AS 7651:2020

Australian STANDARD®

Axle counters

RISSB
RAIL INDUSTRY SAFETY AND STANDARDS BOARD

Train Control Systems Standard

This Australian Standard® AS 7651 Axle counters was prepared by a Rail Industry Safety and Standards Board (RISSB) Development Group consisting of representatives from the following organisations:

Sydney Trains
Aldridge Transport for NSW
Mott MacDonald
PTV
NJT Rail Services
United Goninian Limited
Metro Trains Melbourne
Frauscher Australia
Siemens
Queensland Rail
ARC Infrastructure
Thales
PTA WA

The Standard was approved by the Development Group and the Train Control Standing Committee in October, 2020. On October 12, 2020 the RISSB Board approved the Standard for release.

This Standard was issued for public consultation and was independently validated before being approved.

Development of this Standard was undertaken in accordance with RISSB's accredited process. As part of the approval process, the Standing Committee verified that proper process was followed in developing the Standard

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 comment 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.

Deb Spring
Exec. Chair / CEO
Rail Industry Safety and Standards Board

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Notice to users

This RISSB product has been developed using input from rail experts from across the rail industry and represents good practice for the industry. The reliance upon or manner of use of this RISSB product is the sole responsibility of the user who is to assess whether it meets their organisation's operational environment and risk profile.

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This Standard was prepared by the Rail Industry Safety and Standards Board (RISSB) Development Group AS 7651 Axle counters. Membership of this Development Group consisted of representatives from the organisations listed on the inside cover of this document

Objective

The objective of this Standard is to provide a consistent approach to the use of axle counters within the Australian and New Zealand railway industry.

This Standard should be read in conjunction with AS 7711 Signalling Principles.

Compliance

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

1. Requirements.
2. Recommendations.
3. Permissions.
4. 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 recognise 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 this Standard it could be incumbent on the adopter of this 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 this 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

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1 Scope and general

1.1 Scope

This Standard provides requirements and recommendations for the design, installation, maintenance, and operation of axle counters systems in safety critical applications.

The scope of this Standard includes the following:

(a) Design.

(b) Network and operational requirements.

(c) Track maintenance considerations.

(d) Testing and maintenance requirements.

Where the safety requirements of an axle counter system do not require a SIL 4 rating this Standard may be adopted in part or in full if appropriate to do so.

1.2 Exclusions

1.2.1 Axle counter applications

This Standard excludes any requirements related to the application and use for axle counters.

1.2.2 Broken rail detection

Track circuits provide a limited form of broken rail detection which is not provided by axle counters. This Standard does not provide designers or Rail Infrastructure Managers (RIM) with guidance regarding the provision or management of broken rail detection.

Further guidance regarding management of broken rails is provided in AS 7640.

1.3 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 7514 Wheels
- AS 7517 Wheelsets
- AS 7640 Rail management
- AS 7663 Railway signal cables
- AS 7664 Railway signalling cable routes, pits, and foundations
- AS 7702 Rail equipment type approval
- AS 7703 Railway signalling power supplies
- AS 7711 Signalling principles
- AS 7715 Train detection
- AS 7717 Signal testing and commissioning
- AS 7770 Rail cyber security