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Date of publication: 15 August 2017

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Electric Vehicle Charging Safety Guidelines

Part 3: Electric vehicle supply equipment – New Zealand specific requirements, incorporating amendment 1

1 Application

1.1 This Part 3 of the Electric Vehicle Charging Safety Guidelines applies to electric vehicle supply equipment (EVSE).

2 Introduction

2.1 The Electric Vehicle Charging Safety Guidelines provide guidance for the safe selection and installation of EVSE consistent with New Zealand's electricity supply systems and infrastructure. They are intended to enable suppliers, installers and users to comply with fundamental safety requirements of the Electricity (Safety) Regulations 2010 and do not remove any obligation to comply with those regulations.

2.2 Part 3 of these Guidelines provides specific guidance, safe specification, supply, installation and use of In Cord–Control and Protection Devices (IC-CPD) for charging electric vehicles (EVs), supply cables and Mode 1 charging.

2.3 Part 3 of the Guidelines is intended to be read in conjunction with the *Electric Vehicle Charging Safety Guidelines* Parts 1 and 2, and with the Electricity (Safety) Regulations 2010. Refer to Part 1 for interpretation, terms and definitions, references and bibliography.

2.4 This guide incorporates amendment 1. Amendment 1 is to alter the final date of use for IEC 61851-1 so that product that would be otherwise safe and compliant is still able to be sold in New Zealand in compliance with these guidelines.

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2.5 Amendment 1 is not intended to replace the review of the guidelines indicated at initial publication.

3 Scope

3.1 The specific guidance in Part 3 of these Guidelines applies to all In Cord–Control and Protection Devices (IC-CPD) and supply cables specified, supplied or used for charging electric vehicles (EVs), as well as Mode 1 charging.

4 Interpretation – terms and definitions

4.1 The interpretation, terms and definitions stated in Part 1 of these Guidelines, apply to this Part.

4.2 See Part 1 of these Guidelines for references and bibliography.

5 Specification of In Cord–Control and Protection Devices

5.1 No person shall supply an IC-CPD that does not comply with:

(a) IEC 62752; OR

A1 (b) until 1 December 2019, IEC 61851-1 in conjunction with IEC 62196; OR

(c) be certified by UL in compliance with UL 2202 for operation when supplied at 230 V/400 V 50 Hertz ac.

NOTE: Additional suitable standards may be added at a later date.

5.2 No person may supply an IC-CPD unless it is rated and labelled to operate at a voltage of 230/400 V, 50 Hertz a.c.

5.3 In any case, no IC-CPD may have an inlet supply cord length greater than 2 m.

5.4 Presence of water

Where an IC-CPD is intended to be used outdoors or in a damp location, it must be selected with a degree of protection of at least IPX4 in accordance with AS 60529.

5.5 Inlet connection for an IC-CPD

An IC-CPD inlet connection must be one of the following:

(a) A plug compliant with AS/NZS 3112 rated at 10 A with an IC-CPD which either:

(i) restricts the maximum current to 8 A; OR

(ii) restricts the maximum current to 10 A and uses temperature sensing on the pins of the plug to limit the temperature of the pins to safe levels specified by the manufacturer of the plug.

(b) A plug compliant with IEC 60309 rated at 16 A with an IC-CPD which either:

(i) restricts the maximum current to 12 A; OR

(ii) restricts the maximum current to 16 A and uses temperature sensing on the pins of the plug to limit the temperature of the pins to safe levels specified by the manufacturer of the plug.

(c) A plug compliant with AS/NZS 3123 rated at 20 A with an IC-CPD which either:

(i) restricts the maximum current to 16 A; OR

(ii) restricts the maximum current to 20 A and uses temperature sensing on the pins of the plug to limit the temperature of the pins to safe levels specified by the manufacturer of the plug.

(d) A plug compliant with any other relevant IEC standard rated for continuous duty, where the IC-CPD restricts the maximum current to not more than the rating of the plug and, in any case, no more than 32 A.

5.6 Any IC-CPD that permits the user to adjust the maximum current must be fitted with a plug rated for the highest adjustable current in compliance with Part 3 – 5.5 of these Guidelines.

5.7 No person may supply or use any other plug for the inlet connection of an IC-CPD.

5.8 No person may supply or use an adaptor for an IC-CPD that is not approved by the manufacturer of the IC-CPD for use with that IC-CPD.

5.9 Limit on supply

An IC-CPD must not be used to supply more than one EV at a time.

6 Specification of supply leads

6.1 No person may supply a supply lead that does not comply with:

(a) IEC 61851-1 in conjunction with IEC 62196-1; OR

(b) be certified by UL in compliance with UL 2202 for operation when supplied at 230 V/400 V 50 Hertz a.c.

NOTE: Additional suitable standards may be added at a later date.

6.2 Presence of water

Where a supply lead is intended to be used outdoors or in a damp location, it must be selected with a degree of protection of at least IPX4 in accordance with AS 60529.

6.3 Labelling requirements

No person may supply a a.c. supply lead unless it is rated and labelled to operate at a voltage of 230/400 V, 50 Hertz a.c.

No person may supply an a.c. supply lead unless it is rated and labelled to operate at a current at or above its intended operating current.

No person may supply an d.c. supply lead unless it is rated and labelled to

operate at a voltage and current at or above its intended operating voltage and current.

7 Mode 1 charging

7.1 No person may supply equipment for Mode 1 charging that does not comply with IEC 61851-1:2010 in conjunction with IEC 62196-1.

NOTE: UL standards cannot be used as Mode 1 charging is specifically prohibited by United States national codes.

7.2 Limit on use

Mode 1 charging is only permitted for use in domestic or similar installations.

In New Zealand it is not permitted to use or allow the use of Mode 1 charging in locations that are not domestic or similar.

7.3 Supply cable requirements

All supply cables intended for Mode 1 supply must contain a Type 1 10 mA RCD within 300 mm of the inlet plug to the supply cable.

7.4 A Mode 1 supply lead inlet connection must be a plug compliant with AS/NZS 3112 rated at 10 A and the EV must either:

(a) restrict the maximum current to 8 A, or

(b) restrict the maximum current to 10 A and use temperature sensing on the pins of the plug to limit the temperature of the pins to safe levels specified by the manufacturer of the plug.

7.5 No person may supply or use any other plug for the inlet connection of a supply lead for Mode 1 charging.

7.6 No person may:

(a) supply a supply lead for Mode 1 charging with an adaptor, or

(b) supply an adaptor for a supply lead for Mode 1 charging

(c) use an adaptor with a supply lead for Mode 1 charging