TECHNICAL DATA

eMobility Tools Kit with FEV100 Test Adapter, 87V Multimeter and Test Leads

Key features

- Verify charging voltage and maximum available current using the 87V multimeter and TL224 test leads.
- Check protective earth for correct wiring and functioning with the PE pre-test feature.
- Perform GFCI troubleshooting of EVSE and verify operation within safety standards.

Product overview: eMobility Tools Kit with FEV100 Test Adapter, 87V Multimeter and Test Leads

Test the safety and performance of a type 1, level 1 or level 2 electric vehicle ac charging station (EVSE) with the Fluke eMobility kit. When connected to the test adapter, the 87V digital multimeter will allow you to monitor the output voltage and maximum charging current of the station. Use the FEV100 and 87V together to verify an EV charging station is working properly after install and during periodic maintenance, or troubleshoot an EVSE if it is not delivering the appropriate charge. There is no need to bring an electric vehicle onsite for EVSE troubleshooting: the adapter acts as an electric vehicle when connected to an EVSE for easy performance and maintenance testing. Test charging states of EVSE with CP state simulation. SAE J1772 compliant to North American standards.

Perform multiple electrical safety checks with the FEV100:

- PE PRE-TEST: Grounding system pre-test verifies that there is no presence of dangerous voltage at the ground terminal.
- GFCI TEST: Ground fault circuit interrupter test verifies the breaker of the EVSE is connected by detecting ground faults.
- PE ERROR: Ground fault simulation indicates an interruption of the ground conductor; the pending charging process is aborted, and new charging processes are prevented.
- CP ERROR “E”: The standard J1772 defines Error “E” as a state when charging station is disconnected from vehicle, disconnected from utility, there is a loss of utility power or control pilot is short to control pilot reference (ground).

Virtual demo

Specifications: eMobility Tools Kit with FEV100 Test Adapter, 87V Multimeter and Test Leads

Fluke FEV100 Electric Vehicle Charging Station Test Adapter specifications	
Input voltage	UL1/N = 120 V, UL2/N = 120 V, UL1/L2 = 208 V, 60 Hz (three-phase system) or UL1/N = 120 V, UL2/N = 120 V, UL1/L2 = 240 V, 60 Hz (single-phase system), ±10% voltage fluctuations from nominal
EV connector (EVC-13)	SAE J1772 socket, 16 A (type 1, 5P single-phase)
Internal power consumption	2 W max.
Operating temperature	-4 °F to 104 °F (-20 °C to 40 °C)
Storage temperature	-4 °F to 122 °F (-20 °C to 50 °C)
Operating humidity range	10 % to 85 % relative humidity non-condensing
Storage relative humidity	0 % to 85 % non-condensing

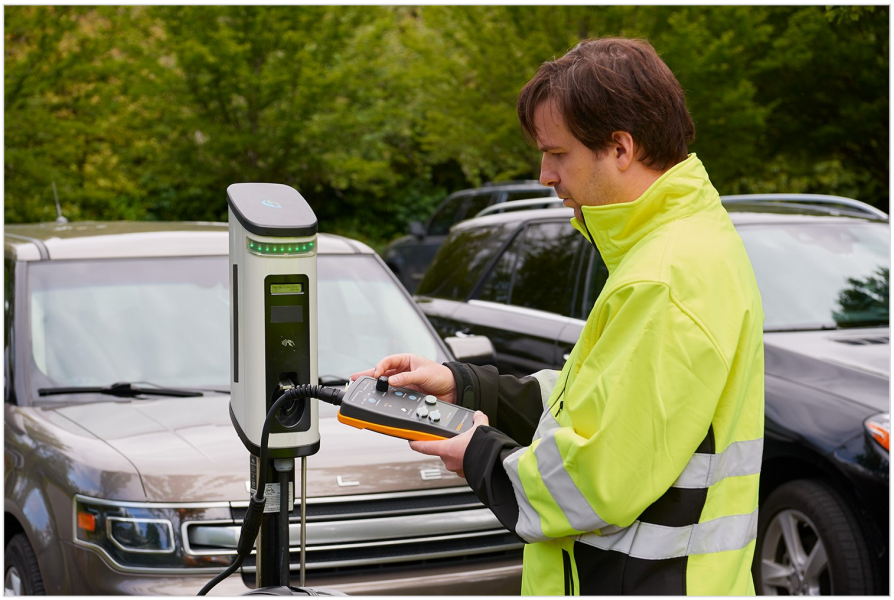
Operating altitude	6561 ft (2000 m) max.
Dimensions (H × W × D)	Approx. 8.66 x 4.33 x 1.77 in (220 x 110 × 45 mm) without cable assembly
Weight	Approx. 4.4 lb (2 kg)
Safety standards	IEC 61010-1, Pollution Degree 2 IEC 61010-2-030
Measurement category	CAT II 250 V
IP protection class	IP54
Electromagnetic Compatibility (EMC)	
International	IEC 61326-1: Basic Electromagnetic Environment CISPR 11: Group 1, Class A Group 1: Equipment has intentionally generated and/or uses conductively-coupled radio frequency energy that is necessary for the internal function of the equipment itself. Class A: Equipment is suitable for use in all establishments other than domestic and those directly connected to a low-voltage power supply network that supplies buildings used for domestic purposes. There may be potential difficulties in ensuring electromagnetic compatibility in other environments due to conducted and radiated disturbances. Caution: This equipment is not intended for use in residential environments and may not provide adequate protection to radio reception in such environments.
USA (FCC)	47 CFR 15 subpart B. This product is considered an exempt device per clause 15.103.
Functions	
CP States	A, B, C, D
CP Error "E"	On/off
PE Error	On/off
GFCI Test	Yes, test resistor of 2 kΩ connected between L1 and PE, time limitation 40 ms
PE Pre-Test (typical)	Visible indication >30 V on PE conductor
Outputs (for test purpose only)	
Measuring terminals L1, L2/N, PE	Max. 250 V 50/60 Hz, CAT II 250 V
CP signal output terminals	Approx. ±12 V (under normal conditions), in case of wrong wiring or error of the charging station these terminals can be hazardous ≥ max. 250 V against PE

Fluke 87V Industrial Multimeter Specifications		
Voltage DC	**Maximum voltage**	1000 V
	Accuracy	±(0.05% + 1)
	Maximum resolution	10 µV

Voltage AC	**Maximum voltage**	1000 V
	Accuracy	±(0.7% + 2) True RMS
	AC bandwidth	20 kHz with low pass filter; 3 dB @ 1 kHz
	Maximum resolution	0.1 mV
Current DC	**Maximum amps**	10 A (20 A for 30 seconds maximum)
	Amps accuracy	±(0.2% + 2)
	Maximum resolution	0.01 µA
Current AC	**Maximum amps**	10 A (20 A for 30 seconds maximum)
	Amps accuracy	±(1.0% + 2) True RMS
	Maximum resolution	0.1 µA
Resistance	**Maximum resistance**	50 MΩ
	Accuracy	±(0.2% + 1)
	Maximum resolution	0.1 Ω
Capacitance	**Maximum capacitance**	9,999 µF
	accuracy	±(1% + 2)
	Maximum resolution	0.01 nF
Frequency	**Maximum frequency**	200 kHz
	Accuracy	±(0.005% + 1)
	Maximum resolution	0.01 Hz
Duty cycle	**Maximum duty cycle**	99.9%
	Accuracy	±(0.2% per kHz + 0.1%)
	Maximum resolution	0.1%
Temperature measurement	−200.0 °C – 1090 °C −328.0 °F – 1994.0 °F excluding probe	
80 BK temperature probe	−40.0 °C – 260 °C −40.0 °F – 500 °F, 2.2 °C or 2% whichever is greater	
Conductance	**Maximum conductance**	60.00 nS
	Accuracy	±(1.0% + 10)
	Maximum resolution	0.01 nS
Diode	**Range**	3 V
	Resolution	1 mV
	Accuracy	±(2% + 1)
Duty cycle range	**Accuracy**	Within ±(0.2% per kHz + 0.1%)
Environmental Specifications		
Operating temperature	−20 °C to + 55 °C	
Storage temperature	−40 °C to + 60 °C	

Humidity (without condensation)	0% – 90% (0 °C – 35 °C) 0% – 70% (35 °C – 55 °C)	
Operating Altitude	2000 m	
Safety Specifications		
Overvoltage category	EN 61010–1 to 1000 V CAT III, 600V CAT IV	
Agency approvals	CE, CSA, RCM	
Mechanical and General Specifications		
Size	201 x 98 x 52 mm (with holster)	
Weight	355 g 624 g – with holster	
Display	**Digital**	6000 counts updates 4/sec. 19,999 counts in high–resolution mode
	Analog	32 segments, updates 40/sec
	Frequency	19,999 counts, updates 3/sec at > 10 Hz
Warranty	Lifetime	
Battery Life	**Alkaline**	~400 hours typical, without backlight
Shock	1 Meter drop per IEC 61010–1:2001	
Vibration	Per MIL–PRF–28800 for a Class 2 instrument	

Ordering information



FLK-FEV100/TY1 KIT

Includes:

FEV100
- Fluke FEV100/BASIC Test Adapter
- Fluke FEV-CON/TY1 Type 1 Connector & Cable
- Soft Carrying Case
- User Manual
- 3-year warranty

87V
- Fluke 87V Industrial Multimeter
- TL75 Test Leads (TL175 Eur)
- AC175 Alligator Clips
- Holster with tilt-leg, test lead storage
- 80BK Temperature Probe
- 9V Battery (Installed)

TL224
- One pair (red, black) silicone insulated leads with one straight female coupler on one end and right angled on the other
- One-year warranty
- Quick Reference Guide