TECHNICAL DATA

Fluke 1732 and 1734 Three-Phase Electrical Energy Loggers

Dual Rated CAT III and CAT IV

FLUKE CONNECT®

KEY MEASUREMENTS

Automatically capture and log voltage, current, power, power factor, energy and associated 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.

Energy logging is now within your reach—discover where you're wasting energy, optimize your facility's energy use and reduce your bill

The new Fluke 1732 and 1734 Three-Phase Electrical Energy loggers introduce a new simplicity to discovering sources of electrical energy waste. Discover when and where energy in your facility is being consumed; from the service entrance to individual circuits. 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.

Profiling energy usage across your facility helps you identify opportunities for energy savings, and provides you with the data you need to act on them. The new Energy Analyze software package allows you to compare multiple data points over time to build a complete picture of energy usage, which is the first step to reduce the cost of your energy bill.

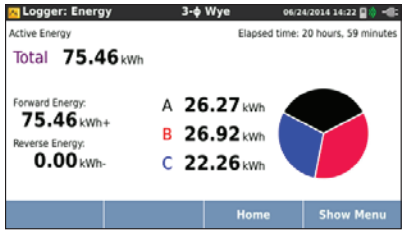
- **Measure all three phases:** With included 3 flexible current probes.
- **Comprehensive logging:** More than 20 separate logging sessions can be stored on the instruments. In fact, all measured values are automatically logged so you never loose measurement trends. They can even be reviewed during logging sessions and before downloading for real-time analysis.
- **Optimized user interface:** Quick, guided, graphical setup ensures you're capturing the right data every time, and the intelligent verification function indicates correct connections have been made, reducing user uncertainty.
- **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:** 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 1734 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 with our automated reporting.

Applications

Load studies: Discover how much energy individual pieces of equipment are consuming when they are operating at minimum and maximum capacity. Check capacity of circuits prior to adding additional loads (various standards exist for this process; in the US the NEC 220-87 is the recommended standard). Load studies can also identify situations where you may be exceeding the allowable load on the circuit or when an agreed peak demand applies from the utility. For convenience, some load studies simply measure current which makes installation of the measuring equipment quick and easy. It is often recommended that load surveys be performed for 30 days so that all typical load conditions are encountered during the test.

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

Energy surveys: Users often ask where measurements should be taken for an energy survey. The answer is multiple points within the facility. Start at the main service feeders; compare the power and energy measured here with the readings from the utility meter to ensure you're receiving the correct charges. Then move downstream to the larger loads; these should be easy to identify by the current rating of the electrical panels downstream of the service entrances. Measuring at many points will allow a full picture of energy usage across the facility to be developed. The next question users typically have is how long an energy survey should last. This of course depends on the facility, but it is recommended that you measure for a period that matches a typical facility activity period. If the facility operates over a five day work week with down time on the weekend, a seven day survey will most likely capture typical conditions. If the facility operates at a constant level for 24 hours a day, 365 days a year, a single day could be reasonably representative as long as you avoid a period where there may be planned maintenance.



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

To capture a full picture of the facilities energy usage it is not necessarily required to have measurements made simultaneously at every consumption point in the facility. To get a comprehensive picture, spot measurements can be made and then compared on a sliding time timescale. For example, you could compare the service entrance results from a typical Tuesday between 6:00 am and 12:00 pm with those of a larger load in the facility. Typically there will be some correlation between these profiles.

Logging related analog measurements: When conducting energy studies, it is useful to log related analog measurements such as temperature, voltage, current or pressure. These variables provide a better overall picture of operating conditions and allow you to correlate asset performance data with energy consumption. Correlating these variables provides more of the data you need to make cost saving performance adjustments. With the Fluke 1734, up to two Fluke Connect wireless modules can be used to capture these measurements, and the values will be automatically logged along with power and energy readings.

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Use up to two Fluke Connect wireless modules with the Fluke 1734 to capture analog measurements

Applications (continued)

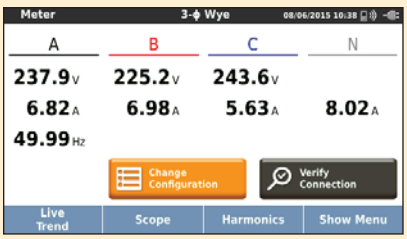
Power and energy logging: When a piece of equipment is operated it instantaneously consumes a specific amount of power in watts (W) or kilowatts (kW). This power is accumulated over the operating time and expressed as energy consumed in kilowatt hours (kWh). Energy is what your electric utility charges for; there will be a standard charge from the utility per kilowatt hour. Utilities may have other additional charges, such as peak demand, which is the maximum power demand over a defined period of time, often 15 or 30 minutes.

There may also be power factor charges, which are based on the effects of the inductive or capacitive loads in the facility. Optimizing peak demand and power factor often results in lower monthly electricity bills. The 1733 and Fluke 1734 Three Phase Electrical Energy loggers have the capability to measure and characterize these effects enabling you to analyze the results and save money.

Simplified load studies: For situations where it's either difficult or impractical to make a voltage connection the simple load study feature allows users to perform a simplified load study by measuring current only. The user can enter the nominal expected voltage to create a simulated power study. For accurate power and energy studies it is required to monitor both voltage and current but this simplified method is useful in certain circumstances.

Log the most common parameters

Designed to measure the most critical three-phase power parameters, the 1732 and 1734 can simultaneously log rms voltage, rms current, voltage, voltage and current THD, active power, reactive power, power factor, active energy, reactive energy, and more. With enough memory for more than a year of data logging, the 1732 and 1734 can discover which loads are can be optimized to enable you to reduce your energy bill.

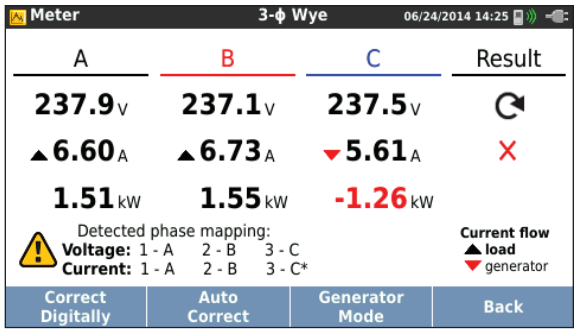


Simple setup means all available measured parameters are automatically selected during logging so you can be sure you have the data you need, even before you know you need it

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

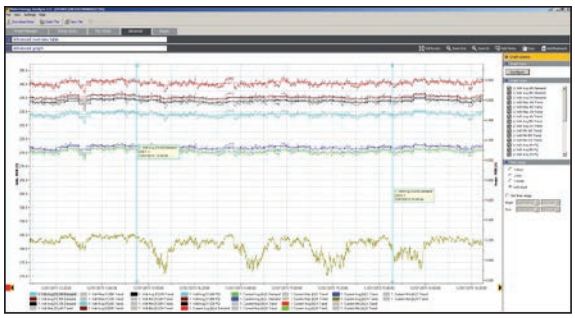
Data downloading couldn't be easier or more flexible:

- 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*
- Integrate energy measurement data along with other plant maintenance data all in one place.

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

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

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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			
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[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 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

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

Electrical specifications *cont.*	
Standards compliance	
Power	IEEE 1459
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 1734, or 1732 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	3, 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

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Model features

	1732 Energy Logger			1734 Energy Logger			
	FLUKE-1732/B	**FLUKE-1732/ EUS**	**FLUKE-1732/ INTL**	**FLUKE-1734/B**	**FLUKE-1734/ EUS**	**FLUKE-1734/ INTL**	**FLUKE-1734/ WINTL**
Model	Energy logger basic version	Energy logger (EU and US)	Energy logger (International)	Energy logger with Fluke Connect®	Energy logger with Fluke Connect (EU and US)	Energy logger with Fluke Connect (International)	Energy logger with Fluke Connect (International wireless)
Functions							
Fluke Connect module support (up to 2 modules**)	Optional	Optional	Optional	•	•	•	•
Recording							
Trend	•	•	•	•	•	•	•
Communication							
USB (mini B)	•	•	•	•	•	•	•
WiFi download of instrument data	•	•	Optional	•	•	Optional	Optional
WiFi download via WiFi access point (requires registration)**	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Included Accessories							
WiFi and BLE adapter**	Optional	Optional	Optional	Optional	•	Optional	•
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	4
C173x Soft Case	•	•	•	•	•	•	•
Color Coding set	•	•	•	•	•	•	•
173x-Hanger kit	Optional	Optional	Optional	•	•	•	•
MP1-Magnet Probe	Optional	Optional	Optional	4	4	4	4
i173X-flex1500 12"	Optional	3	3	Optional	3	3	3
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	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	•	•	•	•	•	•	•
1732 to 1734 upgrade (1732/UPGRADE)	•	•	•	–	–	–	–

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

Ordering information**

FLUKE-1732/B Energy Logger, Basic version (excludes current probes)
FLUKE-1732/EUS Energy Logger, EU and US version (includes current probes)
FLUKE-1732/INTL Energy Logger, International version (includes current probes)
FLUKE-1734/B Energy Logger, with Fluke Connect® (excludes current probes)
FLUKE-1734/EUS Energy Logger, EU/US with Fluke Connect (includes current probes)
FLUKE-1734/INTL Energy Logger, International with Fluke Connect (includes current probes)
FLUKE-1734/WINTL Energy Logger, International wireless version (includes current probes)

Fluke 1732 includes:

Instrument, power supply, voltage test leads, alligator clips (4x), 12 in 1,500A flexible current probe (3x), soft case, Energy Analyze Plus software, line cords, color coding set and documentation on USB flash drive

Fluke 1734 includes:

Instrument, power supply, voltage test leads, alligator clips (4x), 12 in 1,500A flexible current probe (3x), 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

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

FLUKE CONNECT®

Preventive maintenance simplified. Rework eliminated.

Save time and improve the reliability of your maintenance data by wirelessly syncing measurements using the Fluke Connect® system.

- Eliminate data-entry errors by saving measurements directly from the tool and associating them with the work order, report or asset record.
- Maximize uptime and make confident maintenance decisions with data you can trust and trace.
- Access baseline, historical and current measurements by asset.
- Move away from clipboards, notebooks and multiple spreadsheets with a wireless one-step measurement transfer.
- Share your measurement data using ShareLive™ video calls and emails.
- The Fluke 1732 and 1734 Three-Phase Electrical Energy Loggers are part of a growing system of connected test tools and equipment maintenance software. Visit the website to learn more about the Fluke Connect system.

Find out more at **flukeconnect.com**

Download on the App Store

ANDROID APP ON Google Play

All trademarks are the property of their respective owners. WiFi or cellular service required to share data. Smartphone, wireless service and data plan not included with purchase. First 5 GB of storage is free. Phone support details can be viewed at **fluke.com/phones**.

Smart phone wireless service and data plan not included with purchase. Fluke Connect is not available in all countries.

Fluke. *Keeping your world up and running.®*

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Printed in U.S.A. 1/2017 6008068b-en

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