

# KEWTECH

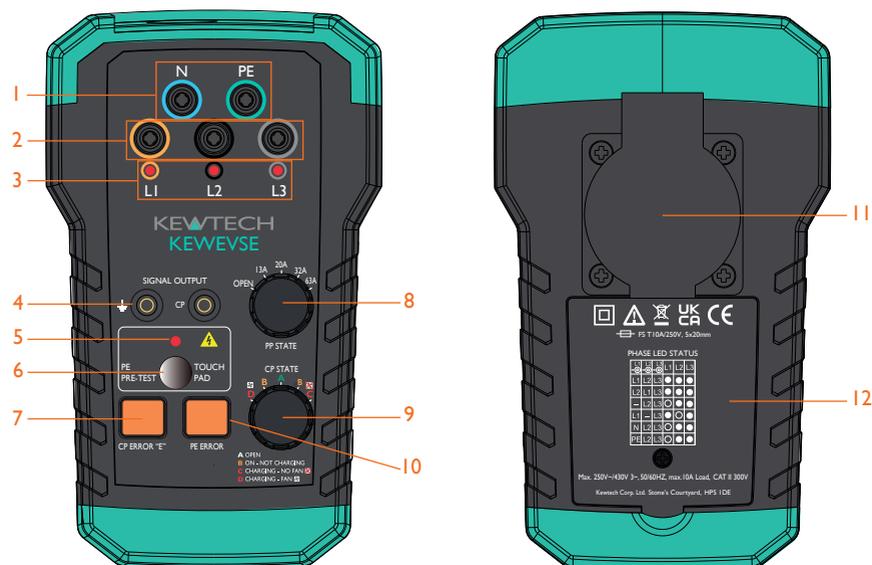
## KEWEVSE EVSE Adapter



## Operating Instructions

[kewtechcorp.com](http://kewtechcorp.com)

## Operation elements and connectors



1. Measuring terminals N, PE
2. Measuring terminals L1, L2, L3
3. Phase indicator LEDs for L1, L2, L3 terminals
4. PE and CP Signal output terminals
5. PE Pre-Test warning light indicator
6. PE Pre-Test touch pad
7. "E" - CP Error simulation button
8. PP (Proximity Pilot) State rotary switch selector (open, 13A, 20A, 32A and 63A)
9. CP (Control Pilot) State rotary switch selector (A, B, C, D)
10. PE Error (Earth Fault) simulation button
11. Mains socket. Use for test purpose only. Allowed current max. 10 A
12. Mains socket fuse compartment.

Adapter is equipped with 50cm cable with type 2 EVSE connector.

## Safety information and explanation of symbols used

References marked on instrument or in instruction manual.

-  Warning of a potential danger, read before use and follow the instruction manual when using this instrument.
-  Reference! Please use utmost care.
-  Caution! Dangerous voltage. Danger of electrical shock.
-  Ground / earth terminal.
-  Continuous double or reinforced insulation category II IEC 536 / DIN EN 61140.
-  Conformity symbol, the instrument complies with the valid directives. It complies with the EMC Directive (2014/30/EU), Standard EN 61326 is fulfilled. It also complies with the Low Voltage Directive (2014/35/EU) Standards EN 61010-1 and EN 61010-031.
-  UK conformity mark.
-  Instrument fulfils the standard (2012/19/EU) WEEE. This marking indicates that this product should not be disposed with other household wastes throughout the EU.
-  To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.
-  The respective accident prevention regulations established by the professional associations for electrical systems and equipment must be strictly met at all times.
-  In order to avoid electrical shock, the valid safety and VDE regulations regarding excessive contact voltages must receive utmost attention, when working with voltages exceeding 120V (60V) DC or 50V (25V)rms AC. The values in brackets are valid for limited ranges (as for example medicine and agriculture).
-  Measurements in dangerous proximity of electrical systems are only to be carried out in compliance with the instructions of responsible electronically skilled technicians, and never alone.
-  If the operator's safety is no longer ensured, the instrument is to be put out of service and protected against use. Safety is no longer ensured, if the instrument:
  - shows obvious damage.
  - does not carry out the desired measurements.
  - has been stored for too long under unfavourable conditions.
  - has been subjected to mechanical stress during transport.
-  The instrument may only be used within the operating ranges as specified in the technical data section.

 Avoid any heating up of the instrument by direct sunlight to ensure perfect functioning and long instrument life.

 The opening of the instrument for fuse replacement, for example, may only be carried out by professionals. Prior to opening, the instrument has to be switched off and disconnected from any current circuit.

 The instrument may only be used under those conditions and for those purposes for which it was conceived. For this reason, in particular the safety references, the technical data including environmental conditions and the usage in dry environments must be followed.

When modifying or changing the instrument, the operational safety is no longer ensured.

## Testing of the charging station

### PE Pre-Test

Prior to all other tests the PE pre-test must be successfully carried out. Never touch PE terminals at the mains socket on the back of the adapter before the PE pre-test is successfully finished.

The PE Pre-test allows the operator to test the PE conductor for the possible presence of dangerous voltage against earth.

Normally the PE conductor is connected to earth and has no voltage against earth.

In a situation where the PE conductor is not connected to earth (mistakenly connected to phase or possibly broken) the user is exposed to a 'danger to life' situation.

#### Test procedure:

- Connect the test adapter to the charging station
- Touch the touch pad (no. 6) with a bare finger
- If the light indicator (no. 5) is illuminated then a dangerous voltage is present at the PE conductor. Stop further testing immediately and remedy the wiring fault.

Do not wear gloves while performing this test and ensure a proper connection to earth. Never touch any metal parts during this test. In the case of improper earthing (e.g., operators body is isolated from the earth) this test may be not reliable.

### Proximity Pilot (PP) State (Cable Simulation)

Using the PP State rotary switch, the current ratings of the charging cable can be simulated. Current ratings are simulated with different resistances connected between PP and PE conductors. Correlation between resistance and current ratings of the charging cable is shown in the table below.

TABLE 1

Cable current rating	Resistance between PP and PE
No cable	Open ( $\infty$ )
13 A	1.5 k $\Omega$
20 A	680 $\Omega$
32 A	220 $\Omega$
63 A	100 $\Omega$

### Control Pilot (CP) State (Vehicle Simulation)

Using the CP State rotary switch selector various vehicle states can be simulated. Vehicle states are simulated with different resistances connected between CP and PE conductors. Correlation between resistance and vehicle states is shown in the table below.

TABLE 2

Vehicle State	State Description	CP-PE Resistance	CP terminal voltage
A	Electric vehicle not connected	Open ( $\infty$ )	$\pm 12V @ 1KHz$
B	Vehicle connected, not ready to charge	2.74K	+9V/-12V @ 1KHz
C	Electric vehicle connected, ready to charge, ventilation not required	882 $\Omega$	+6V/-12V @ 1KHz
D	Electric vehicle connected, ready to charge, ventilation required	246 $\Omega$	+3V/-12V @ 1KHz

### CP Signal output terminals

CP signal output terminals are connected to the CP and PE conductors of the tested charging station via the test cable. (No. 4)

Use an oscilloscope to check the waveform and amplitude of the CP signal.

The Control Pilot function uses Pulse Width Modulation (PWM) to code communication between a vehicle and charging station. The duty cycle of the PWM signal defines the possible available charging current, while amplitude defines charger state.

For details of communication protocol please refer to IEC/EN 61851-1 and the documentation of the manufacturer of the charging station.

 **Important note: In the case of incorrect wiring of the charging station, the signal CP test terminals can become a high live hazardous voltage.**

### CP Error "E" simulation

"E" - CP Error simulation button (no. 7). With the CP Error "E" button pressed the operator can simulate behaviour of the station when there is a short circuit between CP and PE through an internal diode (acc. to standard IEC/EN 61851-1). When the 'CP Error - E' button is pressed the charging process should be aborted and further charging is prevented.

**PE Error (Earth Fault) simulation**

When the PE Error button (no. 10), is pressed the interruption of the PE conductor is simulated. The charging process should be aborted and further charging is prevented.

**Phase indicator**

The phase indicators are LEDs, one LED for each phase (no. 3). When the test adapter is connected to the charging station and phase voltages are present at the charging connector, the LED indicators will illuminate.

 In the case where the neutral (N) conductor is not present or it is interrupted, LED indicators will not indicate possible voltage presence at L1, L2 and L3 conductors. The LED indicators are not intended to be used for phase sequence testing.

- When testing a single phase charging station, only one LED will illuminate.

**Mains socket**

The mains socket (no. 11) is connected to L1, N and PE conductors of the charging station. External load can be connected to the socket. This output is intended for measuring purposes only and offers the possibility to check the electric power meter functionality. It is not allowed to supply anything else through the socket. The max. current is limited to 10 A with an T10A/250V, 5x20 mm fuse located in the back compartment of the Adapter.

**Measuring terminals L1, L2, L3, N and PE**

Measuring terminals (no. 1 and 2) are directly connected to L1, L2, L3, N and PE conductors of the tested charging station. It is permitted to use these for measuring purposes only. It is not allowed to draw current over a longer period or supply anything else.

An appropriate measurement instrument is needed.

**For electrical safety checks, set the CP state to match the EVSE ratings.**

To check the functions of the EVSE charger switch the CP state through from A to C for chargers without ventilation and from A, through to D for chargers with ventilation. With reference to table 2 and the EV charger's manual ensure that the charger performs as it should.

To perform a loop test turn the CP switch to either position C or D (according to the type of charger).

Connect your tester into the KEWEVSE adapter and perform a low current loop test.

To test the RCD and 6mA DC protection, connect your tester to the KEWEVSE adapter. Turn the CP switch to either position C or D (according to the type of charger). Depending on the sequence of tests performed by your tester after each trip, reset the RCD and then turn the PP state switch to the A\* position and then back to C or D (whichever is appropriate).

\* Some EVS equipment does not require you to do this.

**Fuse replacement**

The fuse (T10A / 250V, 5 x 20 mm). If no voltage is present between the L and N terminals of mains socket when the charging connector is connected to the charging station and the charging station is in charging mode, it is possible that mains socket fuse is broken.

- In that case disconnect adapter from the charging station
- Open cover from the back of the adapter (appropriate screwdriver is necessary)
- Locate and replace fuse with the fuse of the same type.
- Return back cover of the fuse compartment.

**Cleaning**

If the instrument is dirty after daily usage, it is advised to clean it by using a humid cloth and a mild household detergent. Prior to cleaning, ensure that instrument is switched off and disconnected from external voltage supply and any other instruments connected (such as UUT, control instruments, etc.).

Never use acid detergents or dissolvent for cleaning.

**Specifications**

Input voltage:	max. 250V (single phase), max. 430V (three phase) 50/60Hz
Measurement Category:	CAT II 300V
Mains socket rating:	250V/10A
Mains socket protection:	Fuse T10A/250V
PP simulation:	Open circuit, 13A, 20A, 32A, 63A
CP simulation:	States A, B, C, D
Error simulation:	CP error "E", PE (earth fault) error
PE Pre-Test:	Yes
Test connector type:	IEC62196-2 Type 2 male
Test cable length:	25cm
Working temperature:	0 ... +40°C
Storage temperature:	-10 ... +50°C
Humidity:	0-80% RH

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