

# RISSB

RAIL INDUSTRY SAFETY AND STANDARDS BOARD

## STANDARDS

### **AS 7662.1**

#### 25 kV AC Rail Traction Systems – Part 1: Traction Power Requirements



Australian  
**STANDARD**

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The Infrastructure Standing Committee verified that RISSB's accredited process was followed in developing the product, before the RISSB Board approved the document for publication.

RISSB wishes to acknowledge the positive contribution of subject matter experts in the development of this Standard. Their efforts ranged from membership of the Development Group through to individuals providing comments on a draft of the Standard during the open review.

I commend this Standard to the Australasian rail industry as it represents industry good practice and has been developed through a rigorous process.



**Alan Fedda**  
Chief Executive Officer  
Rail Industry Safety and Standards Board

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## Approval

Name	Date
Rail Industry Safety and Standards Board	17 September 2025

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## Preface

This standard was prepared by the 25 kV AC Rail Traction Systems – Part 1: Traction Power Requirements Development Group, overseen by the RISSB Infrastructure Standing Committee.

## Objective

The objective of this Standard is to provide the Australian rail industry with a set of mandatory and recommended requirements for the traction power system and includes the interface requirements with other rail systems.

The Standard addresses the requirements of a traction power system for the use of designers, contractors and rail infrastructure managers (RIMs).

The use of this Standard allows for a uniform approach to be applied to the design, installation, testing and commissioning, operation and asset management of traction power supply systems.

## Compliance

There are four types of provisions contained within Australian Standards developed by RISSB:

- (a) Requirements.
- (b) Recommendations.
- (c) Permissions.
- (d) Constraints.

**Requirements** – it is mandatory to follow all requirements to claim full compliance with the Standard. Requirements are identified within the text by the term ‘shall’.

**Recommendations** – do not mention or exclude other possibilities but do offer the one that is preferred. Recommendations are identified within the text by the term ‘should’.

Recommendations recognize that there could be limitations to the universal application of the control, i.e. the identified control is not able to be applied or other controls are more appropriate or better.

**Permissions** – conveys consent by providing an allowable option. Permissions are identified within the text by the term ‘may’.

**Constraints** – provided by an external source such as legislation. Constraints are identified within the text by the term ‘must’.

For compliance purposes, where a recommended control is not applied as written in the standard it could be incumbent on the adopter of the standard to demonstrate their actual method of controlling the risk as part of their WHS or Rail Safety National Law obligations. Similarly, it could also be incumbent on an adopter of the standard to demonstrate their method of controlling the risk to contracting entities or interfacing organisations where the risk may be shared.

RISSB Standards address known hazards within the railway industry. Hazards, and clauses within this Standard that address those hazards, are listed in Appendix A.

**Appendices** in RISSB Standards may be designated either “normative” or “informative”. A “normative” appendix is an integral part of a Standard and compliance with it is a requirement, whereas an “informative” appendix is only for information and guidance.

## Table of Contents

<b>Section 1</b>	<b>Scope and general</b> .....	<b>7</b>
1.1	Scope .....	7
1.2	Normative references .....	7
1.3	Defined terms and abbreviations.....	9
<b>Section 2</b>	<b>General</b> .....	<b>12</b>
2.1	General requirements for the 25 kV traction system .....	12
2.2	Voltage and frequency .....	12
2.3	Parameters relating to traction system performance .....	12
2.4	Equipment ratings .....	12
2.5	Insulation coordination .....	12
2.6	Regenerative braking .....	13
2.7	Electrical protection arrangements .....	13
2.8	Maximum fault current and duration .....	13
2.9	Lightning protection .....	13
2.10	Harmonic and dynamic effects .....	13
2.11	Overhead contact line geometry .....	13
2.12	Neutral sections .....	13
2.13	Protective provisions against electric shock .....	13
2.14	Design life .....	14
<b>Section 3</b>	<b>25 kV AC traction power system design</b> .....	<b>15</b>
3.1	General 25 kV AC traction power system design requirements .....	15
3.2	Traction system modelling .....	15
3.3	Environmental .....	16
3.4	Operational .....	17
3.5	Earthing and bonding .....	17
3.6	Electrical system compatibility.....	18
3.7	Reliability, maintainability and maintenance.....	18
3.8	Safety.....	18
3.9	Integrated review .....	19
<b>Section 4</b>	<b>Electrical protection</b> .....	<b>20</b>
4.1	Description of a protection system .....	20
4.2	Protection system reports.....	20
4.3	Protection system requirements .....	21
4.4	Protection Interfaces.....	22
4.5	Lightning protection .....	22
<b>Section 5</b>	<b>SCADA and telecoms</b> .....	<b>23</b>
5.1	SCADA.....	23
5.2	Telecommunications .....	23
<b>Section 6</b>	<b>Interfaces</b> .....	<b>24</b>

6.1	Network service provider .....	24
6.2	Rolling stock .....	24
6.3	Track and civil infrastructure.....	25
6.4	Signalling .....	25
6.5	Earthing and bonding .....	25
6.6	Stations and depots.....	25
6.7	Third parties .....	26
6.8	Operations.....	26
6.9	Other railways .....	26
<b>Section 7</b>	<b>Equipment .....</b>	<b>27</b>
7.1	Switchgear .....	27
7.2	Traction power transformers including autotransformers .....	27
7.3	Static frequency converter.....	27
7.4	Disconnectors, earthing switches and switches.....	27
7.5	Cable management .....	28
7.6	Low voltage supplies .....	28
7.7	Fire protection.....	28
7.8	Overhead Contact Line.....	28
7.9	Short circuit test device.....	29
7.10	Building.....	29
<b>Section 8</b>	<b>Entry into service .....</b>	<b>30</b>
8.1	Assurance requirement.....	30
8.2	Equipment testing requirements .....	30
8.3	System testing requirements .....	30
<b>Section 9</b>	<b>Sustainability and environment.....</b>	<b>31</b>
9.1	Energy efficiency .....	31
9.2	Environmental impact .....	31
9.3	Resilience to climate change.....	31
<b>Section 10</b>	<b>Maintenance and operation .....</b>	<b>32</b>
10.1	Electrical clearances .....	32
10.2	Isolation and earthing .....	32
10.3	Asset management.....	32
10.4	Operation .....	32
<b>Appendix A</b>	<b>Example Traction Power System Designs (Informative).....</b>	<b>33</b>
A.1	Overview .....	33
A.2	Rail return.....	33
A.3	Return earth wire .....	34
A.4	Boosterless return conductor .....	34
A.5	Boostered return conductor .....	35
A.6	Autotransformer fed .....	36
A.7	Static frequency converter fed solutions .....	37

<b>Bibliography (Informative)</b> .....	<b>38</b>
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## Tables

Table 2-1 Typical Design Life for 25 kV AC Traction System Equipment .....	14
Table 3-1 Minimum Environmental Conditions .....	17

## Figures

Appendix Figure A-1 Rail return electrical layout .....	33
Appendix Figure A-2 Boosterless return conductor electrical layout .....	34
Appendix Figure A-3 Boosted return conductor electrical layout .....	35
Appendix Figure A-4 Autotransformer fed layout .....	36
Appendix Figure A-5 Substation electrical layout .....	37

## Section 1 Scope and general

### 1.1 Scope

This document is the first part of a planned three-part series of standards that specifies the requirements for any member or participant of the Australian rail industry that is involved in any phase of the life cycle for 25 kV AC traction systems.

This document provides the minimum requirements for the design, construction, testing, commissioning and ongoing asset management of 25 kV traction systems. It does not preclude the application of higher performance standards (e.g., based on local experience and good engineering practice which could be contained in the management of traction systems standards, codes, guidelines and procedures of rail transport operators (RTO)).

This document provides the overall requirements of the traction system. The traction system is the equipment and systems forming part of the 25 kV power supplies for rolling stock fitted with a pantograph.

### 1.2 Normative references

The following documents are referred to in the text in such a way that *some* or all of their content constitutes requirements of this document:

- AS 1768, *Lightning protection*
- AS 2067, *Substations and high voltage installations exceeding 1 kV a.c.*
- AS 7637, *Hydrology and hydraulics*
- AS 7722, *EMC management*
- AS 60076.1, *Power transformers*
- AS 61439, *LV switchgear and control gear assemblies*
- AS 62271.200, *High-voltage switchgear and controlgear, Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*
- AS 62271.202, *High-voltage switchgear and controlgear, Part 202: High-voltage/low-voltage prefabricated substation*
- AS/NZ 1170.2:2021 *Structural design action, Part 2: Wind actions*
- AS/NZS 3000, *Electrical installations (known as the Australian/New Zealand Wiring Rules)*
- IEC 60099, *Surge arresters*
- IEC 60870-5, *Telecontrol equipment and systems - Part 5: Transmission protocols*
- IEC 61508-1, *Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 1: General requirements*
- IEC 61850, *Communication networks and systems for power utility automation*
- IEC 62351, *Power systems management and associated information exchange – Data and communications security*
- IEC 62443, *Network and system security for industrial process measurement and control*
- IEC 62848, *Railway applications - DC surge arresters and voltage limiting devices*
- ISO 11064, *Ergonomic design of control centres*
- ISO 55001, *Management systems - Requirements*