

ERA ERTMS/ETCS UNIT  
INTERFACES BETWEEN  
CONTROL-COMMAND AND SIGNALLING TRACKSIDE  
AND OTHER SUBSYSTEMS

Amendment record

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0.2	04/03/2010	all	different modifications proposed	AC
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0.4 modified			first proposal to insert emc requirements for magnetic fields	AC
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## Table of Content

<b>1. INTRODUCTION</b>	<b>4</b>
<b>2. SCOPE</b>	<b>5</b>
<b>3. INTERFACE CHARACTERISTICS</b>	<b>8</b>
<b>3.1. Vehicle design and operation</b>	<b>8</b>
3.1.1. Definitions	8
3.1.2. Axle distances	10
3.1.3. Wheel geometry	11
3.1.4. Use of sanding equipment	13
3.1.5. On-board flange lubrication	14
3.1.6. Use of composite brake blocks	14
3.1.7. Vehicle mass	14
3.1.8. Use of shunt assisting devices	14
3.1.9. Impedance between wheels	15
3.1.10. Combination of rolling stock characteristics for the purpose of adequate dynamic shunting impedance	15
<b>3.2. Electromagnetic compatibility</b>	<b>16</b>
3.2.1. Electromagnetic fields	16
3.2.2. Conducted interference	20
3.2.3. Use of magnetic / eddy current brakes	22
<b>4. SPECIFIC CHARACTERISTICS FOR 1520/1524 MM GAUGE SYSTEMS</b>	<b>23</b>

## 1. INTRODUCTION

This document defines the interoperability requirements that are applicable at the interface between the Control-Command and Signalling Track-side and other subsystems (mainly, but not exclusively, rolling stock).

Since different types of trackside equipment originate different compatibility requirements, in this document traceability is provided, by mean of “justifications” explaining the source of each requirement.

## 2. SCOPE

This specification is limited to requirements related to compatibility of train detection systems with other subsystems.

The possible effects of parameters on equipment other than train detection systems are not taken into account (e.g., rolling stock and operation are involved in respecting the requirement on maximum amount of sand, not to disturb track circuits operations, while the possible effects of sand on infrastructure elements like switches are not in the scope of this specification).

The requirements specified in this document have been identified on the basis of compatibility requirements of train detection systems, by reference to the train detection systems intended for use in interoperable lines, i.e.,

1. Axle counters
2. Track circuits
3. Wheel detectors (e.g., for level crossing operations)
4. Vehicle detectors based on inductive loops

Train detection systems, which are part of the Control-Command and Signalling Trackside, shall be designed in such a way that they are able to detect a vehicle or consist under the conditions specified by the parameters in this specification.

In addition, these requirements apply to the relevant other subsystems as identified in the table below.

*Table 1*

parameter	Subsystem involved				
	CCS on-board	Rolling Stock	Energy	Infrastructure	Operations
maximum axle distances		X			
minimum axle distances		X			X (train composition)
Distances between end of train and first axle		X			X (train composition)
wheel geometry		X			
maximum amount of sand		X (technical characteristics of sanding devices)			X (use of sanding devices)

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parameter	Subsystem involved				
	CCS on-board	Rolling Stock	Energy	Infrastructure	Operations
sand characteristics		X			
on-board flange lubrication		X			X (activation of lubrication)
use of composite brake blocks		X			
vehicle mass		X			
use of shunting assisting devices (such devices are not required by CCS TSI, so no impact for subsystems compliant with TSIs; specific cases exist)					
impedance between wheels		X			X (possibility of operational rules to control rust during operations)
Combination of rolling stock characteristics for the purpose of adequate dynamic shunting impedance					X
electromagnetic fields	X (emissions of Eurobalise antenna)	X			
vehicle impedance		X			X (resulting impedance between rails and pantographs, in case of consists with more locomotives)
DC and low frequency components of traction current			X		

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