



Rolling Stock Event Recorders



Rolling Stock Standard



This Australian Standard® AS 7527 Rolling Stock Event Recorders was prepared by a RISSB Development Group p consisting of representatives from the following organisations:

RTBU	Faiveley Transport	Bruce Engineering
UGL Limited	Circuitlink	ONRSR
ARTC	MVTechnology	ASA
ATSB		

The Standard was approved by the Development Group and the Rolling Stock Standing Committee in June, 2015 and subsequently by the Development Advisory Board (DAB) in June, 2015. On June 19, 2015 the RISSB Board approved the Standard for release.

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

Development of the standard was undertaken in accordance with RISSB's accredited process, which includes an independent validation. 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.



Kevin Taylor
Chief Executive Officer
Rail Industry Safety and Standards Board

Keeping Standards up-to-date

Australian Standards developed by RISSB are living documents that reflect progress in science, technology and systems. To maintain their currency, Standards are reviewed every seven years, and new editions are published. Between editions, amendments may be issued. Australian Standards developed by RISSB may also be withdrawn.

It is important that readers assure themselves they are using a current RISSB Standard, which should include any amendments that may have been issued since the Standard was published. Information about Australian Standards developed by RISSB, including amendments can be found by visiting www.rissb.com.au

RISSB welcomes suggestions for improvements, and asks readers to notify us immediately of any apparent inaccuracies or ambiguities. Members are encouraged to use the change request feature of the RISSB website at: <http://www.rissb.com.au/products/>. Otherwise, please contact us via email at rissb@rissb.com.au or write to Rail Industry Safety and Standards Board, PO Box 4271, Kingston, ACT 2604.

AS 7527:2015

Rolling Stock Event Recorders

Document Details

First published as: AS 7527.1, AS 7527.3, AS 7527.4

ISBN 978-1-76035-185-4

Published by Rail Industry Safety and Standards Board (RISSB) ABN: 58 105 001 465

PO Box 4271, Kingston ACT 2604, Australia.

Copyright

©RISSB

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 RISSB, unless otherwise permitted under the Copyright Act 1968.

Cover image supplied by UGL.

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.

Document Control

Identification

Document Title

AS 7527:2015 Rolling Stock Event Recorders

Document History

Publication Version	Effective Date	Reason for Change
2015	19/06/2015	Consolidate 3 documents. Clarification of the key purpose of the requirements of the standard, Explicit clarification that ETCS Juridical Recording Devices are excluded from the requirements of the standard. Clarification and better definition of various recording parameters to improve implementation.
2013	05/06/2013	First edition

Approval

Name	Date
Development Advisory Board (DAB)	10/06/2015
Rail Industry Safety and Standards Board (RISSB)	19/06/2015

Contents

1	Introduction.....	5
1.1	Purpose	5
1.2	Scope	5
1.3	Compliance.....	5
1.4	Referenced documents	6
1.4.1	Normative References.....	6
1.4.2	Informative References	6
1.5	Definitions.....	6
2	Rolling Stock Requiring Event Recorders	10
3	Device Type, Status and Identification	10
4	Data To Be Recorded.....	11
4.1	Operational Requirements.....	11
4.1.1	Locomotive and Self-Propelled Passenger Rolling Stock	11
4.1.2	Infrastructure Maintenance Rolling Stock.....	12
4.2	Brake System	12
4.3	Driver Supervisory Systems - Locomotives and Passenger Vehicles	13
4.3.1	Vigilance System	13
4.3.2	Station Protection System	13
4.3.3	Deadman System	13
4.3.4	Automatic Warning System	13
4.3.5	Train Protection and Warning System (TPWS) and Train Stop System	13
4.3.6	Train Protection System	13
4.4	Driver Supervisory Systems Infrastructure Maintenance Vehicles.....	14
4.5	Time and Date	14
4.5.1	Time.....	14
4.5.2	Date	14
4.5.3	Global Positioning Systems.....	15
4.6	Driverless Vehicle or Remote-Operated Vehicle	15
5	Timings.....	15
6	Accuracy and Resolution of Recorded Data	15
7	Survivability of Data.....	16
8	Data Extraction and Use	16
9	Maintenance.....	17

Appendix Contents

Appendix A	Hazard Register.....	18
------------	----------------------	----

1 Introduction

1.1 Purpose

This document describes the requirements for event recorders installed in locomotive, self-propelled passenger, and infrastructure maintenance rolling stock vehicles.

The main purpose of the requirements is to ensure that event recorders fitted to rolling stock capture a minimum set of appropriate data for the use of rolling stock operators, rail infrastructure managers, investigators and maintainers for forensic investigations of rail incidents.

1.2 Scope

This document applies to new, modified and existing locomotive rolling stock, self-propelled passenger rolling stock and infrastructure maintenance rolling stock.

For new event recorder installations, all sections apply.

For existing event recorder installations, only sections 2 and 9 apply.

The document applies to the design, construction and maintenance of rolling stock.

Operation of rolling stock in regards to network safeworking rules and route standards is not covered.

This standard is not intended to cover ETCS juridical event recorders.¹

Rolling stock used on light rail, cane railway and monorail networks; and road rail vehicles are not covered.

1.3 Compliance

There are two types of control contained within RISSB Standards:

- (a) mandatory requirements
- (b) recommended requirements

Each of these types of control address hazards that are deemed to require controls on the basis of existing Australian and international Codes of Practice and Standards.

A **mandatory** requirement is a requirement that the standard provides as the only way of treating the hazard.

Mandatory requirements are identified within the text by the term shall.

A **recommended** requirement is one where the standard recognises that there are limitations to the universal application of the requirement and that there may be circumstances where the control cannot be applied or that other controls may be appropriate or satisfactory, subject to agreement with the Rolling Stock Operator, Rail Infrastructure Manager and/or Rail Safety Regulator.

Recommended clauses are mandatory unless the RIM or RSO can demonstrate a better method of controlling the risk.

Recommended requirements are to be considered when compliance with the standards is being assessed.

¹ Juridical event recorders have their own standards for event recorders.

Recommended requirements are identified within the text by the term should.

Hazards addressed by this standard are included in an appendix. Refer to the RISSB website for the latest Hazard Register Guideline: www.rissb.com.au

1.4 Referenced documents

1.4.1 Normative References

The following referenced documents are indispensable for the application of this Standard:

- (a) IEEE 1482.1 Standard for Rail Transit Vehicle Event Recorders
- (b) UK RSSB standard GM/RT 2472 Data Recorders on Trains - Design Requirements
- (c) US Code of Federal Regulations 49 CFR 229 Appendix D Railroad Locomotive Safety Standards - Criteria for Certification of Crashworthy Event Recorder Memory Module
- (d) AS ISO 8601 -2007 Data elements and interchange formats – Information interchange – Representation of dates and times

1.4.2 Informative References

The following referenced documents are cited in this Standard for information only:

- (a) AS 4292 Railway safety management
- (b) AS 7501 Railway rolling stock - Rolling stock certification
- (c) AS7533.1 Railway Rolling Stock - Driving Cabs - Part 1 Locomotive Rolling Stock, AS7533.3 Driving Cabs Passenger Rolling Stock, and AS7533.4 Railway Rolling Stock - Driving Cabs - Infrastructure Maintenance Rolling Stock.

1.5 Definitions

Analogue Signal: A nominally continuous electrical signal that varies in amplitude or frequency in response to changes in sound, light, heat, position, or pressure.

ATMS: Abbreviation for Advanced Train Management System, a proprietary train protection and control system.

AWS: Automatic Warning System. AWS is a system which warns the driver of the aspect of the next signal. It is an advisory system only.

Blended Braking: A brake system where the friction brake application is blended with another method of braking (eg dynamic braking), whether as a normal or emergency brake application.

Cane Railway Network: A railway system dedicated to hauling harvested sugar cane from farms to a raw sugar factory. Typically 610mm gauge.

Country Warning Device: A high noise warning horn or whistle.

Deadman System: Also known as an Operator Enable System or Driver Safety Control. A system which reacts by making a penalty brake application, if a continuous control input required of the Driver is interrupted or not detected.

Digital Signal: An electronic signal transmitted as a binary code through a control line, with the signal state recorded as either "on" or "off".