



Irish Railway Standard IRS-403-A

Requirements for Vehicle Network Interfaces
for Vehicles

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|-------|---|------------|
| A | CRR on behalf of the Irish Railway Industry | 23.10.2020 |

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1. Foreword

1.1. This Irish Railway Standard:

- i. cannot replace any Technical Standard for Interoperability (TSI) or other legal requirements which may be applicable to a given project;
- ii. is recommended to be chosen in accordance with RFU-STR-088 as an Alternative Solution in conjunction with a TSI Parameter to demonstrate conformity with the Essential Requirements;
- iii. may be called up as a code of practice in conjunction with CSM-REA 352/2009 and 402/2013;
- iv. may be called up as good industry practice in conjunction with Railway Safety Act 2005;
- v. may be called up as a code of practice in conjunction with the safe integration of projects within the Railway System in the Republic of Ireland as defined under 2008/57/EC Article 15 or 2016/797 (EU) Article 18;
- vi. may in parts or in full be called up as a National Technical Rule (NR) for the Republic of Ireland in conjunction with 2008/57/EC or 2016/797 (EU).

1.2. Where this document is called up as an NR, the reason for its application shall be identified in line with EU 2016/797 Art 13(2):

- i. where the TSIs do not cover, or do not fully cover, certain aspects corresponding to the essential requirements, including open points as referred to in 2016/797 Article 4(6);
- ii. where non-application of one or more TSIs, or parts of them, has been notified under 2016/797 Article 7 or 2008/57/EC Article 9 or Article 20;
- iii. where a specific case requires the application of technical rules not included in the relevant TSI;
- iv. national rules used to specify existing systems, limited to the aim of assessing technical compatibility of the vehicle with the network;
- v. networks and vehicles not covered by TSIs;
- vi. as an urgent temporary preventive measure, in particular following an accident.

2. Scope and Application

2.1. Scope

2.1.1. Requirements for Vehicle Network interfaces for Vehicles.

2.2. General Compliance Date

2.2.1. This Irish Railway Standard comes into force and is to be complied with for all new authorisations from the date of issue.

2.3. NR Provisions

2.3.1. The following table identifies all sections of this IRS which are proposed as Republic of Ireland NRs. The rationale is identified in line with section 1.2.

2.3.2. In each case the assessment of an Irish NR shall be performed by an IE recognised DeBo employing the Modules stated. The assessment Modules are defined in 2010/713/EC. In this context, the term NoBo (as used in 2010/713/EC) shall be understood to mean DeBo and references to TSIs shall be understood to mean references to Irish NRs.

Table 1 NR Provisions

| Section | Rationale (as defined in section 1.2) | | Module |
|-------------|--|----|---|
| 6.1 | Non-application of TSIs | ii | for vehicles: (SB + SD) or (SB + SF) or SH1 |
| | Technical Compatibility between on-board and trackside equipment | iv | |
| | Networks/ vehicles not covered by TSIs | v | |
| 6.2 to 6.12 | Absence of TSI requirements | i | for vehicles: (SB + SD) or (SB + SF) or SH1 |
| | Non-application of TSIs | ii | |
| | Technical Compatibility between on-board and trackside equipment | iv | |
| | Networks/ vehicles not covered by TSIs | v | |

3. Normative References

| | |
|-----------------------|--|
| TSI L&P | Commission Regulation (EU) No 1302/2014 of 18 November 2014 concerning a technical specification for interoperability relating to the 'rolling stock — locomotives and passenger rolling stock' subsystem of the rail system in the European Union. Currently this includes the following amendments – (EU) 2016/919; (EU) 2018/868 and (EU) 2019/776 and (EU) 2020/387. |
| TSI INF | Commission Regulation (EU) No 1299/2014 of 18 November 2014 on the technical specifications for interoperability relating to the 'infrastructure' subsystem of the rail system in the European Union. Currently this includes the following amendment – (EU) 2019/776. |
| TSI WAG | Commission Regulation (EU) No 321/2013 of 13 March 2013 concerning the technical specification for interoperability relating to the subsystem 'rolling stock — freight wagons' of the rail system in the European Union and repealing Decision 2006/861/EC. Currently this includes the following amendments – (EU) 2015/924 and (EU) 2019/776. |
| Directive 2016/797/EC | Directive (EU) 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the rail system within the European Union (Recast). This shall include any amendments to the document. |
| Directive 2008/57/EC | Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community (Recast). This shall include any amendments to the document. |
| CSM-RA 402/2013 | Commission Implementing Regulation (EU) No 402/2013 of 30 April 2013 on the common safety method for risk evaluation and assessment and repealing Regulation (EC) No 352/2009. This shall include any amendments to the document. |
| S.I. No. 419 of 2011 | Irish Statutory instrument, European Communities (Interoperability of the Rail System) Regulations. This shall include any amendments to the document. |

4. Terms and Definitions

| | |
|----------|---|
| IE | Republic of Ireland |
| Proposer | The proposer is the organisation which proposes a modification. This includes the cases where the modification is mandatory and the proposer merely proposes the detailed concept on how the modification is performed. In certain cases, the proposer may be the applicant for an authorisation or be a supplier to such an applicant. |

5. Symbols and Abbreviated Terms

| | |
|------|--|
| CRR | Commission for Railway Regulation |
| CSM | Common Safety Method |
| DeBo | Designated Body |
| ERA | European Railway Agency |
| IM | Infrastructure Manager |
| NoBo | Notified Body |
| NR | National Technical Rule |
| OTM | On Track Machine |
| RU | Railway Undertaking |
| TSI | Technical Specification for Interoperability |
| WAG | Wagon |

6. Requirements for Vehicles

6.1. Any Parameter relating to Vehicles in Case of a Non-application of a TSI or parts of a TSI

6.1.1. *Note: NR where non-application of one or more TSIs or parts of them has been notified under Directive 2016/797/EC Article 7 or Directive 2008/57/EC Article 9 or Article 20.*

6.1.2. *Note: NR for TSI L&P Section 7.1.1.3*

6.1.3. In this case the requirements for any relevant parameter, specifying the alternative provisions to be applied instead of the TSIs, shall be established by the proposer in line with Railway Safety Act 2005 (incl. all amendments) related CRR guidance and S.I. No. 419 of 2011 23(2).

6.1.4. Where an Applicant chooses to not apply the TSIs according to TSI L&P Section 7.1.1.3, the Applicant shall employ alternatively as National Rule the respective parts of the TSIs in combination with the respective IE Specific Cases.

6.1.5. The proposer shall demonstrate the documented systematic establishment of requirements.

6.1.6. The proposer shall demonstrate the documented evidence on compliance with the established requirements.

6.2. Compatibility of Vehicles with Train Detection Systems

6.2.1. *Note: NR for TSI L&P Section 4.2.3.3.1, Appendix J.2 Index 1 and ERA TO ERA/ERTMS/033281 Rev 4.0.*

6.2.2. An axle which may be a leading axle of a train shall not be sanded.

6.2.3. *Note: This is necessary because the IE Class B system and certain train detection systems in IE require the first axle of a train to have good electric contact with the track.*

6.3. Running Dynamic Behaviour for Vehicles Designed for 1520mm Track Gauge

6.3.1. *Note: Currently no 1520 mm network is existing in IE. Therefore there is no need for a NR to cover the open point related to NR TSI L&P Section 4.2.3.4.2(1).*

6.4. Equivalent Conicity, Design Values for New Wheel Profiles

6.4.1. *Note: NR for TSI L&P Section 4.2.3.4.3.1(1).*

6.4.2. Acceptable values for equivalent conicity, design values for new wheel profiles as well as in-service values, shall be established in conjunction with the evaluation of the running dynamic behaviour according to EN14363:2016.

6.5. Eddy Current Track Brakes at Vehicles

6.5.1. *Note: NR for TSI L&P Section 4.2.4.8.3 (6).*

6.5.2. Until further research on the compatibility of eddy current Track brakes with the existing infrastructure is performed, the use of Eddy Current track brakes is prohibited for operation on infrastructure in Ireland.

6.5.3. Where such brakes are provided on vehicles, they must be turned off upon transition onto infrastructure in Ireland and inadvertent turning back on must occur less frequent than $1 \cdot 10^{-9}$ per h.

6.6. Aerodynamic Effect of vehicles on Ballasted Track at operating speeds above 250km/h

6.6.1. *Note: As long as no infrastructure for operation above 250km/h is available in IE, no NR is required in relation to TSI L&P Section 4.2.6.2.5(2).*

6.7. Fire Containment and Control Systems other than Full Cross Section Partitions within Passenger/Staff Areas

6.7.1. *Note: As long as no infrastructure which requires Category B rolling stock is existing in IE, no NR is required in relation to TSI L&P Section 4.2.10.3.4(4).*

6.8. Running Dynamic Behaviour On-Track Tests of Freight Wagons, Non-Conformity with TSI WAG Section 6.2.2.3

6.8.1. *Note: NR for TSI WAG Section 4.2.3.5.2 in combination with 6.2.2.3.*

6.8.2. In cases where running dynamic behaviour on track tests cannot be performed in full compliance with TSI WAG Section 4.2.3.5.2 in combination with 6.2.2.3, the non-fulfilled aspects shall be replaced by safety requirements which shall be established between the proposer and any IM on whose network operation is intended, and – as far as this(these) organisation(s) is(are) already determined at that time - any RU intending to operate the vehicle. The safety requirements shall be established by employing the risk management process defined in CSM 402/2013.

6.8.3. The proposer shall demonstrate the documented systematic establishment of requirements.

6.8.4. The proposer shall demonstrate the documented evidence on compliance with the established requirements.

6.9. Wheels for Freight Wagons other than Forged or Rolled

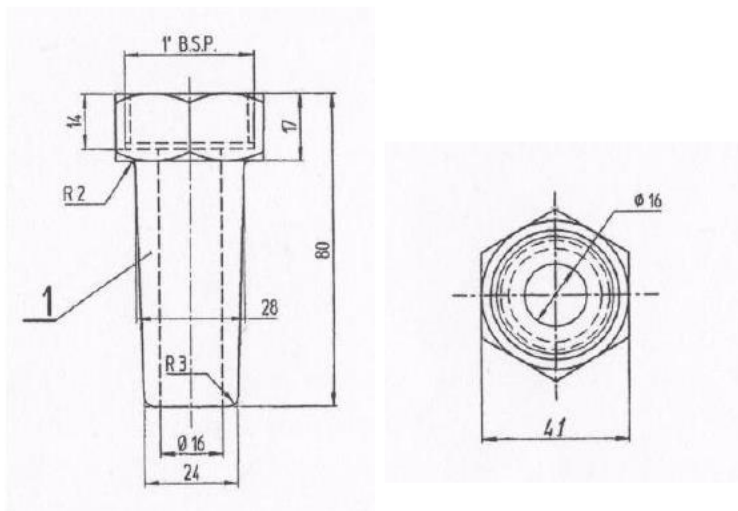
6.9.1. *Note: NR for TSI WAG Section 6.1.2.3 (b) and L&P TSI Section 6.1.3.1(3).*

6.9.2. Wheels other than forged or rolled are not permitted for operation in Ireland.

6.10. Interface for water filling

6.10.1. *Note: NR for TSI L&P Section 7.3.2.23.*

6.10.2. The vehicle shall be equipped with the following water filling nozzle:



6.11. Special requirements for stabling of trains

6.11.1. *Note: NR for TSI L&L Section 7.3.2.24.*

6.11.2. For interior cleaning equipment a socket must be provided inside each vehicle. This socket shall provide electrical power at 230vac 50Hz. This socket shall incorporate an RCD and shall comply with BS 7288:1990.

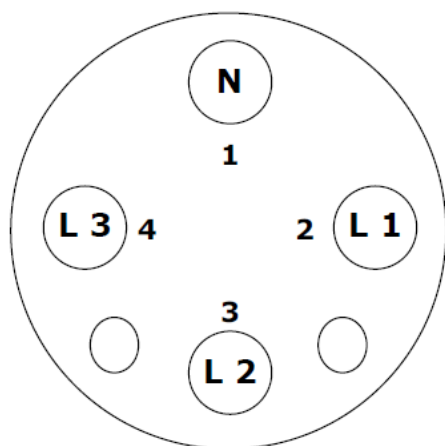
6.11.3. *Note: For shore supplies 400vac 50Hz electrical systems are employed in IE. Two interfaces are applied:*

- *Shore Supply interface for loco hauled carriages at 400vac 50Hz.*
- *Shore Supply interface for DMUs at 400vac 50Hz.*

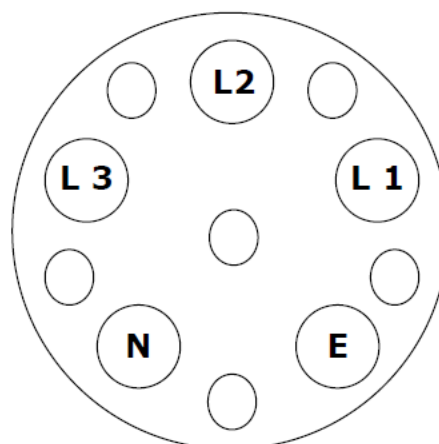
6.11.4. Vehicles intended to be hauled/ pushed by locomotives shall be fitted with a socket compatible with "Carrier Kehops CAM 1238".

6.11.5. DMUs or EMUs shall be fitted with a socket compatible with "GIMOTA GR06L40-A11SN-CAC".

6.11.6. The phase arrangement for both interfaces is as per following diagrams:



Loco Hauled Carriage 3 Ph Shore Supply
View on Socket Face as installed on vehicle
Showing Phase Arrangement



DMU / EMU 3 Ph Shore Supply.
View on Socket Face
Showing Phase Arrangement

6.12. Refuelling Equipment

6.12.1. *Note: NR for TSI L&P Section 7.3.2.25.*

6.12.2. In order to be compatible with the refuelling equipment fitted in IE, vehicles with diesel fuel tanks shall be fitted with a “Banlaw 23R” or equivalent adaptor.

6.12.3. The adaptor shall be fitted horizontally, facing to the side of the vehicle. There shall be a free space of 200mm around the adaptor up to the mounting base. Other additional refuelling interfaces may additionally installed.

6.12.4. At OTMs it is permitted to fit an alternative refuelling interface to the adaptor defined in subsection 6.12.2.

7. Further Clarification

Further clarification can be sought from the CRR by phone at +353 1 206 8110 or by email info@crr.ie.

8. List of Participants

The participants for each revision of this IRS are shown below in Table 2.

Note: IRS-403-A was extracted from IRS-201-A following a request from ERA to separate the NR requirements contained in IRS-201-A between those for Vehicles and those for Fixed Installations. The requirements for Fixed Installations were extracted from IRS-201-A into IRS-501-A.

Table 2 List of Participants by Revision

| Participant Name and Organisation | | Involved in Issue 201-A | Involved in Issue 403-A | |
|-----------------------------------|-------|-------------------------|-------------------------|--|
| Aidan O Sullivan | CRR | ✓ | | |
| Gavin Duffy | IÉ-RU | ✓ | | |
| Maik Wuttke | CRR | ✓ | ✓ | |
| Mary Molloy | CRR | ✓ | | |
| Tommy Johnson | IÉ-IM | ✓ | | |