BZ820-EV ELECTRIC VEHICLE SOCKET TESTER

Instruction Manual

MARTINDALE ELECTRIC

Keeping You Safe

⚠ ALWAYS READ THESE INSTRUCTIONS BEFORE PROCEEDING

Thank you for using one of our products. For safety and a full understanding of its benefits please read this manual before use. Technical support is available from +44 (0)1923 441717 and support@martindale-electric.co.uk.

CONTENTS

1. SAFETY INFORMATION

REMEMBER: SAFETY IS NO ACCIDENT

These instructions contain both information and cautions that are necessary for the correct operation and maintenance of this product. It is recommended that you read the instructions carefully and ensure that the contents are fully understood. Failure to understand and to comply with the warnings and instructions can result in serious injury, damage or even death.

Particular attention should be paid to the Precautions and Technical Specification.

If the equipment is used in a manner not specified by Martindale Electric, the protection provided by the equipment may be impaired.

Please keep these instructions for future reference. Updated instructions and product information are available at: www.martindale-electric.co.uk

1.1 Meaning of Symbols and Markings

Caution - risk of danger and refer to instructions

Caution - risk of electric shock

Equipment protected by double or reinforced insulation (Class II)

CAT II (Measurement Category II) is applicable to test and measuring equipment directly to utilisation points (socket outlets and similar points) of the low-voltage MAINS installation. For further information visit www.martindale-electric.co.uk/measurement_categories.php

Equipment complies with relevant EU Directives

Equipment complies with relevant UK Conformity Assessed marking

End of life disposal of this equipment should be in accordance with relevant Directives.

1.2 Precautions

This product has been designed with your safety in mind, but please pay attention to the following warnings and cautions before use.

Warnings

In order to avoid the danger of electrical shock, it is important that proper safety measures are taken when working with voltages exceeding the extra low voltage (ELV) limit of 50V (25V) RMS AC or 120V (60V) DC. The values in brackets apply to restrictive voltage ranges (for example in the medical or agricultural sectors).

Where applicable other safety measures such as use of protective gloves, goggles etc. should be employed.

This socket tester must only be used by a skilled and competent person who is familiar with the relevant regulations, the safety risks involved and the consequent normal safe working practices, and under the conditions and for the purposes for which it has been constructed and specified.

Before each use the socket tester, plug and cable should be examined for damage, cracks, cuts or scratches. **Do not use** if damaged in any way.

Make sure the socket tester is dry, clean and free from dust, grease and moisture while in use to avoid the danger from electric shock due to surface leakage.

The BZ820-EV must only be used on CAT II installations up to 300V to earth.

Always verify the unit is functioning correctly on a known correctly-wired live EVSE socket outlet before and after use.

If none of the indicators illuminate, this does not necessarily mean the circuit under test is dead. For example the earth and neutral lines could both be open circuit, or the supply voltage may be <125V.

Does not detect E-N reversal.

Cautions

Avoid severe mechanical shock or vibration and extreme temperature.

2. INTRODUCTION

2.1 Inspection

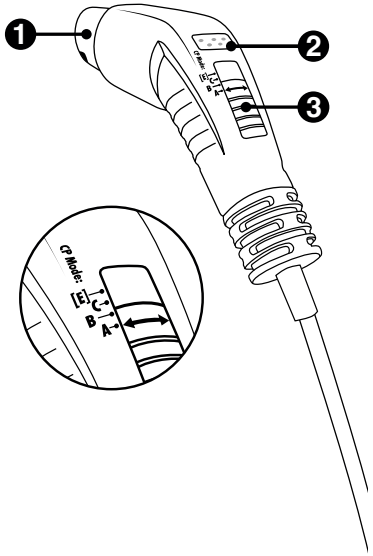
Examine the shipping carton for any sign of damage. Inspect the unit and any accessories for damage. If there is any damage then consult your distributor immediately.

2.2 Description

The Martindale BZ820-EV allows direct connection to an EVSE charging point Type-2 connector.

Switches and connectors

1. Type-2 Electric Vehicle charger plug
2. LED status indicators for CP, L1
3. Slider switch for CP Mode selection



3. OPERATION

3.1 Test procedure

- Select CP Mode “A” with the slider switch.
- Connect Martindale BZ820-EV test plug 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 B should illuminate.
- Select CP Mode “C” with the slider switch, the charging point starts charging. LED C should illuminate along with the relevant phase indicator (see table below)
- Perform all measurements while the charging point is active (voltage and similar).
- CP mode “E” is a fault simulation position which induces failure of the CP signal. This should cause the EV charger to stop charging.
- After completion of all measurements select CP Mode “A” with the slider switch to stop charging.
- Unplug Martindale BZ820-EV test plug from the charging point.

3.1.1 LED indication (EV adapter)

Vehicle State	State description	LED indications
A	No vehicle connected	None
B	Vehicle connected, not ready to charge	B only
C	Electric vehicle connected ready to charge	C & L1 (single phase)
[E] Error	CP Error	None

3.2 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 the table below.

Vehicle State	State description	CP-PE Resistance	CP Terminal Voltage
A	Electric vehicle not connected	Open (∞)	±12V @ 1KHz
B	Vehicle connected, not ready to charge	2.74kΩ	+9V/-12V @ 1KHz
C	Electric vehicle connected ready to charge, ventilation not required	882Ω	+6V/-12V @ 1KHz
[E] Error	CP Error “E”	0Ω	0V

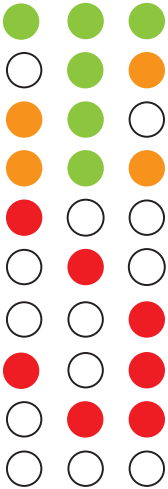
3.3 Measuring connection

The BZ820-EV directly connects to L1, L2, L3, CP, N and PE conductors of the tested charging station via the Type-2 EV adapter. The L2 & L3 LED’s will illuminate on the adapter if three phase voltage is present.

3.3.1 Wiring and Voltage Check

The condition of the wiring at the socket under test or any out of tolerance supply voltage will be indicated by the LED sequences of figure 1 on the lower row of LED's. If a wiring fault is detected or the supply voltage is out of tolerance the top loop indicator LED's will not illuminate as a loop impedance measurement is not made.

Figure 1. Wiring and Voltage Test Indicators (Lower LED's)



Wiring Correct, Voltage OK

Wiring Correct, Voltage high >270V

Wiring Correct, Voltage low <195V

Earth-Neutral voltage >30V

Open Neutral

Open Earth >500Ω

Phase (Live) Fault

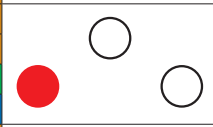
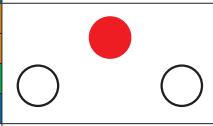
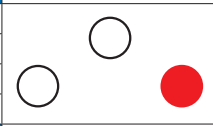
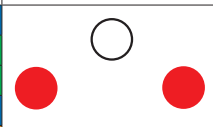
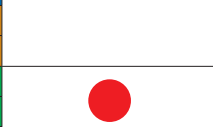
Phase-Neutral Reversal

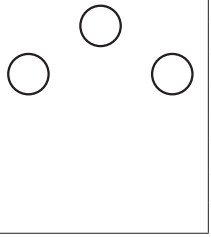
Phase-Earth Reversal

Serious wiring fault or voltage <135V

In the event of a fault being indicated, investigation should only be carried out by a suitably qualified electrician.

Figure 2. *Socket wiring and BZ820-EV indications when live (phase) is connected.*

N	E	L	
Socket Under Test Wiring			
N	E	L	
E	N	L	
E	E	L	
N	N	L	
OPEN	E	L	
OPEN	N	L	
OPEN	L	E	
OPEN	L	N	
N	OPEN	L	
E	OPEN	L	
L	OPEN	E	
L	OPEN	N	
L	E	OPEN	
L	N	OPEN	
E	L	OPEN	
N	L	OPEN	
L	E	N	
L	E	E	
L	N	E	
L	N	N	
E	L	L	
N	L	L	
N	L	E	
E	L	E	
E	L	N	
N	L	N	
L	E	L	
L	N	L	

N	E	L	
Socket Under Test Wiring			
OPEN	OPEN	OPEN	
L	L	L	
L	L	OPEN	
L	OPEN	L	
OPEN	L	L	
L	OPEN	OPEN	
OPEN	L	OPEN	
OPEN	OPEN	L	

4. MAINTENANCE

4.1 Cleaning

PRIOR TO CLEANING, ENSURE THE BZ820-EV IS DISCONNECTED FROM ANY LIVE CIRCUITS

If contamination is found, clean with a damp soft cloth and if necessary a mild detergent or alcohol. Do not use abrasives, abrasive solvents, or detergents which can cause damage to the unit. If a mild detergent is used, the unit should subsequently be thoroughly cleaned with a water dampened soft cloth. After cleaning, dry and allow to remain in a dry environment for 2 hours before use.

4.2 Repair & Service

There are no user serviceable parts. Return to Martindale Electric if faulty. Our service department will quote promptly to repair any fault that occurs outside the guarantee period.

4.3 Storage Conditions

The BZ820-EV should be kept in warm dry conditions away from direct sources of heat or sunlight, and in such a manner as to preserve their working life. It is strongly advised that they are not kept in a tool box where other tools may damage them.

5. WARRANTY AND LIMITATION OF LIABILITY

This Martindale product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is 2 years and begins on the date of receipt by the end user. This warranty extends only to the original buyer or end-user customer, and does not apply to fuses, disposable batteries, test leads or to any product which, in Martindale's reasonable opinion, has been misused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation, handling or storage.

Martindale authorised resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Martindale.

Martindale's warranty obligation is limited, at Martindale's option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to Martindale within the warranty period.

This warranty is the buyer's sole and exclusive remedy and is in lieu of all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. Martindale shall not be liable for any special, indirect, incidental or consequential damages or losses, including loss of data, arising from any cause or theory.

Since some jurisdictions do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any part of any provision of this warranty is held invalid or unenforceable by

a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision or other part of that provision.

Nothing in this statement reduces your statutory rights.

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Specification
BZ820-EV

Electrical
Nominal operating voltage: 230V~ ±10%.
Operating frequency: 50Hz
Power consumption: <2.5W
Power: from mains socket under test
Standby: after approx. 10 minutes
Voltage low indication: <195V >125V ± 5%
Voltage high indication: >270V ± 5%
Earth neutral voltage high indication: > 30V nominal
Open earth indication: >35kΩ ± 15%

General
Dimensions: 91(L) x 80(W) x 38(D)mm
Weight: approx. 120g

Environmental
Location: Indoor use & outdoor use in dry weather conditions only
Altitude: up to 2000m
Operating environment: -10°C to 40°C, at max. 60%RH
Mains supply voltage fluctuations: ± 10%
Overvoltage category: CAT II 300V
Pollution degree: 2

Safety
Conforms to BS EN 61010-1
Class II, Reinforced insulation

EMC: Conforms to BS EN 61326-1

Check out what else you can get from Martindale:

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- Continuity Testers
- Digital Clamp Meters
- Digital Multimeters
- Electricians' Kits
- Environmental Products
- Full Calibration & Repair Service
- Fuse Finders
- Labels
- Microwave Leakage Detectors
- Multifunction Testers
- PAT Testers & Accessories
- Phase Rotation Testers
- Proving Units
- Safe Isolation Kits
- Socket Testers
- Specialist Drummond Testers
- Thermometers & Probes
- Test Leads
- Voltage Indicators

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