

Fluke 1740 Series Three-Phase Power Quality Loggers *Memobox*

Technical Data

Assess power quality and conduct long-term studies with ease

Rugged and portable, Fluke 1740 Series power quality loggers are designed for easy installation and use, anywhere in low- and medium-voltage applications. There are three models to choose from to meet your basic or advanced power logging needs:

Fluke 1743: IP65 water-proof monitor for logging the most common power parameters including V, A, W, VA, VAR, PF, energy, flicker, voltage events, and THD.

Fluke 1744: Includes the same features as the Fluke 1743. In addition to common power parameters, the Fluke 1744 also measures voltage and current harmonics, interharmonics, mains signaling, unbalance, and frequency.

Fluke 1745: Advanced IP50 power quality logger with the same measurement capability as the 1744, plus real-time LCD, five hour UPS.

Features	1745	1744	1743
Measurement of common power parameters: V, A, W, VA, VAR, PF, energy, flicker, voltage events (dips, swells, interruptions), and THD	•	•	•
Measurement of voltage and current harmonics to the 50th, unbalance, frequency and mains signaling	•	•	
Dust/water resistance	IP 50	IP 65 water proof	
Display	LED + LCD	LED	LED
Memory	8 MB	8 MB	8 MB
UPS ride-through	> 5 hr	3s	3s
EN 50160	•	•	•

Applications include:

Disturbance analysis – Uncover root cause of equipment malfunction for later mitigation and predictive maintenance

Quality of service compliance – validate incoming power quality at the service entrance

Power quality studies – Assess baseline power quality to validate compatibility with critical systems before installation

Load studies – Verify electrical system capacity before adding loads

Energy and power quality assessment – Validate performance of facility improvements by quantifying energy consumption, power factor, and general power quality before and after improvements



Fluke 1743



Fluke 1744



Fluke 1745

Uncover intermittent and hard-to-find power quality issues – Fluke 1740 Series power quality loggers are capable of logging up to 500 parameters for up to 85 days and capturing events.



Plug and play

All three 1740 Series loggers feature easy plug and play setup for immediate use. The current probes are connected to the logger with a single plug. The instrument automatically detects, scales, and powers the probes using line power from the measured voltages. All accessories are individually calibrated and can be shared with multiple Fluke 1740 series loggers.

Electrical shock protection

The Fluke 1740 loggers feature insulated housings and accessories to help protect you from electrical shock when coming into contact with blanket bus bars, terminals, or cables. They are also designed to meet the stringent safety standards for use in 600 V CAT III and 300 V CAT IV environments.

Measures all power quality and power parameters

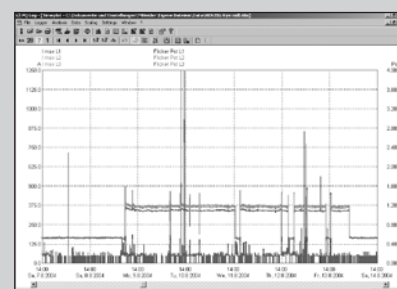
The Fluke 1745 and Fluke 1744 record over 500 different parameters for each averaging period. This allows you to analyze power quality in detail and to correlate intermittent events, which help you identify the root cause of disturbances. For basic power logging, the Fluke 1743 captures all relevant power parameters.

Calculates current harmonics

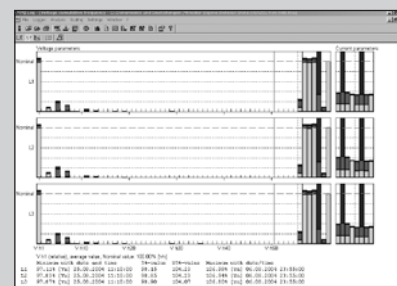
Fluke 1745 and Fluke 1744 loggers can calculate the limits of current harmonics to predict overload of the grid according to the standards VSE, VEOE, VDN, among others. This powerful feature is beneficial to users worldwide in support of predictive maintenance, enabling current harmonics to be observed before a distortion appears in the voltage.

View graphs and generate reports with Fluke Power Log software

With its easy-to-use interface, the included PQ Log software assists you with logger setup, enables you to verify actual measurement values quickly using the online function, and downloads data from the logger to a connected PC operating on standard Windows® operating systems. You can view the logged data in graphical and tabular form, export it to a spreadsheet, or generate a professional report with the Report Writer function.



For root cause analysis, different measurements such as flicker, voltage and THD can be shown in the same time plot, to help you quickly identify the cause of a disturbance.



Statistical analysis of Voltage and Current harmonics over a given time period. Red bar graphs indicate issues with the grid. Other colors are warnings for potential future issues. Harmonics can be presented also as time plots.



Statistical summaries like EN50160 and DISDIP table allow for a quick, comprehensive overview of 8 power quality parameters on one dashboard.

Specifications

Logger	
Power supply	
Functional Range	88 V ... 660 V absolute, 50 Hz / 60 Hz 100 V ... 350 V dc Internal fuse: 630 mA T
Power consumption	5 Watts
Ride through	Fluke 1745: Internal battery for typ. > 5 hours ride through with intelligent power management Fluke 1743/44: 3 sec Capacitor
Fuse	Power supply fuse can be replaced in service facility only. Supply can be connected in parallel to measuring inputs (up to 660 V)
Display, indicators	LEDs for status and voltage levels Fluke 1745: LC-display with backlight for voltage, current, active power, phase sequence.
Memory	Capacity 8 MB Flash-EPROM
Intervals	A function > 12000 intervals for > 85 days with 10 min intervals P function > 30000 intervals for > 212 days with 10 min intervals
Events	> 13000
Memory model	linear, circular
Interface	RS 232, 9600...115 000 Baud, automatic Baud rate selection, 3-wire communication
Dimensions	Fluke 1745: 282 mm x 216 mm x 74 mm Fluke 1743/44: 170 mm x 125 mm x 55 mm
Weight	Fluke 1745: approx. 3 kg Fluke 1743/44: approx. 2 kg
Measurement	
A/D converter	16 bit, sample rate: 10.24 kHz
Anti-aliasing filter	FIR-Filter, $f_c = 4.9$ kHz
Frequency response	Uncertainty < 1 % of V_m for 40 Hz to 2500 Hz
Interval length	1, 3, 5, 10, 30 s, 1, 5, 10, 15, 60 minutes
Averaging time for Min/max values	½, 1 mains period, 200 ms, 1, 3, 5 s
Time base	Resolution: 10 ms (at 50 Hz), deviation: 2s/ day at 23 °C ± 2 K

Voltage and Current Measurement	
Input voltage	
Input range V_i P-N	max 480 V ac
Input range V_i P-P	max 830 V ac
Max. overload voltage	1.2 V_i
Input range selection	By job programming
Connections	P-P or P-N, 1- or 3-phase
Nominal voltage V_N	≤ 999 kV with PTs and ratio
Input resistance	App. 820 kΩ per chan. Lx-N Single phase (L1 or A, L2 or B, L3 or C connected): app. 300 kΩ
Intrinsic uncertainty	0.1 % of V_i
Voltage transformer	Ratio: < 999 kV / V_i
Ration selection	By job programming
Current input with Flexi Set	
Input ranges I_i L1 or A, L2 or B, L3 or C, N	15 A / 150 A / 1500 A / 3000 A ac
Measuring range	0.75 A ... 3000 A ac
Intrinsic uncertainty	< 2 % of I_i
Position influence	Max. ± 2 % of measured value – for distance conductor to meas. head > 30 mm
Stray field influence	< ± 2 A ac for $I_{ext}=500$ A ac and distance to measuring head > 200 mm
Temperature coefficient	< 0.05 % / K
Current transformer	Ratio ≤ 999 kA / I_i
Ratio selection	By job programming
Connection	3-phase, 3-phase +N, 2 phase L1 or A and L3 or C (2 W-meter-method) 7 pole connector
Current input for clamp	
Input ranges I_i L1 or A, L2 or B, L3 or C, N	0.5 V nominal (for I_i) 1.4 Vpeak
Intrinsic uncertainty	< 0.3 % of I_i
Max. overload	10 V ac
Input resistance	App. 8.2 kΩ
Current transformer	Ratio ≤ 999 kA / I_i
Ration selection	By job programming
Power systems	Delta, 2-Element Delta, Wye, Single Phase, Split Single Phase

General	
Intrinsic error	Refers to the reference conditions and is guaranteed for two years
Warranty	2 years
Recalibration interval	2 years recommended
Quality system	developed, designed, and manufactured according to DIN ISO 9001
Reference conditions	23 °C ± 2 K; 74 °F ± 2 K, $V_m=230$ V ± 10%, 50 Hz ± 0.1 Hz or 60 Hz ± 0.1 Hz phase sequence L1, L2, L3 interval length: 10 minutes Star connection (L1, L2, L3 to N) Power supply: 88 V ... 265 V ac
Environment conditions	
Working temp. range	-10 °C to 55°C
Operating temp. range	0 °C to 35°C
Storage temp. range	-20 °C to 60°C
Reference temp. range	23 °C ± 2 K
Relative humidity	Fluke 1745: Class B2 acc. IEC 60654-1 Fluke 1744/43: Class C2 acc. IEC 60654-1
Housing	robust, fully insulated housing and accessories
Protection type	Fluke 1745: IP50 as per EN 60529 Fluke 1744/43: IP 65 as per EN 60529
Safety	IEC/EN 61010-1 600 V CAT III, 300 V CAT IV, pollution degree 2, double insulation
Type test voltage	5.2 kV rms, 50 Hz / 60 Hz, 5 s
EMC	
Emission	IEC/EN 61326-1, EN55022
Immunit	IEC/EN 61326-1

Ordering Information

Fluke-1743 Power Quality Logger Memobox

Fluke-1744 Power Quality Logger Memobox

Fluke-1745 Power Quality Logger Memobox

Includes:

- 4 Flexible probes 15/150/1500/3000 A with 2 m cable
- CD-ROM with PQ Log software
- RS232 interface cable and RS232-USB adapter
- 4 black dolphin clips
- Test leads for voltages and power supply
- Color localization kit
- Carrying bag
- Test certificate with measurement values
- Printed English manual
- Multi-language manual CD

Recommended Accessories

- MBX CLAMP 1 A / 10 A:
3-phase current clamps with 2 ranges 1 A/10 A, 2 m cable
- MBX CLAMP 5 A / 50 A + N:
3-phase+N current clamps with 2 ranges 5 A/50 A, 2m cable
- MBX CLAMP 20 A / 200 A + N:
3-phase+N current clamps with 2 ranges 20 A/200 A, 2 m cable

Miscellaneous Accessories

- MBX 300 POLESET: Pole mounting kit



Fluke 1745



Fluke 1743



Fluke 1744

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