SATS 5396:2024



## **Technical Specification**

# Electric vehicle (EV) chargers for residential use



#### SA TS 5396:2024

This Australian Technical Specification was prepared by EM-001, Electric Vehicle Operation. It was approved on behalf of the Standards Australia's Standards Development and Accreditation Committee on 19 September 2024.

This Technical Specification was published on 27 September 2024.

The following are represented on Committee EM-001:

ARRB (Australian Road Research Board)

Australian Automobile Association

Australian Automotive Aftermarket Association

Consumers Federation of Australia

**CSIRO** 

Department of Climate Change, Energy, the Environment and Water

Department of Transport (WA)

Department of Transport and Main Roads (QLD)

Electric Vehicle Council

Electrical Regulatory Authorities Council, Australia

Electrical Trade Union (Vic)

Energy Networks Australia

Engineers Australia

Federal Chamber of Automotive Industries

Fire Protection Association Australia

Heavy Vehicle Industry Australia

Institute of Automotive Mechanical Engineers

National Heavy Vehicle Regulator

Swinburne University of Technology

University of Technology Sydney

Victorian Automotive Chamber of Commerce

#### **Keeping Standards up-to-date**

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting: <a href="https://www.standards.org.au">www.standards.org.au</a>

SATS 5396:2024

## **Technical Specification**

## Electric vehicle (EV) chargers for residential use

First published as SA TS 5396:2024.

© Standards Australia Limited 2024

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher, unless otherwise permitted under the Copyright Act 1968 (Cth).

### **Preface**

This Technical Specification was prepared by the Standards Australia Committee EM-001, Electric Vehicle Operation.

The objective of this document is to provide consumers with advice for owning and operating an EV, and the installation and use of EV chargers for residential applications.

In line with Standardisation Guide 003, this Technical Specification has a medium level of transparency and a low level of consensus. This document has undergone a peer review and not a full public comment process.

The electric vehicle (EV) industry is rapidly evolving. This Technical Specification serves as initial guidance. Further iterations or revisions, including public consultation, may be necessary to adequately address the technological advancements that are expected to occur in the sector.

The terms "normative" and "informative" are used in Standards (and other publications) to define the application of the appendices to which they apply. A "normative" appendix is an integral part of a Standard, whereas an "informative" appendix is only for information and guidance.

NOTE 1 This document includes advice on electrical safety; however, the user of this document needs to refer to relevant federal, State and Territory, and local regulations and other Standards to determine legal requirements as applicable.

NOTE 2 Australian Standards are voluntary, and do not include contractual, legal or statutory requirements, with which Standards users are understood to conform to, and which take precedence.

The development of the EV charger specifications is an initiative of the NSW Department of Climate Change, Energy, the Environment and Water in collaboration with Transport for NSW. This important work has been facilitated through Standards Australia and aligns with the NSW Government's Net Zero Plan Stage 1: 2020–2030.

Standards Australia thanks Standards New Zealand for permission to reproduce content from SNZ PAS 6011:2021 which is copyright of Standards New Zealand. All rights reserved.

### **Contents**

Preface		<b>i</b> i
Introduction	on	<b>v</b>
1.1 1.2 1.3 1.4	Scope and general Scope Normative references Terms and definitions Abbreviations	
Section 2 2.1	Electric vehicle technology overview  EV types  2.1.1 Zero- and low-emission vehicles	8 8
	2.1.2 Battery electric vehicles 2.1.3 Plug-in hybrid electric vehicles 2.1.4 Hybrid electric vehicles 2.1.5 Fuel cell electric vehicles	88 88
2.2	EV chargers  2.2.1 General  2.2.2 Charging modes  2.2.3 Plug types and cable connections  2.2.4 Vehicle to infrastructure and communication  2.2.5 Charger functionality  2.2.6 EV charging recommendations	
2.3	Battery technology.  2.3.1 Understanding battery capacity and charging times.  2.3.2 Factors affecting the rate of charge.	15
Section 3 3.1	Technical specification requirements  Charging equipment installations  3.1.1 General  3.1.2 Analyzing load to accommodate electric chargers	19 19
3.2 3.3	Charging scenarios — Typical EVSE locations  Electrical safety for EV charging  3.3.1 General  3.3.2 Earthing  3.3.3 Safety tips  3.3.4 EV charger locations  Cybersecurity and data capture	
Section 4 4.1 4.2 4.3 4.4	Planning an extended trip in an EV  General  Before leaving  Charging during the trip  Charging at your destination	24 24 24
5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8	EV charging etiquette General Charger selection Time at a DC charger Queuing for an EV charger Damaged EV chargers Do not unplug other EVs when they are charging EV charging spaces Use of charging leads	25 25 25 25 26 26 26
<b>Section 6</b> 6.1 6.2	Understanding electrical load General Preliminary considerations	28



The is a new provider i arenade and chare publication at the limit below	This is a free preview.	Purchase the	entire publication	at the link below:
--	-------------------------	--------------	--------------------	--------------------

**Product Page** 

- Dooking for additional Standards? Visit Intertek Inform Infostore
- Dearn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation