± 5 °C, instrument operating for at least 30 minutes, no external electrical/magnetic field, RH <65 %
- **Input conditions:** Cosϕ/PF=1, Sinusoidal signal f=50 Hz/60 Hz, power supply 120 V/230 V ±10 %.
- **Current and power specifications:** Input voltage 1 ph: 120 V/230 V or 3 ph wye/delta: 230 V/400 V Input current: I > 10 % of Irange
- **Primary conductor of clamps or Rogowski coil in center position**
- **Temperature coefficient:** Add 0.1 x specified accuracy for each degree C above 28 °C or below 18 °C

Electrical specifications	
Power supply	
Voltage range	100 V to 500 V using safety plug input when powering from the measurement circuit
	100 V to 240 V using standard power cord (IEC 60320 C7)
Power consumption	Maximum 50 VA (max. 15 VA when powered using IEC 60320 input)
Efficiency	≥ 68.2 % (in accordance with energy efficiency regulations)
Maximum no-load consumption	< 0.3 W only when powered using IEC 60320 input
Mains power frequency	50/60 Hz ± 15 %
Battery	Li-ion 3.7 V, 9.25 Wh, customer-replaceable
On-battery runtime	Four hours in standard operating mode, up to 5.5 hours in power saving mode
Charging time	< 6 hours
Data acquisition	
Resolution	16-bit synchronous sampling
Sampling frequency	10.24 kHz at 50/60 Hz, synchronized to mains frequency
Input signal frequency	50/60 Hz (42.5 to 69 Hz)
Circuit types	1-ϕ, 1-ϕ IT, split phase, 3-ϕ delta, 3-ϕ wye, 3-ϕ wye IT, 3-ϕ wye balanced, 3-ϕ Aron/Blondel (2-element delta), 3-ϕ delta open leg, currents only (load studies)
Data storage	Internal flash memory (not user replaceable)
Memory size	Typical 10 logging sessions of 8 weeks with 1-minute intervals and 500 events[1]
Basic interval	
Measured parameters	Voltage, current, aux, frequency, THD V, THD A, power, power factor, fundamental power, DPF, energy
Averaging interval	User selectable: 1 sec, 5 sec, 10 sec, 30 sec, 1 min, 5 min, 10 min, 15 min, 30 min
Averaging time min/max values	Voltage, Current: Full cycle RMS updated every half cycle (URMS1/2 according to IEC61000-4-30 Aux, Power: 200ms
Demand Interval (Energy Meter Mode)	
Measured parameters	Energy (Wh, varh, VAh), PF, maximum demand, cost of energy
Interval	User selectable: 5 min, 10 min, 15 min, 20 min, 30 min, off
Power quality measurements	
Measured parameter	Voltage, frequency, unbalance, voltage harmonics, THD V, current, harmonics, THD A, TDD
Averaging interval	10 min
Individual harmonics	2nd ...50th harmonic
Total harmonic distortion	Calculated on 50 harmonics
Events	Voltage: dips, swells, interruptions, current: inrush current
Triggered recordings	Full cycle RMS updated every half cycle of voltage and current (Urms1/2 according to IEC61000-4-30) Waveform of voltage and current

[1]The number of possible logging sessions and logging period depends on user requirements.

Electrical specifications *cont.*	
Standards Compliance	
Harmonics	IEC 61000-4-7: Class 1 IEEE 519 (short time harmonics)
Power quality	IEC 61000-4-30 Class S, IEC62586-1 (PQI-S device)
Power	IEEE 1459
Power quality compliance	EN50160 (for measured parameters)
Interfaces	
USB-A	File transfer via USB flash drive, firmware updates, max. supply current: 120 mA
WiFi	File transfer and remote control via direct connection or WiFi infrastructure
Bluetooth	Read auxiliary measurement data from Fluke Connect® 3000 series modules (requires 1738, or 1736 upgrade option)
USB-mini	Data download device to PC
Voltage inputs	
Number of inputs	4 (3 phases and neutral)
Maximum input voltage	1000 Vrms, CF 1.7
Input impedance	10 MΩ
Bandwidth	42.5 Hz - 3.5 kHz
Scaling	1:1 and variable
Measurement category	1000 V CAT III/600 V CAT IV
Current inputs	
Number of inputs	4, mode selected automatically for attached sensor
Input voltage	Clamp input: 500 mVrms/50 mVrms; CF 2.8
Rogowski coil input	150 mVrms/15 mVrms at 50 Hz, 180 mVrms/18 mVrms at 60 Hz; CF 4; all at nominal probe range
Range	1 A to 150 A/10 A to 1500 A with thin flexible current probe i17XX-flex1500 12"
	3 A to 300 A/30 A to 3000 A with thin flexible current probe i17XX-flex3000 24"
	6 A to 600 A/60 A to 6000 A with thin flexible current probe i17XX-flex6000 36"
	40 mA to 4 A/0.4 A to 40 A with 40 A clamp i40s-EL
Bandwidth	42.5 Hz - 3.5 kHz
Scaling	1:1 and variable
Auxiliary inputs	
Number of inputs	2
Input range	0 to ± 10 V dc, 1 reading/s
Scale factor	Format: mx + b (gain and offset) user configurable
Displayed units	User configurable (7 characters, for example, °C, psi, or m/s)
Wireless connection	
Number of inputs	2
Supported modules	Fluke Connect® 3000 series
Acquisition	1 reading/s

Environmental specifications	
Operating temperature	-10 °C to +50 °C (14 °F to 122 °F)
Storage temperature	-20 °C to +60 °C (–4 °F to 140 °F), with battery: -20 °C to +50 °C (–4 °F to 122 °F)
Operating humidity	10 °C to 30 °C (50 °F to 86 °F) max. 95 % RH 30 °C to 40 °C (86 °F to 104 °F) max. 75 % RH 40 °C to 50 °C (104 °F to 122 °F) max. 45 % RH
Operating altitude	2000 m (up to 4000 m derate to 1000 V CAT II/600 V CAT III/300 V CAT IV)
Storage altitude	12,000 m
Enclosure	IP50 in accordance with EN60529
Vibration	MIL-T-28800E, Type 3, Class III, Style B
Safety	IEC 61010-1 IEC Mains Input: Overvoltage Category II, Pollution Degree 2 Voltage Terminals: Overvoltage Category IV, Pollution Degree 2
	IEC 61010-2-031: CAT IV 600 V / CAT III 1000 V
Electromagnetic compatibility (EMC)	EN 61326-1: Industrial CISPR 11: Group 1, Class A
	Korea (KCC): Class A Equipment (industrial broadcasting and communication equipment)
	USA (FCC): 47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103
Temperature coefficient	0.1 x accuracy specification/°C
General specifications	
Color LCD display	4.3-inch active matrix TFT, 480 pixels x 272 pixels, resistive touch panel
Warranty	Instrument and power supply: Two-years (battery not included) Accessories: one-year Calibration cycle: two-years
Dimensions	Instrument: 19.8 cm x 16.7 cm x 5.5 cm (7.8 in x 6.6 in x 2.2 in) Power supply: 13.0 cm x 13.0 cm x 4.5 cm (5.1 in x 5.1 in x 1.8 in) Instrument with power supply attached: 19.8 cm x 16.7 cm x 9 cm (7.8 in x 6.6 in x 3.5 in)
Weight	Instrument: 1.1 kg (2.5 lb) Power supply: 400 g (0.9 lb)
Tamper protection	Kensington lock slot

i17xx-flex 1500 12" Flexible Current Probe specifications	
Measuring range	1 to 150 A ac/10 to 1500 A ac
Nondestructive current	100 kA (50/60 Hz)
Intrinsic error at reference condition*	± 0.7 % of reading
Accuracy 173x + iFlex	± (1 % of reading + 0.02 % of range)
Temperature coefficient over operating temperature range	0.05 % of reading/°C 0.09 % of reading/°F
Working voltage	1000 V CAT III, 600 V CAT IV
Probe cable length	305 mm (12 in)
Probe cable diameter	7.5 mm (0.3 in)
Minimum bending radius	38 mm (1.5 in)
Output cable length	2 m (6.6 ft)
Weight	115 g
Probe cable material	TPR
Coupling material	POM + ABS/PC
Output cable	TPR/PVC
Operating temperature	-20 °C to +70 °C (-4 °F to 158 °F) temperature of conductor under test shall not exceed 80 °C (176 °F)
Temperature, non-operating	-40 °C to +80 °C (-40 °F to 176 °F)
Relative humidity, operating	15 % to 85 % non-condensing
IP rating	IEC 60529:IP50
Warranty	One-year

* Reference condition:
- Environmental: 23 °C ± 5 °C, no external electrical/magnetic field, RH 65 %
- Primary conductor in center position

Model features

	1736 Power Logger			1738 Power Logger		
	FLUKE-1736/B	FLUKE-1736/EUS	FLUKE-1736/INTL	FLUKE-1738/B	FLUKE-1738/EUS	FLUKE-1738/INTL
Model	Power logger basic version	Power logger (EU and US)	Power logger (International)	Power logger advanced version	Power logger advance version (EU and US)	Power logger advanced version (International)
Functions						
PQ Health (EN50160 analysis)	Opt.	Opt.	Opt.	•	•	•
IEEE 519 reporting	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
Fluke Connect® module support (up to 2 modules**)	Opt.	Opt.	Opt.	•	•	•
Recording						
Trend	•	•	•	•	•	•
Waveform Snapshots + RMS profile	Opt.	Opt.	Opt.	•	•	•
Communication						
USB (mini B)	•	•	•	•	•	•
WiFi download of instrument data	•	•	Opt.	•	•	Opt.
WiFi download via WiFi access point (requires registration)**	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
Included Accessories						
WiFi only adapter**	–	•	–	–	–	–
WiFi and BLE adapter**	Opt.	Opt.	Opt.	Opt.	•	Opt.
USB flash drive (4GB)	•	•	•	•	•	•
USB Cable	•	•	•	•	•	•
3PHVL-173 Flat Cable	•	•	•	•	•	•
1x red, 1x black 0.1m cable	•	•	•	•	•	•
1x red, 1x black 1.5m lead	•	•	•	•	•	•
Alligator clips	4	4	4	4	4	4
C173x Soft Case	•	•	•	•	•	•
Color Coding set	•	•	•	•	•	•
173x-Hanger kit	Opt.	Opt.	Opt.	•	•	•
MP1-Magnet Probe	Opt.	Opt.	Opt.	4	4	4
i173X-flex1500 12″	Opt.	4	4	Opt.	4	4
Line cord	EU, UK, US, AU, BR	EU, US, UK	EU, UK, US, AU, BR	EU, UK, US, AU, BR	EU, US, UK	EU, UK, US, AU, BR
Compatible Optional Accessories						
173X- AUX analog adapter	•	•	•	•	•	•
i17XX-flex1500 12″ Current Probe	•	•	•	•	•	•
i17XX-flex3000 24″ Current Probe	•	•	•	•	•	•
i17XX-flex6000 36″ Current Probe	•	•	•	•	•	•
i40s-EL Current Clamp	•	•	•	•	•	•
IEEE 519 reporting opt	•	•	•	•	•	•
1736 to 1738 upgrade (1736/UPGRADE)	•	•	•	–	–	–

* Modules not included

** Not all models are available in all countries. Check with your local Fluke representative.

Ordering information**

FLUKE-1736/B Power Logger, Basic version (excludes current probes)
FLUKE-1736/EUS Power Logger, EU and US version (includes current probes)
FLUKE-1736/INTL Power Logger, International version (includes current probes)
FLUKE-1736/WINTL Power Logger, International wireless version (includes current probes)
FLUKE-1738/B Power Logger, Advanced version (excludes current probes)
FLUKE-1738/EUS Power Logger, EU/US Advanced version (includes current probes)
FLUKE-1738/INTL Power Logger, International advanced version (includes current probes)
FLUKE-1738/WINTL Power Logger, International wireless version (includes current probes)

Fluke-1736 includes:

Instrument, power supply, voltage test leads, alligator clips (4x), 12 in 1,500A flexible current probe (4x), soft case, Energy Analyze Plus software, WiFi adapter**, line cords, color coding set and documentation on USB flash drive

Fluke 1738 includes:

Instrument, power supply, voltage test leads, alligator clips (4x), 12 in 1,500A flexible current probe (4x), soft case, Energy Analyze Plus software, magnetic hanging strap, magnetic voltage probes (4x), WiFi/BLE adapter**, line cords, color coding set and documentation on USB flash drive

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FLUKE CONNECT®

See it. Save it. Share it. All the facts, right in the field.

Fluke Connect® with ShareLive™ video call is the largest system of software and wireless test tools that lets you stay in contact with your entire team without leaving the field*. The Fluke Connect software is compatible with the following devices: iPhone models 4S and up running iOS 8.0 or higher, iPad Air and iPad Mini (2nd generation) in an iPhone frame on iPad and iPod Touch (5th generation), HTC One and One M8 running Android 4.4.x or higher, LG G3 and Nexus 5 running Android 4.4.x or higher, Samsung Galaxy S4 running Android 4.3.x or higher, Samsung Galaxy S5 running Android 4.4.x or higher and works with over 30 different Fluke products—the largest system of connected test tools in the world. And more are on the way. Go to the Fluke website to find out more: www.flukeconnect.com.

***Within provider's wireless service area.**

Download the app at:

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ANDROID APP ON Google play

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