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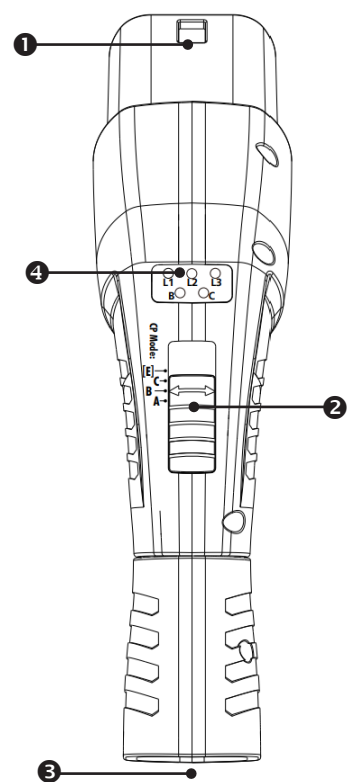
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6.0 Specifications

1. Operation Elements and Connectors







1. Type-2 plug
2. Slider switch for CP Mode selection
3. Test 4mm test sockets for L1, L2, L3, N, PE, CP
4. 5 x Indication LEDs for L1, L2, L3, B, C





2.0 References marked on instrument or in instruction manual

-  Warning of a potential danger, follow with instruction manual.
-  Reference! Please pay utmost attention.
-  Caution! Dangerous voltage. Danger of electrical shock.
-  Ground 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.
-  Instrument fulfils the standard (2012/19/EU) WEEE. This marking indicates that this product should not be disposed of with other household waste 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 environmentally safe recycling.

3.0 Safety references

-  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 120 V (60 V) DC or 50 V (25 V) 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 a responsible electronics technician, 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. The 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 must 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.

4.0 Testing

4.1 Purpose of Elma EVSE-101 Type 2 Adapter

The Elma EVSE-101 Type 2 Adapter is an accessory to support all relevant measurements of a multifunction tester (MFT) to simply wire between the EVSE charging point (Type-2 connector) and the measurement inputs of the MFT. All wires of the charging connector are available: L1, L2, L3, N, PE, CP and PP. This allows to perform typical MFT measurements: Voltage, frequency, phase indication, phase sequence, various RCD tests and measurements, insulation resistance, low ohm measurements, line and loop impedances, etc.

4.2 Test procedure

- Connect the needed 4mm test plugs of the Elma EVSE Type 2 Adapter to your MFT.
- Select CP Mode “A” with the slider switch.
 - Connect the test adapter to the Type-2

connector of the charging point.

- Select CP Mode “B” with the slider switch, the charging point should show “ready to charge”. LED indicator B will be lit.
- Select CP Mode “C” with the slider switch, the charging point starts charging. LED indicator C will light along with L1 for single phase charging point or L1, L2 & L3 if three phase charging point.
- Perform all measurements in active stage of the charging point (voltage and similar).
- After you completed all your measurements select CP Mode “A” with the slider switch to stop charging.
- Unplug Elma EVSE-101 test adapter from the charging point.

4.3 Proximity Pilot (PP) State (Cable Simulation)

The Elma EVSE-101 Type 2 Adapter is configured internally (220 Ohm between PP and PE) to setup 32 A current capability.

4.4 Control Pilot (CP) State (Vehicle Simulation)

With the CP Mode slider switch 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 Table below.

Vehicle State	State Description	CP-PE Resistance	CP terminal voltage
A	Electric vehicle not connected	Open (∞)	$\pm 12V$ @ 1kHz
B	Vehicle connected, not ready to charge	2.74k Ω	+9V/-12V @ 1kHz
C	Electric vehicle connected ready to charge, ventilation not required	882 Ω	+6V/-12V @ 1kHz
[E]	CP Error „E“ (see below)	0 Ω	0V

4.5 CP Signal Output Terminals

CP output terminals are connected to the CP and PE conductors of the tested charging station. Use an oscilloscope to check the waveform and amplitude of the CP signal. 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 wrong wiring of the charging station, low signal CP test terminals can get high, live hazard voltage.

4.6 CP Error “E” Simulation

“E” - CP Error simulation could be realized by pushing the slider switch into (spring loaded) position [E]. This will simulate behaviour of the station when there is a short circuit between CP and PE through internal diode (acc. to standard IEC/EN 61851-1). In the case of CP Error (“E” is pushed), result should be aborting of the charging process and new charging process is prevented. All LEDs Off.

4.7 Measuring Terminals

Measuring terminals (no. 1 and 3 on the picture) are directly connected to L1, L2, L3, N and PE conductors of the tested charging station. It is allowed 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.

-  The indication LEDs are connected between L1, L2, L3 and Neutral respectively, therefore insulation resistance testing between these terminals is not possible using this adapter. Applying insulation resistance test voltages to these terminals may damage the adapter and must be avoided.

5.0 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 solvent for cleaning.

6.0 Specifications

- Input voltage: 230/400V 3~ 50/60 Hz
- Measurement Category: CATII 300 V
- Mains socket rating: max. 10A
- PP simulation: setup internally to 32 A
- CP simulation: States A, B, C
- Error simulation: CP error “E”
- Test connector type: IEC 62196-2 Type 2 male
- Working temperature: 0 ... +40°C
- Storage temperature: -10 ... +50°C
- Humidity: 0-80 % RH
- Compliance with: IEC 61010-1/
IEC 61010-031