RAIL SAFETY AND STANDARDS BOARD

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Packet 44 Applications
RIS-0784-CCS_NID_UKSYS_11 | Issue 2 Draft 1a | June 2025

NID_UKSYS_11 Train speed units override

Rail Industry Standard RIS-0784-CCS sets out the requirements for managing packet 44 applications in GB. This document is provided to support the reuse of existing packet 44 application NID_UKSYS_11.

Published by **Rail Safety and Standards Board**

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Synopsis

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Issue record

Issue	Date	Comments
One	05/12/2020	Original document.
Two	20/06/2025 [proposed]	Replaces issue one. Modifications to harmonise the use of NID_UKSYS = 11.

Revisions have been marked by a vertical black line in this issue.

Superseded documents

The following is superseded, either in whole or in part, as indicated.

Superseded documents	Sections superseded	Date when sections are superseded
RIS-0784-CCS_NID_UKSYS_11	All	20 June 2025 [Proposed]

Supply

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Approval and authorisation

The content of this document was approved by the Control Command and Signalling Standards Committee (CCS SC) on 08 May 2025.

This document was authorised by RSSB on 20 June 2025 [proposed].

Part 1 NID_UKSYS_11 Train speed units override

NID_UKSYS value	11
Date of allocation	01/08/2015
Owner	Network Rail
Identity of Users	All Railway Undertakings running European Train Control System (ETCS) fitted rolling stock in Great Britain (GB)
Type of of train	All classes of ETCS fitted rolling stock in GB
Geographical area	National
Transmission	Eurobalise or Radio Block Centre from track to train

1.1 Purpose

1.1.1 Rail Industry Standard RIS-0784-CCS sets out the process of managing GB packet 44 applications (when NID_XUSER=9) through a national identifier NID_UKSYS that provides a unique identity for each approved application. The values allocated to NID_UKSYS are set out in Appendix A of RIS-0784-CCS.

1.1.2 This document is to provide the specification of the packets and variables concerned for NID_UKSYS=11.

1.2 System functionality

1.2.1 ETCS is a metric system and therefore speed display units are kilometres per hour (km/h) by default. The United Kingdom however had previously agreed with the European Rail Agency (ERA) that the UK would require the use of miles per hour (mph) on a temporary basis. This requirement was transposed into the Command, Control and Signalling National Technical Specification Notice (CCS NTSN, Issue 2) and is applicable to the baseline 4 specifications.

1.2.2 Default speed units are set as defined within the ERTMS/ ETCS DMI National Requirements document (GERT8402) where issue 3.1 sets out that ETCS operation in levels 0, 1, 2 and 3 shall by default be set to kilometres per hour (km/h); it also sets out the default units to be used when operating under Class B systems in Level NTC. The packet 44, NID_UKSYS = 11 application enables flexible control of the speed units displayed to the driver on the ETCS DMI. The onboard speed unit can be changed to km/h or miles per hour (mph).

1.2.3 Each application where default values are not used requires a packet 44 message to be sent to the onboard configuring the displayed speed unit visible to the driver. The speed unit for each applicable level must be set appropriately for the application to ensure correct and safe operation.

1.2.4 It is intended that all classes of ETCS fitted rolling stock that operate in the GB will utilise this packet as a means of controlling the displayed speed units.

Note: Changes to a trains displayed speed unit will not alter the units or method used for onboard calculations used for the speed management of the train.

1.3 Version management

1.3.1 Version compatibility of this packet 44 application is managed through the variable NID_VERSION contained within the packet 44 message.

1.3.2 NID_VERSION remains the same for this revision of NID_UKSYS=11.

Part 2 Data structure and values

2.1 Header

2.1.1 The message or Eurobalise header is compliant with ETCS baseline 4 SRS for system versions 2.y.

2.2 Packet Structure

Variable	Length	Comment
NID_PACKET	8	**=44**
Q_DIR	2	Qualifier for direction
L_PACKET	13	
NID_XUSER	9	**=9**
NID_UKSYS	8	**=11**
T_UKSTART	8	**= 0 (Not used)**
T_UKFINISH	8	**= 0 (Not used)**
NID_VERSION	8	**= 1 (Interface identification version)**
Q_SCALE	2	Qualifier for the distance scale (not used because D_START_OVRD is set to 3267 (now))
M_LEVEL	3	Operating level to be overridden
NID_NTC	8	If M_LEVEL = 1 (NTC); National System identity
D_START_OVRD	15	**= 32767 (Now)**
L_END_OVRD	15	**= 32767 (Infinite length)**
M_DMI_SPEED_UNITS_OVRD	2	Units of speed for override
N_ITER	5	
M_LEVEL(k)	3	
NID_NTC(k)	8	If M_LEVEL = 1 (NTC)
D_START_OVRD(k)	15	**= 32767 (Now)**
L_END_OVRD(k)	15	**= 32767 (Infinite length)**
M_DMI_SPEED_UNITS_OVRD(k)	2	

Note: Fixed values are shown in bold.

2.3 Variables

2.3.1 The definitions of the variables are set out below. The definitions for NID_PACKET, Q_DIR, L_PACKET and NID_XUSER are set out in Subset-026. The definitions for NID_UKSYS, T_UKSTART and T_UKFINISH are set out in RIS-0784-CCS.

NID_VERSION			
Name	Interface Version		
Description	Unique interface version identifier for version and compatibility control		
Length of variable	**Minimum Value**	**Maximum Value**	**Resolution/ formula**
8 bits	0	255	
Special/Reserved Values	0	= Reserved (message rejected)	

Q_SCALE			
Name	Qualifier for the distance scale.		
Description	Qualifier to indicate the same scale used for describing all distances inside the packet that contains Q_SCALE.		
Length of variable	**Minimum Value**	**Maximum Value**	**Resolution/ formula**
2 bits	0	3	
Special/Reserved Values	0	10 cm scale	
	1	1 m scale	
	2	10 m scale	
	3	Spare	

M_LEVEL			
Name	Operating Level to be overridden		
Description			
Length of variable	**Minimum Value**	**Maximum Value**	**Resolution/ formula**
3 bits	0	7	

M_LEVEL		
Special/Reserved Values	0	Level 0
	1	Level NTC specified by NID_NTC
	2	Level 1
	3	Level 2
	4	Level 3
	5-7	Spare

NID_NTC			
Name	National System identity		
Description	Each value of this variable represents the identify of a National System as defined in ERA_ERTMS_040001		
Length of variable	**Minimum Value**	**Maximum Value**	**Resolution/ formula**
8 bits	0	255	

D_START_OVRD	
Name	Incremental distance to speed units override
Description	Fixed value because this option is not used.
Length of variable	**Value**
15 bits	32767 (32767 is a special value which means 'now')

L_END_OVRD	
Name	Length of override section
Description	The length of the override section starting from the distance indicated by D_START_OVRD. Fixed value because this option is not used.
Length of variable	**Value**
15 bits	32767 (32767 is a special value which means 'infinite length')

M_DMI_SPEED_UNITS_OVRD			
Name	DMI speed units		
Description	The units for the train speed displayed on the DMI		
Length of variable	**Minimum Value**	**Maximum Value**	**Resolution/ formula**

M_DMI_SPEED_UNITS_OVRD			
2 bits	0	3	
Special/Reserved Values	0	= Display default DMI speed units	
	1	= Display DMI speed in km/h	
	2	= Display DMI speed in mph	
	3	= Spare	

Part 3 Design principles and application rules

3.1 Design principles and application rules

3.1.1 The requirements for ERTMS/ETCS DMI equipment if a speed display in mph is required are set out in GERT8402, which defines NTRs for the GB specific speed display switching method.

3.1.2 The trackside design principles and application rules for the NID_UKSYS=11 Packet 44 message are set out in the Network Rail System Requirements and Integration GB Generic Requirements Suite, ETCS - Baseline 3 - GB Trackside Sub-system Requirements Specification, as amended by Approved ETCS changes to SR&I baseline 4. These trackside design principles and application rules, which are necessary to harmonise the GB approach to speed display switching are described below.

3.1.3 When the NID_UKSYS=11 Packet 44 message, containing the train speed unit override information, is sent to the onboard, the train speed units sent are to be immediately acted upon (allowing for transmission and computing delays), this requires D_START_OVRD to be set to 32767 (Now).

3.1.4 Version 1.0 of this document allowed the train speed unit override message to define a distance beyond the location of the announcement at which the changes triggered by the message take effect. This ability to apply an offset distance to a train speed unit override commencement is deemed unnecessary and is not to be used.

3.1.5 When train speed unit override information is implemented, it will be applicable for an infinite distance.

a) To make any override of the display of the default units apply until a further trackside command is received.
b) Version 1.0 of this document allowed the train speed unit override information to include an option to define a length over which the message would remain effective. By setting L_END_OVRD = 32767, the length of the override becomes infinite.

3.1.6 Train speed unit override information will contain commands relating to all ERTMS/ETCS levels that apply to the ERTMS/ETCS area being entered.

a) Train speed units cannot be relied upon being correct when entering an area therefore must be set accordingly for each level upon entry to an ERTMS/ETCS area.
b) There is no requirement to reset train speed units when leaving an ERTMS/ETCS area therefore train speed units are required to be set appropriately upon entry to each ERTMS/ETCS area. The requirement to set all levels applies for levels that are and are not being changed from their default value.
c) Consider that when, in degraded mode, the train enters Level NTC operation, the speed unit for Level 0 needs to be set to mph. For example, if TPWS/AWS fails, the train enters Level 0 for which the default is km/h

3.1.7 The trackside implementation of the NIDSYS=11 Packet 44 message, including the value assigned to variable Q_DIR, is determined as part of the trackside application

design to ensure that the ERTMS/ETCS onboard can correctly identify if the information is valid for its orientation.

a) The onboard must be able to determine its direction to be able to apply the appropriate speed units to the correct area.
b) The train speed unit override may be placed within a Balise Group used for the Level Transition Order or suitable Balise that precedes it such as Level Transition Announcement or Radio Establishment.

3.1.8 Balise groups are envisaged at the exit from an area where an override has been required. If overridden variables are incompatible with the area being entered Clause *3.1.6* must be respected.

3.1.9 A level may only appear within the construct of the NIDSYS=11 Packet 44 message once.

References

GERT8402	ERTMS/ETCS DMI National Requirements
RIS-0784-CCS	The Management of Packet 44 Applications
Subset-026	ETCS Baseline 3 - ERTMS/ETCS Class 1 System Requirements Specification, v3.6.0, ERA, 13 May 2016
ETCS - Baseline 3 - GB Trackside Sub-system Requirements Specification	NEPT/ERTMS/REQ/0006, issue 3.0, 3 September 2021
Approved ETCS changes to SR&I baseline 4	Network Rail Technical Authority Report number: 571012-DRP-REP-ESE-000019, issue 1.1, 26 June 2024