

TECHNICAL DATA

# Fluke FEV300 Test Adapter Kits for Electric Vehicle Charging Stations



## Test the safety and functionality of electrical vehicle charging stations, easily and reliably

The FEV300 Test Adapter Kits are designed to test function and safety of charging stations mode 3 for AC charging. The adapter imitates an electric vehicle and opens up a charging cycle (activating voltage/current output), allowing you to conduct tests in combination with appropriate test instruments like an installation tester (for example the Fluke 1664 FC) and/or an oscilloscope (for example the Fluke 120B Series Industrial ScopeMeter®). With the FEV300 Adapter Kit, charging stations can be tested in accordance with IEC/EN 61851-1 and IEC/HD 60364-7-722.

### Features and functions:

- **Suitable to vehicle charging stations** with charging mode 3
- **Fits to charging stations** with EV socket-outlet type 2 and 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 all charging states can be simulated.
- **Separate phase indication by three LED lamps** for easy check if voltage is present at the charging output.
- **Measuring terminals L1, L2, L3, N and PE** to connect test device like installation tester to perform safety and functional tests.
- **Compatibility:** Integrates into Fluke portfolio of test and measurement tools, by allowing direct connection through FEV measurement terminals.
  - The **Fluke 1664 FC** allows safety measurements via the measuring terminals like:
    - earth bond
    - insulation
    - loop/line impedance
    - RCD trip test
- **Simulation of CP error state "E"**
- **Simulation of PE error state "F" (Earth fault)**
- **Terminals for CP signal output** to check communication between adapter (simulated electrical vehicle) and charging station. This can be measured by a ScopeMeter® or multimeter. The voltage level defines the charging modes and the duty cycle of this PWM (Pulse Width Modulation) signal defines the maximum allowable charging current.
- **IP 54 rating** - Dust and splashing water protected

## Fluke FEV300 Test Adapter Kits



**Proximity Pilot (PP)** state selector

**PE Pre-Test** to check if possible, hazard touch voltage is present

**Measuring terminals** to check safety and function of charging station using the Fluke 1664 FC installation tester

**Terminals** for CP signal output to check communication protocol

**Control Pilot (CP)** state selector

**Error simulation** for CP error state "E" and PE error state "F"

### Connect to EV charging station Type 1 with vehicle connector

FEV300-CON-TY1 can be used with EV charging station type 1 with fixed cable and vehicle connector



### Connect to EV charging station Type 2 with socket outlet or vehicle connector

FEV300-CON-TY2 can be used with EV charging station type 2 with socket outlet or fixed cable and vehicle connector



## Main Applications

- Safety testing of charging stations
- Functional testing of charging stations
- Troubleshooting/repair of charging stations

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## Correlation between vehicle state and CP signal

Vehicle State	Description	PWM voltage at CP terminal
A	Electric vehicle (EV) not connected	A1: +12 V or A2: $\pm 12$ V PWM (1 kHz)
B	Electric vehicle (EV) connected, not ready to charge	B1: +9 V or B2: +9 V / -12 V PWM (1 kHz)
C	Electric vehicle (EV) connected, ventilation not required, ready to charge	C1: +6 V or C2: +6 V / -12 V PWM (1 kHz)
D	Electric vehicle (EV) connected, ventilation required, ready to charge	D1: +3 V or D2: +3 V / -12 V PWM (1 kHz)

## Specifications

General features	
Input voltage	Up to 250 V (single phase system) / up to 480 V (three phase system), 50/60 Hz, max 10 A
Internal power consumption	3 W max.
FEV300-CON-TY2 Plug	AC charging mode 3, suitable to IEC 62196-2 type 2 socket outlet or fixed cable with vehicle connector (type 2, 7P three-phase)
FEV300-CON-TY1 Plug	AC charging mode 3, suitable to IEC 62196-2 type 1 or SAE J1772 with vehicle connector (type 1, 5P single-phase)
Dimensions (H x W x D)	110 x 45 x 220 mm length without connection cable and test cable
Weight (including type 1 or type 2 connection cable)	Approx. 1 kg
Safety standards	IEC/EN 61010-1, pollution degree 2 IEC/EN 61010-2-030, CAT II 300 V, protection class II
Ingress protection	IEC 60529: IP54 (housing) IEC 60529: IP54 (measuring terminals with protection caps in place, connector/ plug in connected condition or with protection caps in place, otherwise IP20)
Operating temperature	-20 °C to 40 °C
Storage temperature	-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	2000 m max.
Functions	
PE Pre-Test	Visible indication >50 V AC/DC between PE conductor and touch sensor
PP Simulation	Open, 13 A, 20 A, 32 A, 63 A
CP States	State A, B, C, D
CP Error state "E"	On/off (CP signal short-circuited to PE)
PE Error state "F" (Earth fault)	On/off (interruption of PE conductor)
Outputs (for test purpose only)	
Measuring terminals L1, L2, L3, N, PE	Max. 250/480 V, max. 10 A
CP signal output terminals	Approx. +/-12 V

**Included in Test Adapter Kits**



	FEV300/TY2	FEV300/TY1 & TY2	FEV300/KIT
FEV300/BASIC Test Adapter	•		•
FEV300-CON-TY1		•	
FEV300-CON-TY2	•	•	•
1664 FC Multifunction Tester			•
Soft Carrying Bag	•	•	•

**Ordering information**

**FEV300 Test Adapter Kits**

**Suggested test equipment:**

- Fluke 1664 FC Installation Multifunction Testers
- Fluke 87V Industrial Multimeter
- Fluke 376 FC True-RMS Clamp Meter with iFlex
- Fluke 120B Series Industrial ScopeMeter handheld Oscilloscopes



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