

EV-500 Series Test Adapter Kits for Electric Vehicle Charging Stations

Get access to the socket-outlets of a charging station to perform safety and functional tests, while simulate presence of an electrical vehicle

The EV-500 Series Test Adapter Kits are designed to test function and safety of charging stations mode 3 for AC charging. The Adapter Kit allows you to conduct tests in combination with appropriate test instruments like an installation tester (for example the Beha-Amprobe ProInstall Series) and/or Scope Meters (oscilloscope) (for example Fluke 120B Series Industrial ScopeMeter handheld oscilloscopes). With the Adapter Kit, the charging stations can be tested in accordance with IEC/EN 61851-1 and IEC/HD 60364-7-722.

Features & Functions

- **Suitable to vehicle charging stations with charging mode 3**
- **EV-connectors for type 2 and type 1**
- **PE Pre-Test:** With this safety feature the PE conductor will be tested for possible presence of dangerous voltage against earth.
- **Proximity Pilot (PP) state "Cable Simulation":** With PP State rotary switch the adapter can simulate various current capabilities of charging cables.
- **Control Pilot (CP) state "Vehicle Simulation":** With CP State rotary switch selector various charging states can be simulated.
- **Separate phase indication by three LED lamps** for easy check if voltage is present.
- **Measuring terminals L1, L2, L3, N and PE** to connect test device like installation tester to perform safety and functional tests.
- **Mains socket offering the possibility** to connect an external load to check if the electric power meter works and counts in the right manner.
- **Simulation of CP error "E"**
- **Simulation of PE error (Earth fault)**
- **Terminals for CP signal output to check communication between adapter (=simulated electrical vehicle) and charging station.** This could be measured by a scopemeter. The voltage level defines the charging modes and the duty cycle of this PWM (Pulse Width Modulation) signal defines the charging current.
- **IP 54 rating** - Dust and splashing water protected



Safety Certification

All Beha-Amprobe tools, including the Beha-Amprobe EV-500 Series, are rigorously tested for safety, accuracy, reliability, and ruggedness in our state-of-the-art test lab. In addition, Beha-Amprobe products that measure electricity are listed by a 3rd party safety lab, either UL or CSA. This system assures that Beha-Amprobe products meet or exceed safety regulations and will perform in a tough, professional environment for many years to come.



Main Applications

- **Safety testing** of charging stations
- **Functional testing** of charging stations
- **Trouble shooting / repair** of charging stations



Correlation between vehicle state and CP-signal

Vehicle State	Description	PWM voltage at CP terminal
A	Electric vehicle (EV) not connected	$\pm 12\text{ V } 1\text{ kHz}$
B	Electric vehicle (EV) connected, not ready to charge	$+ 9\text{ V} / -12\text{ V } 1\text{ kHz}$
C	Electric vehicle (EV) connected, ventilation not required, ready to charge	$+ 6\text{ V} / -12\text{ V } 1\text{ kHz}$
D	Electric vehicle (EV) connected, ventilation required, ready to charge	$+ 3\text{ V} / -12\text{ V } 1\text{ kHz}$

Specifications

Functions	
PE Pre-Test	Yes, with touch electrode
PP simulation	open, 13 A, 20 A, 32 A, 63 A
CP states	A, B, C, D
CP Error "E"	on/off
PE Error (Earth fault)	on/off
Outputs (for test purpose only)	
Measuring terminal L1, L2, L3, N and PE	Max. 250/430 V, CAT II 300 V, max. 10 A
Mains socket	Max. 250 V, CAT II 300 V, allowed current max. 10 A
CP Signal output terminals	PWM communication protocol, approx. max. $\pm 12\text{ V}$
General Features	
Input voltage	Up to 250 V (single phase system) / up to 430 V (three phase system), 50/60 Hz, max 10 A
EV Connector (EVC-20)	AC charging mode 3, suitable to IEC 62196-2 type 2 socket outlet or fixed cable with vehicle connector (type 2, 7P three-phase)
EV Connector (EVC-13) OPTIONAL	AC charging mode 3, suitable to IEC 62196-2 type 1 or SAE J1772 with vehicle connector (type 1, 5P single-phase)
Mains outlet protection	Fuse T 10 A/250 V, 5x20 mm
Dimensions (W x H x L)	110 x 45 x 220 mm (length without connection cable and connector)
Weight	Approx. 1 kg (Adapter EVA-500-x + EC-connector EVC-20)
IP protection class	IP54
CE directive	Low Voltage Directive LVD 2014/35/EU
Safety	IEC/EN 61010-1:2010 IEC/EN 61010-2-030:2010
EMC	Not applicable
Working temperature range	0 ... +40 °C
Storage temperature range	-10 ... +50 °C
Reference humidity range	10 ... 60 % relative humidity w/o condensation
Working humidity range	10 ... 85 % relative humidity w/o condensation
Pollution degree	2
Protection class	II
Measurement category	CAT II 300 V
Altitude above sea level	2000 m max.



Included in Test Adapter Kits

	EV-521-D KIT	EV-521-CH	EV-521-UK	EV-521-F
EVA-500-D Test Adapter	•	—	—	—
EVA-500-CH Test Adapter	—	•	—	—
EVA-500-UK Test Adapter	—	—	•	—
EVA-500-F Test Adapter	—	—	—	•
EVC-20 Test Cable for EV charging station type 2 with socket outlet or fixed cable with vehicle connector	•	•	•	•
User Manual	•	•	•	•
Soft Carrying Bag	•	•	•	•
Type of mains outlet socket	Schuko socket (CEE 7/3)	Swiss socket type 13	UK socket	French socket type E



Optional accessories:

- EVC-13 test cable for EV charging station type 1 with fixed cable and vehicle connector

Suggested test equipment:

- ProInstall-100
- ProInstall-200
- Fluke 120B Series Industrial ScopeMeter handheld Oscilloscopes