ERTMS/ETCS – Class 1

FFFIS STM
Application Layer

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Company	Technical Approval	Management approval
ALCATEL		
ALSTOM		
ANSALDO SIGNAL		
BOMBARDIER		
INVENSYS RAIL		
SIEMENS		

1. MODIFICATION HISTORY

Issue Number Date	Section Number	Modification / Description	Author
0.0.4 19-04-00	Most sections	Modified according to review comments circulated before and found during UNISIG STM meeting 000417-000418 in Brussels.	J. Näsström
0.0.5 10-05-00	Most sections	All variables moved to new chapter 23. Modified taking into account "Cenelec review of Application Layer 004" 19-04-00, Invensys review comments per 04-05-2000, Alcatel comments and Alstom comment reply. Alstom "Review and comment on Application Layer" 25-04-2000 has been integrated.	J. Näsström
0.0.6 30-05-00	General General Picture 6.1.1.3 17.1.1.1 4.2.1.2 19.1 17.4.4 17.6.5 & 23.1.1.144 22.2.1	Editorial corrections Empty lines in packets Deleted. Editorial Updated Legend of drawings Clarified JRU introduction Configuration clarified Added variable for Availability of Additional TI. NID_STM added	J. Näsström
2.0.0 31-05-00		Final version.	J. Näsström
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2.0.3 26/01/03		Modification according to agreed comments	M. Deladrière (Alstom)

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2.0.4 2003-01-30		Modified during the Meeting of the STM Workgroup in Brussels.	R. Ramos (Invensys)
2.0.5 2003-03-13		Modified during the Meeting of the STM Workgroup in Brussels.	P. Lührs (Siemens)
2.0.6 2003-03-26		JRU requirements moved to SUBSET-035. Modified during the Meeting of the STM Workgroup in Braunschweig.	P. Lührs (Siemens)
2.0.7 2003-04-15	All	Override packets from STM to STM control function and from STM control function to STM added to the specification according to comment INV058-30. Suppress T_INTERVENT & N_EOAOVERPASS according to Als058-39/40 D_NOMODO_LRBG variable added according to comment SIE058-035. Packet STM-37 deleted according to comment SIE058-045	M. Deladrière (Alstom)
2.0.8 27/05/2003	All	Up-date according to new Subset-035 and comments proposals.	M. Deladrière (Alstom)
2.0.9 25/06/2003	All	Traceability and consistency to Subset-035 A-27 has been performed. Taking into accounts Invensys comments to the previous issue.	M. Deladrière (Alstom)
2.0.10 25/06/2003	All	Modification performed during WG meeting in Stockholm: Added STM provider within the packet for DRU	M. Deladrière (Alstom)
2.0.11 25/07/2003	All	Modification performed during WG meeting in Brussels	M. Deladrière (Alstom)

Issue Number Date	Section Number	Modification / Description	Author
2.0.12 12-08-03	All	Modification according to review process and review sheet UNISIG_ALL_COM_WP_STM_SUBSET058_V2011_v001.doc	M. Deladrière (Alstom)
2.0.13	All	Modification according to review process and review sheet UNISIG_ALL_COM_WP_STM_SUBSET058_V2012_ v001.doc	M. Deladrière (Alstom)
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2.1.1	7.2.3 7.2.16 8.1.36 8.1.44 8.1.48 8.1.68 8.1.109 8.1.152 8.1.153 8.1.158 8.1.159	Modification according to EEIG comments on the issue 2.1.0	M. Deladrière (Alstom)

Every Time the Version Number of this document is changed the Compatibility Number shall be updated, see chapter 5.2.

2. TABLE OF CONTENTS

3. SCOPE

3.1.1.1 The STM FFFIS Application Layer specifies data formats that shall be used in the communication between Specific Transmission Module STM and ETCS on-board.

3.1.1.2 The boundary to lower layers is the Safe Time Layer.

3.1.1.3 The boundary to higher layer is the application processes within the STM and the ETCS On-board.

3.1.1.4 The scope of this document is the Application Layer only.

3.1.1.5 The transmitted message is embedded in a safety protocol structure as defined by Safe Time Layer and Safe Link Layer. (See [Ref. 3 FFFIS STM Safe Time Layer], SUBSET-056 and [Ref. 4 FFFIS STM Safe Link Layer], SUBSET-057).

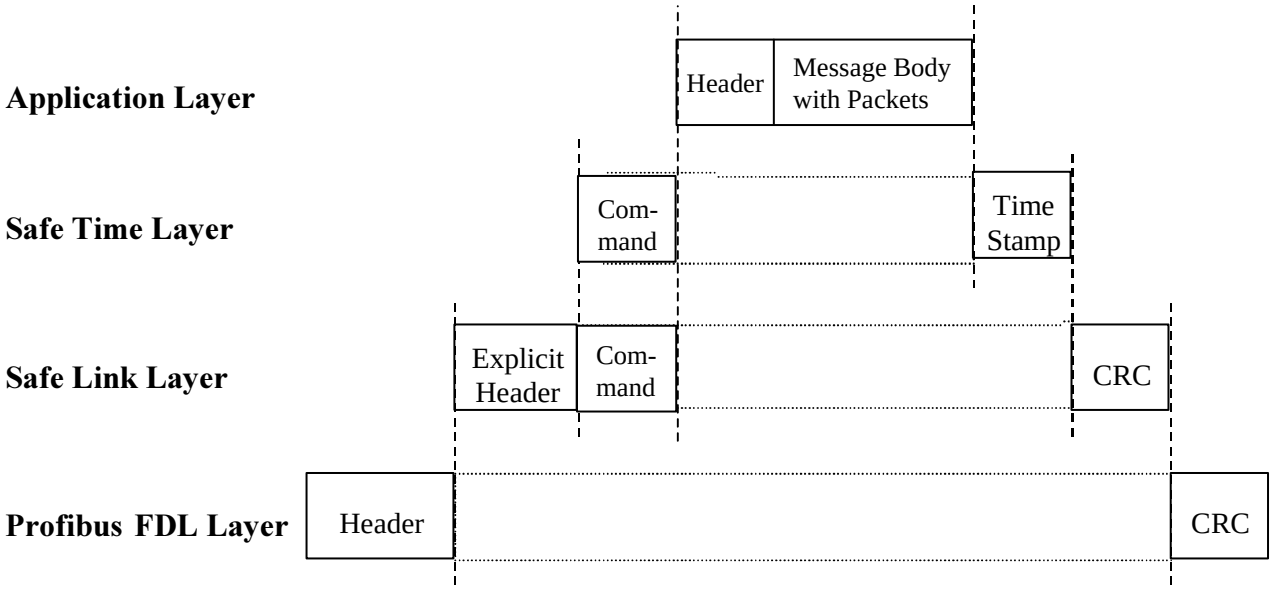

Figure 1: FFFIS STM Layers

4. INTRODUCTION

4.1 References

4.1.1.1 [Ref. 1 SRS], SUBSET-026 Issue 2.2.2

4.1.1.2 [Ref. 2 FFFIS STM], SUBSET-035 Issue 2.1.1

4.1.1.3 [Ref. 3 FFFIS STM Safe Time Layer], SUBSET-056

4.1.1.4 [Ref. 4 FFFIS STM Safe Link Layer], SUBSET-057

4.1.1.5 [Ref. 5 FFFIS STM Performance Requirements], SUBSET-059

4.1.1.6 [Ref. 6 Codes for the representation of names of languages-Part 1: Alpha-2 Code], ISO 639-1:2002(E/F)

5. CONFIGURATION MANAGEMENT

5.1 General

5.1.1 Aim and Objectives

5.1.1.1 During the life time of the Application Layer there will be several versions of the specification.

5.1.1.2 The objective of the interoperability configuration is to define principles to be applied in situations where different nodes have been certified to different versions.

5.1.1.3 Note: The handling of different software versions is out of the scope of the system configuration management.

5.1.2 Evolution of the versions

5.1.2.1 The evolution of the versions of the Application Layer shall be sequential; i. e. there shall only be a direct upgrade of an existing version and no branch is accepted.

5.1.2.2 The versions of the Application Layer shall be identified by a compatibility number which complies with the following:

5.1.2.2.1 Each Compatibility Number will have the following format: X.Y.Z, where X, Y and Z are any number between 0 and 255 (examples: 1.12.0, 6.8.203, 65.0.15).

5.1.2.2.2 The first number (X) distinguishes not compatible versions.

5.1.2.2.3 The second number (Y) indicates compatibility within a version X.

5.1.2.2.4 If the first number of two versions is the same, that indicates that those versions are compatible, independently of the second number (e. g. version 3.5 is compatible with 3.3, 3.14).

5.1.2.2.5 The third number (Z) is a vendor-specific (version) number that indicates the implemented version X.Y.

5.2 Compatibility Numbers

5.2.1.1 The Compatibility Number shall be changed with every official release of this document.

5.2.1.2 Compatibility Table

Application Layer		
Version of the Document (SUBSET-058)	**Compatibility Number**	**Difference to previous version (overview)**
2.0.0	X=2, Y=0, Z=0	Initial Revision.
2.1.1	X=3, Y=0, Z	General revision of the specification: Z is vendor specific

6. COMPONENTS OF FFFIS STM LANGUAGE

6.1.1 Introduction

6.1.1.1 The FFFIS STM language is used for transmitting information over the Profibus link between the STM and the ETCS On-board functions.

6.1.1.2 The FFFIS STM language is based on variables, packets, and messages (variables are described in §6.1.2, packets are described in §6.1.3, and messages are described in §6.1.4).

6.1.1.2.1 Note: A number of variables contain values, which have to be assigned. Some of these values have to be unique to ensure interoperability. A centralised handling of this assignment is therefore required (nationally or internationally, depending on the variable). The concerned variables have been marked. The values included in this document for these variables are therefore not to be used without prior verification of their validity.

<table>
<tr><td rowspan="10">Application message</td><td rowspan="2">Message Header</td><td>NID_STM</td></tr>
<tr><td>L_MESSAGE</td></tr>
<tr><td rowspan="3">First Packet</td><td>NID_PACKET</td></tr>
<tr><td>L_PACKET</td></tr>
<tr><td>Other variables in First Packet</td></tr>
<tr><td>.
Other packets in application message if any
.</td><td></td></tr>
<tr><td rowspan="3">Packet-N last data packet
if different from Packet-1</td><td>NID_PACKET</td></tr>
<tr><td>L_PACKET</td></tr>
<tr><td>Other variables in Packet</td></tr>
<tr><td>Padding bits</td><td>0 to 7 bits</td></tr>
</table>

Figure 2: Application message detailed structure

6.1.2 Definition of Variables and rules for variable coding

6.1.2.1 Variables shall be used to encode single data values. Variables cannot be splitted in minor units. The whole variable has one type (meaning).

6.1.2.2 Variables may have special values, which are related to the basic meaning of the variable.

6.1.2.3 Special values have always the highest values in a variable (e.g. 11...111 = "unknown").

6.1.2.4 Spare values shall be located between the normal and special values in the variable range.

6.1.2.5 Names of variables are unique. A variable is used in context with the meaning as described in the variable definition. Variables with different meanings have different names.

6.1.2.6 Signed values shall be encoded as 2's complement.

6.1.2.7 One bit variables (Boolean) shall always use 0 for false and 1 for true.

6.1.2.8 Offsets for numerical values shall be avoided (0 shall be used for 0, 1 for 1, etc.) except where justified.

6.1.2.9 When transmitting, the most significant bit must be transmitted first.

6.1.2.10 All Variables have one of the following prefixes:

A_	Acceleration
D_	Distance
G_	Gradient
L_	Length
M_	Miscellaneous
N_	Number
NC_	Class Number
NID_	Identity Number
Q_	Qualifier
T_	Time/Date
V_	Speed
X_	Text

6.1.2.11 Length of variables is given in bits, unless otherwise stated.

6.1.2.12 For the STM FFFIS (especially the Application Layer, SUBSET-058), the definition of the variables within this document shall take precedence over SRS specification ([Ref. 1 SRS], SUBSET-026 Issue 2.2.2), when used to interface STMs with ETCS on-board functions.

6.1.2.12.1 Note 1: For the present version of this document, the definition of variables and packets is not in conflict with the SRS.

6.1.2.12.2 Note 2: If a variable is changed within the SRS, this shall change the SRS but not the STM FFFIS. To change a variable of the STM FFFIS, it is necessary to change the STM FFFIS specifications.

6.1.2.12.3 Justification: A change of a variable within the SRS shall not lead automatically to a change of the STM FFFIS and cause modifications of equipments that have implemented the STM FFFIS.

6.1.2.13 Reserved values and spare values for variables shall not be used.

6.1.3 Definition of Packets and rules for packets handling

6.1.3.1 Packets are multiple variables grouped into a single unit, with a defined internal structure.

6.1.3.2 This structure consists of a unique packet number, the length of the packet in bits and an information section containing a defined set of variables. The packet structure is defined as follows:

Description	This is the format of packets when transmitted over FFFIS STM.		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier
	L_PACKET	13	Packet length
	Q_SCALE	2	Specifies which distance scale is used for all distance information within the packet. There is no Q_SCALE variable in packets, which do not contain distance information in a variable, which requires the information in Q_SCALE.
	Other variables in packet if any	*N*	*Refer to packet definition in §7*

6.1.3.3 The data element transmission order shall respect the order of data elements listed in the packet definition (from top to bottom).

6.1.3.4 The packet length (number of bits) shall be the length in bits of the whole packet. It shall take into account the following variables NID_PACKET and L_PACKET plus all other packet variables length as well as iterations for its value computation.

6.1.3.5 All currently not defined packet identifiers are reserved for future use. All future packet definitions shall follow the above-defined structure.

6.1.3.6 The sender of a packet shall ensure that the packet length will fit within one message.

6.1.3.7 The variable N_ITER in a packet shall specify the number of iterations of a variable or group of variables, which follow.

6.1.3.8 If N_ITER is 0 then no variable(s) which belong to the iteration given by N_ITER shall follow.

6.1.3.9 The variable N_L_ITER in a packet shall specify the number of iterations of a variable or group of variables, which follow.

6.1.3.10 If N_L_ITER is 0 then no variable(s) which belong to the iteration given by N_L_ITER shall follow.

6.1.3.11 Two nested levels of iterations shall be possible.

6.1.3.12 The variable L_CAPTION in a packet shall specify the number of characters in a data label, button label, or indicator label.

6.1.3.13 The variable L_VALUE in a packet shall specify the number of characters in a data value.

6.1.3.14 If L_VALUE is 0 then no variable(s) for characters shall follow.

6.1.3.15 The variable L_TEXT in a packet shall specify the number of characters in a text string.

6.1.3.16 If L_TEXT is 0 then no variable(s) for characters shall follow.

6.1.3.17 If, depending on the value of a previous qualifier variable in the packet, a variable is optional, it is written indented in the packet definition.

6.1.4 Definition of a message and rules for messages handling

6.1.4.1 A message is the whole application data transmitted at a given time on the interface between an ETCS On-board function and an STM or between an STM and an ETCS On-board function.

6.1.4.2 The message shall have the format as defined in Figure 2: Application message detailed structure.

6.1.4.3 The data element transmission order shall respect the order of data elements listed in the message format (from top to bottom).

6.1.4.4 The sender of messages shall transmit the messages in a chronological way. The first transmitted message shall be the oldest.

6.1.4.5 Messages belonging to the same ETCS On-board function shall be treated by the receiver in the order of their reception.

6.1.4.6 The message header shall be composed of the NID_STM and the L_MESSAGE variables. ([Ref. 2 FFFIS STM], SUBSET-035 Issue 2.1.1 §7.2.1.2, 7.3.4.3)

6.1.4.7 The NID_STM in the message header shall indicate the STM, which is the receiver or transmitter of the message.

6.1.4.8 The message header shall be part of the message at every transmission. ([Ref. 2 FFFIS STM], SUBSET-035 Issue 2.1.1 §7.2.1.2, 7.3.4.3)

6.1.4.9 The message header shall be the same for all connections to ERTMS/ETCS On-board Functions in both directions (from STM to ERTMS/ETCS Function and from ERTMS/ETCS function to STM).

6.1.4.10 The Message Body shall consist of one or many packets.

6.1.4.11 It shall be forbidden to send more instances of the same packet type in the same message.

6.1.4.11.1 Exception 1: It shall be possible that a message contains several ETCS airgap message for STM (packet STM-45).

6.1.4.11.2 Exception 2: It shall be possible that a message contains several Text message (packet STM-38)

6.1.4.11.3 Exception 3: It shall be possible that a message contains several Delete text message (packet STM-39)

6.1.4.11.4 Exception 4: It shall be possible that a message contains several National ETCS DMI (packet STM-43)

6.1.4.11.5 Exception 5: It shall be possible that a message contains several Diagnostic message (packet STM-77)

6.1.4.11.6 Exception 6: It shall be possible that a message contains several STM information to JRU (packet STM-161)

6.1.4.11.7 Note: This interdiction of the same instance of the packet type within one message is not justified from the system point of view but was mainly due to some implementations.

6.1.4.12 The sender of a message shall put the packet in the message in a chronological way. The first packet transmitted within the message shall be the oldest one.

6.1.4.13 The receiver of a message shall treat the packets of a message in the order of their reception.

6.1.4.14 Packets within a message depend on what has to be transmitted according to the definition in [Ref. 2 FFFIS STM], SUBSET-035.

6.1.4.15 The message shall be completed by padding bits to have the whole message length to be byte aligned for transmission through the safety layers. (See [Ref. 3 FFFIS STM Safe Time Layer], SUBSET-056 and [Ref. 4 FFFIS STM Safe Link Layer], SUBSET-057).

7. PACKET DEFINITIONS

7.1 Packet related to all On-board functions (ETCS+STM)

7.1.1 Packet STM-1 STM/ETCS function version number

Subset-035 Ref.	§5.2.8.1, 7.6.2, 15.1.2, 15.2.1.3		
Description	This packet contains implicitly the connection request from the STM or the connection confirm from the ETCS On-board Function and provide also version number and compatibility number for check.		
Direction of information	**From STM to ETCS On-board function** **From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value=1
	L_PACKET	13	Packet length
	N_058_VERMAJOR	8	Application Layer compatibility number, major number: X
	N_058_VERMID	8	Application Layer compatibility number, middle number: Y
	N_058_VERMINOR	8	Application Layer compatibility number, minor number: Z
	N_035_VERMAJOR	8	FFFIS STM Layer compatibility number, major number: X
	N_035_VERMID	8	FFFIS STM Layer compatibility number, middle number: Y
	N_035_VERMINOR	8	FFFIS STM Layer compatibility number, minor number: Z
	N_SRS_VERMAJOR	8	Major version number of [Ref. 1 SRS]: X
	N_SRS_VERMINOR	8	Minor version number of [Ref. 1 SRS]: Y

7.1.2 Packet STM-15: State report from STM

Subset-035 Ref.	§5.2.8.1, 7.2.1.3, 7.3.1.8.4, 7.3.3.3, 7.3.4.4, 7.4.1.3, 7.4.1.6.2, 7.4.2.2		
Description	Indicates to the ERTMS/ETCS the STM state.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 15
	L_PACKET	13	Packet length
	NID_STMSTATE	4	Actual STM state

7.2 Packet related to the STM Control Function

7.2.1 Packet STM-2: ETCS On-board physical addresses, safety levels and Product identity

Subset-035 Ref.	§7.3.1.2.8, 7.4.1.1.6, 7.4.1.1.11, 14.3.1.2, 14.3.1.6, 14.4.1.2		
Description	Message defining each ETCS On-board function physical bus address, associated safety level and product identity.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 2
	L_PACKET	13	Packet length
	N_ADDR_JRU	7	Address of JRU function
	Q_ADDR_JRU	2	Safety level/Availability of JRU function
	N_ADDR_CAB_A	7	Address of Cab A DMI
	Q_ADDR_CAB_A	2	Safety level of DMI CAB A function
	N_ADDR_CAB_B	7	Address of Cab B DMI
	Q_ADDR_CAB_B	2	Safety level/Availability of DMI CAB B function
	N_ADDR_CAB_A_RED	7	Address of Cab A redundant DMI
	Q_ADDR_CAB_A_RED	2	Safety level/Availability of redundant DMI CAB A function
	N_ADDR_CAB_B_RED	7	Address of Cab B redundant DMI
	Q_ADDR_CAB_B_RED	2	Safety level/Availability of redundant DMI CAB B function
	N_ADDR_DRU	7	Address of Diagnostic Recording Unit function
	Q_ADDR_DRU	2	Safety level/Availability of DRU function
	N_ADDR_CLOCK	7	Address of Reference Clock function. For validation only, as synchronisation has already taken place.
	Q_ADDR_CLOCK	2	Safety level of the Reference Clock function
	N_ADDR_ODO	7	Address of Odometer function
	Q_ADDR_ODO	2	Safety level of Odometer function

	N_ADDR_EUROSUP	7	Address of European supervision function.
	Q_ADDR_EUROSUP	2	Safety level/Availability of European Supervision function
	N_ADDR_TI	7	Address of Train Interface function
	Q_ADDR_TI	2	Safety level of Train Interface function
	N_ADDR_BI	7	Address of Brake interface function
	Q_ADDR_BI	2	Safety level of Brake Interface function
	L_TEXT	8	Number of characters in text string Value = 24
	X_TEXT(k)	8	Product identity in ASCII Vendor_ID (8 next characters) Software version (8 next characters) Hardware version (8 last characters)

7.2.2 Packet STM-4: STM parameters data and product identity

Subset-035 Ref.	§7.2.1.4, 7.3.1.2.4, 7.3.1.2.6		
Description	This packet contains STM parameters and product identity for the STM Control Function.		
Direction of information	**From STM to ETCS On-board STM Control Function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value=4
	L_PACKET	13	Packet length
	NID_STMTYPE	1	STM type: SE/SN
	L_TEXT	8	Number of characters in text string Value =24
	X_TEXT(k)	8	Product identity in ASCII • Vendor_ID (8 first characters) • Software version (8 next characters) • Hardware version (8 last characters)

7.2.3 Packet STM-5: ETCS status data

Subset-035 Ref.	§5.2.11.3, 7.4.1.1.12		
Description	This packet contains the ETCS On-board current status (ETCS technical mode and ETCS level of operation) for the STM.		
Direction of information	**From ETCS On-board STM Control Function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value=5
	L_PACKET	13	Packet length
	M_LEVEL	3	ETCS current level of operation
	NID_STM	8	If M_LEVEL = 1 (STM), this value shall be transmitted only in Level STM.
	M_MODE	4	ETCS current technical mode

7.2.4 Packet STM-6: Override activation

Subset-035 Ref.	§5.2.8.4, 13.3		
Description	Report of the activation of the STM override procedure from the STM to the ETCS On-board STM Control Function.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 6
	L_PACKET	13	Packet length

7.2.5 Packet STM-7: Override status

Subset-035 Ref.	§5.2.8.4, 13.3		
Description	Reports a change of the ETCS Override status from the ETCS On-board STM Control Function to the STMs.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 7
	L_PACKET	13	Packet length
	Q_OVREOA_STATUS	1	ERTMS/ETCS Override EOA status

7.2.6 Packet STM-13: State request from STM

Subset-035 Ref.	§5.2.8.1, 7.3.1.3.3, 7.3.1.3.4, 7.3.1.3.5, 7.3.1.4.1, 7.3.1.4.3, 7.3.3.3,7.4.1.1.10		
Description	Reports a request for a state change from the STM to the ETCS On-board STM Control Function.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 13
	L_PACKET	13	Packet length
	NID_STMSTATEREQUEST	4	Request to change state

7.2.7 Packet STM-14: State order to STM

Subset-035 Ref.	§5.2.8.1, 7.3.3.3, 7.4.1.1.10, 7.4.1.2.1, 7.4.1.2.4, 7.4.1.3		
Description	State order to STM.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 14
	L_PACKET	13	Packet length
	NID_STMSTATEORDER	4	STM state order

7.2.8 Packet STM-16: Transition variables STM max speed from STM

Subset-035 Ref.	§7.3.1.6.2, 7.4.2.2.1		
Description	Transmit to the ERTMS/ETCS the STM max speed.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 16
	L_PACKET	13	Packet length
	V_STMMAX	7	STM max speed

7.2.9 Packet STM-17: Transition variables STM system speed and distance from STM

Subset-035 Ref.	§7.3.1.6.3, 7.4.2.2.4		
Description	Transmit to the ERTMS/ETCS the STM system speed and distance.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 17
	L_PACKET	13	Packet length
	V_STMSYS	7	STM system speed
	D_STMSYS	15	STM system distance

7.2.10 Packet STM-18: Trip message from STM

Subset-035 Ref.	§7.3.3.2		
Description	Indicates to the ERTMS/ETCS that the STM is currently in a national trip procedure.		
Direction of information	**From STM function to ETCS On-board**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 18
	L_PACKET	13	Packet length Value = 21

7.2.11 Packet STM-19: STM specific test request

Subset-035 Ref.	§5.2.8.3, 13.2		
Description	STM Specific test request		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 19
	L_PACKET	13	Packet length
	M_XATTRIBUTE	10	Attributes for text given in L_TEXT/X_TEXT
	L_TEXT	8	Number of characters in a text string Maximum value = 40
	X_TEXT(k)	8	Text character

7.2.12 Packet STM-175: Train Data

Subset-035 Ref.	§5.2.8.2, 5.2.11.2, 7.3.1.3.2.1, 7.4.1.1.13		
Description	Validated train data.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value =175
	L_PACKET	13	Packet length
	NID_OPERATIONAL	32	Train Running Number
	NC_TRAIN	15	Train Category to which belongs the train.
	L_TRAIN	12	Train length
	V_MAXTRAIN	7	Maximum permitted train speed.
	M_LOADINGGAUGE	8	Load profile
	M_AXLELOAD	7	Axle load
	M_AIRTIGHT	2	Airtight system presence
	N_ITER	5	
	M_TRACTION(k)	8	Traction System Type

7.2.13 Packet STM-176: Train data additional "braking characteristic" to STM

Subset-035 Ref.	§5.2.8.2, 5.2.11.2, 7.3.1.3.2.1, 7.4.1.1.13		
Description	Validated train data additional braking characteristic.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 176
	L_PACKET	13	Packet length
	T_BEGIN_SB_EF	16	Brake delay time for starting service brake effort
	T_FULL_SB_EF	16	Brake delay time for full service brake effort
	N_ITER	5	Iteration for Service Brake characteristic
	V_SB_CHAR(i)	10	Deceleration characteristic for Service brake: Speed value V_SB_CHAR(1)= 0
	A_SB_CHAR(i)	8	Deceleration characteristic for Service brake: Deceleration value
	T_BEGIN_EB_EF	16	Brake delay time for starting emergency brake effort
	T_FULL_EB_EF	16	Brake delay time for full emergency brake effort
	N_ITER	5	Iteration for Emergency Brake characteristic
	V_EB_CHAR(i)	10	Deceleration characteristic for Emergency brake: Speed value V_EB_CHAR(1)= 0
	A_EB_CHAR(i)	8	Deceleration characteristic for Emergency brake: Deceleration value
	T_TRACTION_CUT_OFF	16	Traction cut off time
	A_MAX	8	Maximum train acceleration

Note: The Braking curve model is defined within the SRS [Ref. 1 SRS], SUBSET-026 Issue 2.2.2 in the chapter 3. For information, we copy here the Figure 31 of the SRS.

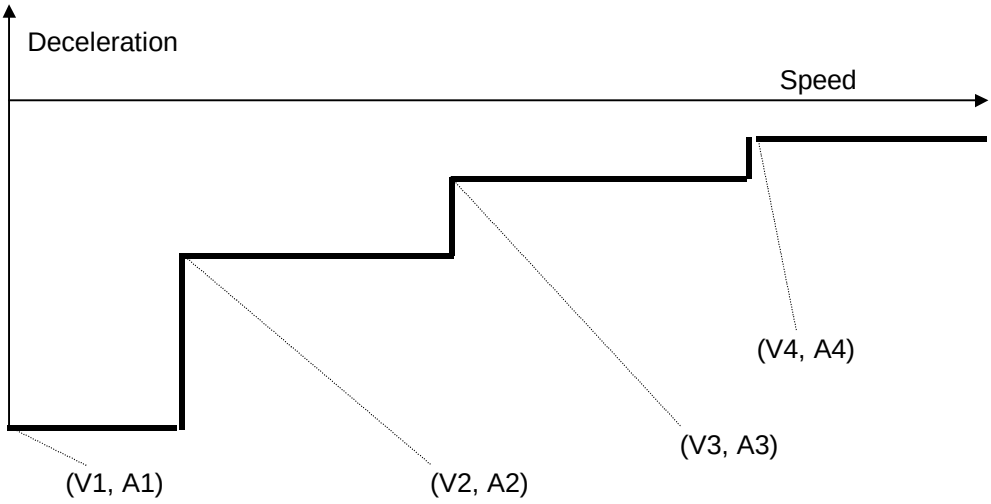

Figure 3: Braking model (speed dependency of the braking capacity)

7.2.14 Packet STM-177: Additional Data Values and date/time to STM

Subset-035 Ref.	§5.2.8.2, 5.2.11.3, 7.3.1.3.2.1, 7.4.1.1.13		
Description	ETCS additional data and date / time.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 177
	L_PACKET	13	Packet length
	NID_DRIVER	32	Driver identity
	NID_ENGINE	24	Onboard ETCS identity
	M_ADHESION	1	Adhesion factor
	T_YEAR	7	Official year UTC
	T_MONTH	4	Official month UTC
	T_DAY	5	Official day UTC
	T_HOUR	5	Official hour UTC
	T_MINUTES	6	Official minutes UTC
	T_SECONDS	6	Official seconds UTC
	T_TTS	5	Official hundredth of second UTC

7.2.15 Packet STM-178: National Values to STM

Subset-035 Ref.	§5.2.8.2, 5.2.11.4, 7.3.1.3.2.1, 7.4.1.1.13		
Description	Downloads a set of National Values.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 178
	L_PACKET	13	Packet length
	Q_SCALE	2	Qualifier for the distance scale.
	V_NVSHUNT	7	Shunting mode (permitted) speed limit
	V_NVSTFF	7	Staff Responsible mode (permitted) speed limit
	V_NVONSIGHT	7	On Sight mode (permitted) speed limit
	V_NVUNFIT	7	Unfitted mode (permitted) speed limit
	V_NVREL	7	Release Speed (permitted) speed limit
	D_NVROLL	15	Roll away distance limit
	V_NVALLOWOVTRP	7	Maximum speed limit allowing the driver to select the “override EOA” function
	V_NVSUPOVTRP	7	Permitted speed limit to be supervised when the “override EOA” function is active
	D_NVOVTRP	15	Maximum distance for overriding the train trip
	T_NVOVTRP	8	Maximum time for overriding the train trip
	D_NVPOTRP	15	Maximum distance for reversing in Post Trip mode
	D_NVSTFF	15	Maximum distance for running in Staff Responsible mode
	Q_NVDRIVER_ADHES	1	Qualifier for the modification of trackside adhesion factor by driver

7.2.16 Packet STM-181: Specific STM Data need

Subset-035 Ref.	§5.2.8.2, 5.2.12, 7.3.1.2.5, 13.1		
Description	STM need for Specific STM Data Entry.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 181
	L_PACKET	13	Packet length
	Q_DATAENTRY	1	Need for Specific STM Data Entry
	Q_DRIVERINT	1	Need for driver intervention or not.

7.2.17 Packet STM-179: Specific STM Data Entry request

Subset-035 Ref.	§5.2.8.2, 5.2.12, 13.1		
Description	Request for Specific STM Data Entry. This request can be grouped with other ones by using the Q_FOLLOWING indicator in order to transmit up to 5 requests at a time.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 179
	L_PACKET	13	Packet length
	Q_DRIVERINT	1	Need for driver intervention or not.
	Q_FOLLOWING	1	Indicate a following request
	N_ITER	5	Maximum iteration data =0 if there is “End of Specific STM Data Entry” Maximum value = 5
	NID_STM(j)	8	STM identity used to point to the corresponding palette of Specific STM Data variables. This NID_STM may be different from the one in the message header as the STM is allowed to re-use Specific STM data from another STM.
	NID_DATA(j)	8	Identifier of a Specific STM Data to be entered.
	M_XATTRIBUTE(j)	10	Attribute for text string of the data label
	L_CAPTION(j)	5	Length of X_CAPTION for data label Maximum value = 20
	X_CAPTION(j,q)	8	Data label caption text byte string

	L_VALUE(j)	8	Length of X_VALUE for default value.
	X_VALUE(j,i)	8	Data value caption text byte string
	N_ITER(j)	5	Maximum iteration data pick-up list values =0 if there is no pick-up list value Maximum value = 16 if the maximum length has been used for all caption texts. Higher values are allowed, if a reduced size of caption text is used but limited by the maximum message length.
	L_VALUE(j,i)	8	Length of X_VALUE for pick-up list value Maximum value = 10
	X_VALUE(j,i,k)	8	Data for pick—up list value caption text byte string

7.2.18 Packet STM-180: Specific STM Data to STM

Subset-035 Ref.	§5.2.8.2, 5.2.12, 13.1		
Description	ETCS report of the Specific STM data entry data requested by the STM.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 180
	L_PACKET	13	Packet length
	N_ITER	5	Maximum iteration data Maximum value = 5
	NID_STM(j)	8	STM identity used to point to the corresponding palette of Specific STM Data variables. This NID_STM may be different from the one in the message header as the STM is allowed to re-use Specific STM data from another STM.
	NID_DATA(j)	8	Identifier of a Specific STM Data to be selected by the driver.
	L_VALUE(j)	8	Length of X_VALUE
	X_VALUE(j,k)	8	Data value caption text byte string selected by the driver

7.2.19 Packet STM-182: Request for Specific STM Data values to STM

Subset-035 Ref.	§5.2.8.2, 5.2.12, 13.1		
Description	Request for Specific STM Data values. This request is sent to the STM when the data view procedure is triggered.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 182
	L_PACKET	13	Packet length Value = 21

7.2.20 Packet STM-183: Specific STM data view values

Subset-035 Ref.	§5.2.8.2, 13.1		
Description	Specific STM Data view values. Those data are sent by the STM when the data view procedure is triggered and the ETCS On-board has requested for the data.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 183
	L_PACKET	13	Packet length
	Q_FOLLOWING	1	Indicate following data to be viewed at the same time
	N_ITER	5	Maximum iteration data =0 if there is “No Specific Data Values” Maximum value = 5
	NID_STM(j)	8	STM identity used to point to the corresponding palette of Specific STM Data variables. This NID_STM may be different from the one in the message header as the STM is allowed to re-use Specific STM data from another STM.
	NID_DATA(j)	8	Identifier of the Specific STM Data
	M_XATTRIBUTE(j)	10	Attribute for text string of the data label and its associated value(s)
	L_CAPTION(j)	5	Length of X_CAPTION for data label Maximum value = 20
	X_CAPTION(j,q)	8	Data label caption text byte string
	L_VALUE(j)	8	Length of X_VALUE for current value. Maximum value = 10 =0 if there is no current value
	X_VALUE(j,i)	8	Data value caption text byte string

7.2.21 Packet STM-45: ETCS airgap message for STM

Subset-035 Ref.	§5.2.13		
Description	ETCS airgap packet that is forwarded to STM.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 45
	L_PACKET	13	Packet length
	D_NOMODO_LRBG	32	Value of the nominal distance given from the ETCS On-board odometer function (D_NOM) at the LRBG of the balise group, which transmitted the airgap message included within this packet.
	N_L_ITER	8	Number of bytes in ETCS packet
	M_DATA(k)	8	Full ETCS packet (containing also ETCS packet number…)

7.3 Packet related to the Odometer function

7.3.1 Packet STM-9: Odometer parameters to STM

Subset-035 Ref.	§7.3.1.3.2.1, 8.1.1.19, 8.7		
Description	Configuration data and performance parameters from the odometer. The packet is multicast by ETCS on-board from odometer function. For the odometer function only, the packet shall always be preceded by Packet-1 STM/ETCS function version number.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 9
	L_PACKET	13	Packet length
	T_ODOCYCLE	8	Typical cycle time of odometer function
	T_ODOMAXPROD	8	Maximum production delay time.
	Q_V_ABS	8	Absolute Speed Accuracy, typical.
	Q_V_REL	8	Relative Speed Accuracy, typical.
	Q_D_ABS	8	Absolute Distance Accuracy, typical.
	Q_D_REL	8	Relative Distance Accuracy, typical.

7.3.2 Packet STM-8: Odometer multicast

Subset-035 Ref.	§8		
Description	Periodic transmission of odometer data.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 8
	L_PACKET	13	Packet length
	T_ODO	32	Timestamp
	V_MAX	16	Upper bound of the measured speed.
	V_NOM	16	Nominal speed value.
	V_MIN	16	Lower bound of the measured speed.
	D_MAX	32	MAX_ODO, Positive direction side of non-stochastic confidence interval.
	D_NOM	32	NOM_ODO, nominal value of distance.
	D_MIN	32	MIN_ODO, Negative direction side of non-stochastic confidence interval.
	D_RES	8	RES_ODO, resolution of distance (RES_ODO) measurement.
	Q_SAFEDIR	1	Ambiguous Direction
	Q_NOM_ODO	1	Indicate if the odometer configuration is nominal or not.
	M_K_ETCS	3	The confidence level (K) is defined as a level of probability that the true position is inside the confidence interval.

	D_MAX_ACCUM	32	Accumulative part in positive movement direction of stochastical confidence interval Variable not transmitted if M_K_ETCS =0
	D_MIN_ACCUM	32	Accumulative part in negative movement direction of stochastical confidence interval Variable not transmitted if M_K_ETCS =0
	M_MAXSUMVAR	32	Maximum Sum of Variance Variable not transmitted if M_K_ETCS =0
	M_MINSUMVAR	32	Minimum Sum of Variance Variable not transmitted if M_K_ETCS =0

7.4 Packets related to the Supervision Function (linked to ETCS technical mode SE) TBD

7.4.1.1 This function still has to be defined. The requirements listed within this chapter are not normative. They just give basic principles.

7.4.2 Packet STM-11: STM Reference Location Report

Subset-035 Ref.	§5.2.14, 9.1.4		
Description	Defines location reference with confidence interval and accuracy of localisation function		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value=11
	L_PACKET	13	Packet length
	D_ODOMIN	32	Lower bound of the reference distance location of NID_STMBG
	D_ODOMAX	32	Upper bound of the reference distance location of NID_STMBG
	L_REFLOC_WIN	10	Length of reference location
	NID_STMBG	14	Identity number of location.

7.4.3 Packet STM-12: Movement Authority

Subset-035 Ref.	§4.1.2.4.2, 4.1.2.4.3, 5.2.14, 7.3.1.7.3, 9		
Description	Transmission of a movement authority.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value=12
	L_PACKET	13	Packet length
	Q_SCALE	2	Qualifier for the distance scale.
	V_MAIN	7	Signalling related speed restriction
	V_LOA	7	Permitted speed at the limit of authority
	T_LOA	10	Validity time for the target speed at the LOA
	N_ITER	5	Set to zero if V_MAIN = 0 or if only one section in the MA
	L_SECTION(k)	15	Length of section in the MA
	Q_SECTIONTIMER(k)	1	Qualifier to indicate whether there is a Section Time Out related to the section
	T_SECTIONTIMER(k)	10	Validity time of a section in the MA
	D_SECTIONTIMERSTOPLOC(k)	15	Distance from beginning of section to the Section Time-out stop location
	L_ENDSECTION	15	Length of the End section in the MA
	Q_SECTIONTIMER	1	Qualifier to indicate whether there is a Section Time Out related to the section

	T_SECTIONTIMER	10	Validity time of a section in the MA
	D_SECTIONTIMERSTOPLOC	15	Distance from beginning of section to the Section Time-out stop location
	Q_ENDTIMER	1	Qualifier to indicate whether end section timer information exists for the End section in the MA
	T_ENDTIMER	10	Validity time for the End section in the MA
	D_ENDTIMERSTARTLOC	15	Distance from End section timer start location to End of Authority
	Q_DANGERPOINT	1	Qualifier for danger point description
	D_DP	15	Distance from the End of Authority to danger point
	V_RELEASEDP	7	Release speed associated with the danger point
	Q_OVERLAP	1	Qualifier to tell whether there is an overlap
	D_STARTOL	15	Distance from overlap timer start location to End of Authority
	T_OL	10	Overlap validity time
	D_OL	15	The distance from the End of Authority to the end of overlap
	V_RELEASEOL	7	Release speed associated with the overlap

7.4.4 Packet STM-21: Gradient Profile

Subset-035 Ref.	§4.1.2.4.2, 4.1.2.4.5, 5.2.14, 7.3.1.7.3, 9		
Description	Transmission of the gradient. D_GRADIENT gives the distance to the next change of the gradient value. The gradient value is the minimum gradient for the given distance.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value=21
	L_PACKET	13	Packet length
	Q_SCALE	2	Qualifier for the distance scale.
	D_GRADIENT	15	Incremental distance to next change of gradient.
	Q_GDIR	1	Qualifier for gradient slope.
	G_A	8	Safe gradient
	N_ITER	5	
	D_GRADIENT(k)	15	Incremental distance to next change of gradient.
	Q_GDIR(k)	1	Qualifier for gradient slope.
	G_A(k)	8	Safe gradient

7.4.5 Packet STM-27: Static Speed Profile

Subset-035 Ref.	§4.1.2.4.2, 4.1.2.4.5, 5.2.14, 7.3.1.7.3, 9		
Description	Static speed profile and optionally speed limits depending on the international train category.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value=27
	L_PACKET	13	Packet length
	Q_SCALE	2	Qualifier for the distance scale.
	D_STATIC	15	Incremental distance to next discontinuity in a international SSP profile
	V_STATIC	7	Static speed profile
	Q_FRONT	1	Qualifier to profile discontinuity
	N_ITER	5	
	NC_DIFF(n)	4	International Train categories
	V_DIFF(n)	7	Absolute Positive Speed associated to a train category.
	N_ITER	5	
	D_STATIC(k)	15	Incremental distance to next discontinuity in a international SSP profile
	V_STATIC(k)	7	Static speed profile
	Q_FRONT(k)	1	Qualifier to profile discontinuity
	N_ITER(k)	5	
	NC_DIFF (k,m)	4	International Train categories
	V_DIFF(k,m)	7	Absolute Positive Speed associated to a train category.

7.5 Packets related to the DMI function

7.5.1 Packet STM-30: Driver language transmission

Subset-035 Ref.	§10.5.2.8, 10.7		
Description	Driver language selection.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 30
	L_PACKET	13	Packet length
	NID_DRV_LANG	16	Driver language selection

7.5.2 Packet STM-32: Button Request

Subset-035 Ref.	§5.2.9.1.1, 10.6.5, 10.7		
Description	Create or update the visual states of buttons by STM. Only referenced buttons are updated.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value=32
	L_PACKET	13	Packet length
	N_ITER	5	Maximum value = 10
	NID_STM(k)	8	STM identity used to point to the corresponding palette for button and icon. This NID_STM may be different from the one in the message header as the STM is allowed to re-use buttons from another STM.
	NID_BUTTON(k)	8	Functional identity of button from button palette given by NID_STM
	NID_BUTPOS(k)	4	Button position on DMI
	NID_ICON(k)	8	Identity of button icon to be displayed
	M_BUT_ATTRIB(k)	10	Attributes of the button
	L_CAPTION(k)	5	Length of X_CAPTION Maximum value = 12
	X_CAPTION(k)	8	Caption text bytestring

7.5.3 Packet STM-34: Button event report

Subset-035 Ref.	§5.2.9.1.1, 10.6.5, 10.7		
Description	Report the button events.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value=34
	L_PACKET	13	Packet length
	N_ITER	5	Number of events being reported
	NID_STM(k)	8	STM identity used to point to the corresponding Button palette. This NID_STM may be different from the one in the message header as the STM is allowed to re-use buttons from another STM.
	NID_BUTTON(k)	8	Functional identity of button from button palette given by NID_STM
	Q_BUTTON(k)	1	Button event
	T_BUTTONEVENT(k)	32	event timestamp

7.5.4 Packet STM-35: Indicator request

Subset-035 Ref.	§5.2.9.1.2, 10.6.4, 10.7		
Description	Create or update the visual states of indicators by STM. Only referenced indicators are updated.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 35
	L_PACKET	13	Packet length
	N_ITER	5	Maximum value = 24
	NID_STM(k)	8	STM identity used to point to the corresponding palette for indicator and icon. This NID_STM may be different from the one in the message header as the STM is allowed to re-use indicators from another STM.
	NID_INDICATOR(k)	8	Functional identity of indicator from indicator palette given by NID_STM
	NID_INDPOS(k)	5	Indicator position on DMI
	NID_ICON(k)	8	Identity of icon from palette given by icon palette given by NID_STM
	M_IND_ATTRIB(k)	10	Attributes of the indicator
	L_CAPTION(k)	5	Length of X_CAPTION Maximum value = 12
	X_CAPTION(k,j)	8	Caption text bytestring

7.5.5 Packet STM-38: Text message

Subset-035 Ref.	§5.2.9.1.4, 10.6.3, 10.7		
Description	Text messages for the DMI, with or without acknowledgement.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 38
	L_PACKET	13	Packet length
	NID_XMESSAGE	8	Sequence number of given text messages
	M_XATTRIBUTE	10	Attributes of text
	Q_ACK	1	Acknowledgement qualifier
	L_TEXT	8	Number of characters in text string Maximum value = 40
	X_TEXT(k)	8	Text character

7.5.6 Packet STM-39: Delete text message

Subset-035 Ref.	§5.2.9.1.4, 10.6.3.8, 10.7		
Description	STM commands the deletion of text message. Applies also if driver has not given acknowledgement.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 39
	L_PACKET	13	Packet length
	NID_XMESSAGE	8	Sequence number of text message to be deleted.

7.5.7 Packet STM-40: Acknowledgement reply

Subset-035 Ref.	§5.2.9.1.4, 10.6.3.5, 10.7		
Description	Report from ETCS on acknowledgement of text message.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 40
	L_PACKET	13	Packet length
	NID_XMESSAGE	8	Sequence number of the acknowledged message.

7.5.8 Packet STM-42: European ETCS DMI TBD

7.5.8.1 This function still has to be defined. The requirements listed within this chapter are not normative. They just give basic principles.

Subset-035 Ref.	§5.2.9.1.3, 10.6.8, 10.7		
Description	Data for inhibition of ETCS DMI objects while in European mode.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 42
	L_PACKET	13	Packet length
	Q_INDICATE	12	Inhibition of ETCS DMI objects

7.5.9 Packet STM-43: National ETCS DMI

Subset-035 Ref.	§5.2.9.1.3, 10.6.7, 10.6.8, 10.7		
Description	Data for displaying on ETCS DMI while in National mode		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 43
	L_PACKET	13	Packet length
	Q_SCALE	2	Qualifier for the distance scale.
	Q_INDICATE	12	Inhibition of ETCS DMI objects
	Q_WARNINGLIMIT	1	Warning limit status
	Q_INDICATIONLIMIT	1	Indication limit status
	V_PERMIT	10	Permitted speed
	V_TARGET	7	Target speed
	V_RELEASE	7	Release speed
	V_INTERV	7	Intervention speed
	D_TARGET	15	Target distance
	N_ITER	5	
	M_SUP	32	STM-customised supervision information

7.5.10 Packet STM-46: Sound command

Subset-035 Ref.	§5.2.9.1.4, 10.6.6, 10.7		
Description	Command sound.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 46
	L_PACKET	13	Packet length
	N_ITER	5	Number of sounds to be generated Maximum value = 2 The STM is able to request to the ETCS On-board to generate a maximum of two sounds at the same time.
	NID_STM(n)	8	STM identity used to point to the corresponding sound palette. This NID_STM may be different from the one in the message header as the STM is allowed to re-use sounds from another STM.
	NID_SOUND(n)	8	Functional identity of sound from sound palette given by NID_STM
	Q_SOUND(n)	2	Continuous/ Not continuous/ Stopped
	N_ITER(n)	5	Number of segments of sound
	M_FREQ(n,k)	8	Frequency of a segment
	T_SOUND(n,k)	8	Duration of segment

7.6 Packets related to the Diagnostic Logger function (DRU)

7.6.1 Packet STM-77: Diagnostic message

Subset-035 Ref.	§5.2.7.1, 12		
Description	Packet which delivers diagnostic message.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 77
	L_PACKET	13	Packet length
	L_TEXT	8	Number of characters in text string Maximum value = 10
	X_TEXT(k)	8	STM provider Identity in ASCII
	N_L_ITER	8	Number of data bytes
	M_DATA(k)	8	STM proprietary data

7.7 Packets related to the Train Interface function (TIU)

7.7.1 Packet STM-129: STM specific brake control command

Subset-035 Ref.	§5.2.4.3, 6.1.2.3		
Description	STM specific brake command control.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 129
	L_PACKET	13	Packet length
	M_TIRB_CMD	2	Inhibit regenerative brake
	M_TIMSH_CMD	2	Inhibit magnetic shoes brake
	M_TIEDCB_CMD	2	Inhibit Eddy current brake
	M_TIPAEB_CMD	2	Inhibit Passenger emergency brake

7.7.2 Packet STM-130: STM commands to train interface

Subset-035 Ref.	§5.2.4.3, 6.1.2.3		
Description	Transmission of the STM commands to the train interface.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 130
	L_PACKET	13	Packet length
	M_TIPANTO_CMD	2	Pantograph
	M_TIFLAP_CMD	2	Air tightness
	M_TIMS_CMD	2	Main switch/Circuit breaker
	M_TITR_C_CMD	2	Traction cut-off

7.7.3 Packet STM-139: Train interface inputs status/availability to STM

Subset-035 Ref.	§5.2.4.4, 6.1.2.3, 7.3.1.3.2.1, 7.4.2.4.1		
Description	Transmission of the train interface inputs status/availability to STM.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 139
	L_PACKET	13	Packet length
	M_TITR_C_STATUS	2	Traction cut off
	M_TIDIR_STATUS	3	Direction Controller position
	M_TICAB_STATUS	3	Cab status

7.7.4 Packet STM-141: Train interface command configuration to STM

Subset-035 Ref.	§7.3.1.3.2.1, 7.4.2.4.1		
Description	Transmission of the train interface commands availability to STM.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 141
	L_PACKET	13	Packet length
	M_TIRB_CMD_AVAIL	1	Inhibit regenerative brake command availability
	M_TIMSH_CMD_AVAIL	1	Inhibit magnetic shoes brake command availability
	M_TIEDCB_CMD_AVAIL	1	Inhibit Eddy current brake command availability
	M_TIPAEB_CMD_AVAIL	1	Inhibit Passenger emergency brake command availability
	M_TIPANTO_CMD_AVAIL	1	Pantograph command availability
	M_TIFLAP_CMD_AVAIL	1	Air tightness command availability
	M_TIMS_CMD_AVAIL	1	Main switch/Circuit breaker command availability
	M_TITR_C_CMD_AVAIL	1	Traction cut-off command availability

7.8 Packets related to the Brake Interface function (BIU)

7.8.1 Packet STM-128: STM emergency and service brake command to brake interface

Subset-035 Ref.	§5.2.5.1		
Description	Transmission of the STM EB and SB command to the brake interface.		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 128
	L_PACKET	13	Packet length
	M_BIEB_CMD	2	EB command
	M_BISB_CMD	2	SB command

7.8.2 Packet STM-136: Brake interface emergency and service brake status/availability to STM

Subset-035 Ref.	§5.2.5.1, 7.3.1.3.2.1, 7.4.2.4.2		
Description	Transmission of the brake interface status to STM.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 136
	L_PACKET	13	Packet length
	M_BIEB_STATUS	2	EB status
	M_BISB_STATUS	2	SB status

7.8.3 Packet STM-143: Brake Train interface emergency and service brake parameters to STM

Subset-035 Ref.	§5.2.5, 7.3.1.3.2.1		
Description	Transmission of the train interface EB and SB configuration to STM.		
Direction of information	**From ETCS On-board function to STM**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 143
	L_PACKET	13	Packet length
	M_BIEB_STATUS	2	EB state available
	T_EB_MAXDELAY	16	Maximum emergency brake command issue time delay
	M_BISB_STATUS	2	SB state available
	T_SB_MAXDELAY	16	Maximum service brake command issue time delay

7.9 Packets related to the juridical logger function (JRU)

7.9.1 Packet STM-161: STM information to JRU

Subset-035 Ref.	§5.2.6.1, 7.3.1.8.3, 11		
Description	National STM data transmitted to the JRU. (Structure of the data internal to each company)		
Direction of information	**From STM to ETCS On-board function**		
Content	**Variable**	**Length**	**Comment**
	NID_PACKET	8	Packet identifier Value = 161
	L_PACKET	13	Packet length
	T_JRU	32	Time Stamp
	N_L_ITER	8	Number of data bytes in message
	M_DATA(k)	8	Information to JRU

8. VARIABLES

8.1.1 A_EB_CHAR

Name	Deceleration characteristic for Emergency brake		
Description	Deceleration absolute value associated to a speed (V_EB_CHAR) defining a characteristic for the Emergency brake model.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0 m/s²	2.55 m/s²	0.01 m/s²
Special/Reserved Values			

8.1.2 A_MAX

Name	Maximum train acceleration		
Description	Maximum train acceleration part of the train model.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0 m/s²	2.55 m/s²	0.01 m/s²
Special/Reserved Values			

8.1.3 A_SB_CHAR

Name	Deceleration characteristic for Service brake		
Description	Deceleration absolute value associated to a speed (V_SB_CHAR) defining a characteristic for the Service brake model.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0 m/s²	2.55 m/s²	0.01 m/s²
Special/Reserved Values			

8.1.4 D_DP

Name	Distance from the End of Authority to danger point		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE.
Special/Reserved Values			

8.1.5 D_ENDTIMERSTARTLOC

Name	Distance from End section timer start location to End of Authority		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE
Special/Reserved Values			

8.1.6 D_GRADIENT

Name	Incremental distance to next change of gradient.		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE.
Special/Reserved Values			

8.1.7 D_MAX

Name	Upper bound of the functional confidence interval of a measured distance		
Description	MAX_ODO is defined as an odometer report parameter that changes in proportion to moved distance, but including all accumulative errors that brings estimation to the positive side. Coded as two's complement.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	- 2 147 483 647	+ 2 147 483 648	Signed, unit 1 cm.
Special/Reserved Values			

8.1.8 D_MAX_ACCUM

Name	Accumulative part in positive direction of stochastical confidence interval.		
Description	Signed value of the Accumulative part in positive direction of stochastical confidence interval provided by the odometer to STM. Coded as two's complement.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	- 2 147 483 647 cm	+ 2 147 483 648 cm	1 cm
Special/Reserved Values			

8.1.9 D_MIN

Name	Lower bound of the functional confidence interval of a measured distance		
Description	MIN_ODO is defined as an odometer report parameter that changes in proportion to moved distance, but including all accumulative errors that brings estimation to the negative side. Coded as two's complement		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	- 2 147 483 647 cm	+ 2 147 483 648 cm	Signed, unit 1 cm.
Special/Reserved Values			

8.1.10 D_MIN_ACCUM

Name	Accumulative part in negative direction of stochastical confidence interval.		
Description	Signed value of the Accumulative part in negative direction of stochastical confidence interval provided by the odometer to STM. Coded as two's complement.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	- 2 147 483 647 cm	+ 2 147 483 648 cm	1 cm
Special/Reserved Values			

8.1.11 D_NOM

Name	Nominal value of a measured distance		
Description	Signed nominal value of a measured distance provided by the odometer to STM. Coded as two's complement		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	- 2 147 483 647 cm	+ 2 147 483 648 cm	Signed, unit 1 cm.
Special/Reserved Values			

8.1.12 D_NOMODO_LRBG

Name	Nominal distance reference of LRBG		
Description	Signed value of the nominal distance given from the ETCS On-board odometer function (D_NOM) at the LRBG of the balise group, which transmitted the airgap message included within this packet. Coded as two's complement		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	- 2 147 483 647 cm	+ 2 147 483 648 cm	1 cm
Special/Reserved Values			

8.1.13 D_NVOVTRP

Name	Maximum distance for overriding the train trip		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE
Special/Reserved Values			

8.1.14 D_NVPOTRP

Name	Maximum distance for reversing in Post Trip mode		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE
Special/Reserved Values			

8.1.15 D_NVROLL

Name	Roll away distance limit		
Description	This variable is part of the National Values and is used for Roll Away Protection and Reverse Movement Protection		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.660 km	10 cm, 1m or 10 m depends on Q_SCALE
Special/Reserved Values	32767	∞	

8.1.16 D_NVSTFF

Name	Maximum distance for running in Staff Responsible mode		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.660 km	10 cm, 1m or 10 m depends on Q_SCALE
Special/Reserved Values	32767	∞	

8.1.17 D_ODOMAX

Name	Upper bound of the reference distance location of NID_STMBG		
Description	Signed value of the upper bound of the reference distance location of NID_STMBG. Coded as two's complement		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	- 2 147 483 647 cm	+ 2 147 483 648 cm	1 cm
Special/Reserved Values			

8.1.18 D_ODOMIN

Name	Lower bound of the reference distance location of NID_STMBG		
Description	Signed value of the lower bound of the reference distance location of NID_STMBG.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	- 2 147 483 647 cm	+ 2 147 483 648 cm	1 cm
Special/Reserved Values			

8.1.19 D_OL

Name	The distance from the End of Authority to the end of overlap		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE.
Special/Reserved Values			

8.1.20 D_RES

Name	Distance resolution		
Description	Current distance resolution included in the odometer data transmitted from the ETCS On-board odometer function to the STMs.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/ formula***
8 bits	0cm	255cm	1cm
Special/Reserved Values			

8.1.21 D_SECTIONTIMERSTOPLOC

Name	Distance from beginning of section to the Section Time-out stop location		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE
Special/Reserved Values			

8.1.22 D_STARTOL

Name	Distance from overlap timer start location to End of Authority		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE
Special/Reserved Values			

8.1.23 D_STATIC

Name	Incremental distance to next discontinuity in a international SSP profile		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE
Special/Reserved Values			

8.1.24 D_STMSYS

Name	STM system distance		
Description	Distance to beginning of STM system speed area measured from the level transition border.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 m	327.670 Km	10 m
Special/Reserved Values			

8.1.25 D_TARGET

Name	Target distance		
Description	Target distance SN mode		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 m	327.660 Km	10 cm, 1 m or 10 m depends on Q_SCALE
Special/Reserved Values	32767	Unknown value/Not displayed	

8.1.26 G_A

Name	Safe gradient		
Description	This is the minimum gradient between two defined locations.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0‰	254‰	1‰
Special/Reserved Values	255	Non numerical value telling that the current gradient description ends at D_GRADIENT(n)	

8.1.27 L_CAPTION

Name	Length of text caption bytestring used for button label, indicator label, and data label.		
Description	L_CAPTION defines the length of a text caption bytestring (L_CAPTION * X_CAPTION)		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
5 bits	1	31	1 Character
Special/Reserved Values	0	Reserved	

8.1.28 L_ENDSECTION

Name	Length of the End section in the MA		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE.
Special/Reserved Values			

8.1.29 L_MESSAGE

Name	Message length		
Description	L_MESSAGE indicates the length of the message in bytes, including all packets and all variables defined in the message header (NID_STM and L_MESSAGE also).		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	5	238	1 Byte
Special/Reserved Values	0-4	Reserved	
	239-255	Reserved	

8.1.30 L_PACKET

Name	Packet length		
Description	L_PACKET indicates the length of the transmitted packet in bits, including NID_PACKET, L_PACKET, Q_SCALE (if included) and all other packet variables.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
13 bits	0	1904 As allowed by maximum length of application data.	1 bit
Special/Reserved Values	1905-8191	Spare	

8.1.31 L_REFLOC_WIN

Name	Length of the reference location.		
Description	Length of safe positioning of the reference location NID_STMBG, or confidence interval of position report. Unit cm, unsigned. Half distance is allocated before and half is after centre of position.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits	0cm	1023cm	In cm
Special/Reserved Values			

8.1.32 L_SECTION

Name	Length of section in the MA		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
15 bits	0 cm	327.670 km	10 cm, 1m or 10 m depends on Q_SCALE
Special/Reserved Values			

8.1.33 L_TEXT

Name	Length of text string		
Description	L_TEXT defines the length of a text string (L_TEXT * X_TEXT)		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	1	255	1 Text String Element
Special/Reserved Values	0	No X_TEXT shall follow.	

8.1.34 L_TRAIN

Name	Train length		
Description	This is the absolute real length of the train.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
12 bits	0 m	4094 m	1 m
Special/Reserved Values	4095	Unknown (default value)	

8.1.35 L_VALUE

Name	Length of text caption bytestring for value used for data value, default value of data and for pick-up list values.		
Description	L_VALUE defines the length of a data caption bytestring (L_VALUE * X_VALUE)		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	1	255	1 Text String Element
Special/Reserved Values	0	No X_VALUE shall follow.	

8.1.36 M_ADHESION

Name	Adhesion factor		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1bit			
Special/Reserved Values	0	70% (reduce adhesion)	
	1	100% (full adhesion)	

8.1.37 M_AIRTIGHT

Name	Airtight system presence		
Description	indicates whether the train is fitted with an airtight system or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Not fitted	
	01	Fitted	
	10	Unknown	
	11	Spare	

8.1.38 M_AXLELOAD

Name	Axle load		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 t	40 t	0.5 t
Special/Reserved Values	101 0001	Spare	
	…	…	
	111 1101	Spare	
	111 1110	Axle load above 40 t	
	111 1111	Axle load unknown	

8.1.39 M_BIEB_CMD

Name	Emergency brake train interface command		
Description	Boolean information telling if the emergency brake must be applied or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Command to apply EB	
	10	Command to release EB	
	11	No command from STM ->Keep current output status	

8.1.40 M_BIEB_STATUS

Name	Emergency brake train interface state		
Description	Boolean information telling if the emergency brake is commanded or not or the status is not available.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Fail state	
	01	EB applied	
	10	EB released	
	11	Status not available	

8.1.41 M_BISB_CMD

Name	Service brake train interface command		
Description	Boolean information telling if the service brake must be applied or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Apply SB	
	10	Release SB	
	11	No command from STM ->Keep current output status	

8.1.42 M_BISB_STATUS

Name	Service brake train interface status		
Description	Boolean information telling if the service brake is commanded or not or the status is not available.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Fail status	
	01	SB applied	
	10	SB released	
	11	Status not available	

8.1.43 M_BUT_ATTRIB

Name	Attributes for buttons.		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits			
Special/Reserved Values	0xxxxxxxxx	Not displayed (Note: This allow to “removing” a button from display.)	
	x0xxxxxxxx	Indicator Normal flashing	
	x1xxxxxxxx	Indicator Counterphase flashing	
	xx00xxxxxx	Indicator No flashing	
	xx01xxxxxx	Indicator Slow flashing	
	xx10xxxxxx	Indicator Fast flashing	
	xx11xxxxxx	Reserved	
	xxxx000xxx	Black button background (applicable while no icon is referenced)	
	xxxx001xxx	White button background (applicable while no icon is referenced)	
	xxxx010xxx	Red button background (applicable while no icon is referenced)	
	xxxx011xxx	Blue button background (applicable while no icon is referenced)	
	xxxx100xxx	Green button background (applicable while no icon is referenced)	
	xxxx101xxx	Yellow button background (applicable while no icon is referenced)	
	xxxx110xxx	Light red button background (applicable while no icon is referenced)	
	xxxx111xxx	Light green button background (applicable while no icon is referenced)	
	xxxxxxx000	Black text label (applicable while no icon is referenced)	
	xxxxxxx001	White text label (applicable while no icon is referenced)	
	xxxxxxx010	Red text label (applicable while no icon is referenced)	
	xxxxxxx011	Blue text label (applicable while no icon is referenced)	
	xxxxxxx100	Green text label (applicable while no icon is referenced)	
	xxxxxxx101	Yellow text label (applicable while no icon is referenced)	
	xxxxxxx110	Light red text label (applicable while no icon is referenced)	
	xxxxxxx111	Light green text label (applicable while no icon is referenced)	

8.1.44 M_DATA

Name	Data for JRU or DRU or for STM		
Description	Number of bytes of data to be transmitted.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	238	
Special/Reserved Values	239-255	Reserved	

8.1.45 M_FREQ

Name	Sound segment frequency		
Description	Frequency of sound segment. Need not be highly accurate		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	128 Hz	8160 Hz	F = M_FREQ * 32 Hz Resolution: 32 Hz
Special/Reserved Values	0	Silence	
	1	Spare	
	2	Spare	
	3	Spare	

8.1.46 M_IND_ATTRIB

Name	Attributes for indicators.		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits			
Special/Reserved Values	0xxxxxxxxx	Not displayed (Note: This allow to “removing” an indicator from display.)	
	x0xxxxxxxx	Indicator Normal flashing	
	X1xxxxxxxx	Indicator Counterphase flashing	
	Xx00xxxxxx	Indicator No flashing	
	Xx01xxxxxx	Indicator Slow flashing	
	Xx10xxxxxx	Indicator Fast flashing	
	Xx11xxxxxx	Reserved	
	xxxx000xxx	Black indicator background (applicable while no icon is referenced)	
	xxxx001xxx	White indicator background (applicable while no icon is referenced)	
	xxxx010xxx	Red indicator background (applicable while no icon is referenced)	
	xxxx011xxx	Blue indicator background (applicable while no icon is referenced)	
	xxxx100xxx	Green indicator background (applicable while no icon is referenced)	
	xxxx101xxx	Yellow indicator background (applicable while no icon is referenced)	
	xxxx110xxx	Light red indicator background (applicable while no icon is referenced)	
	xxxx111xxx	Light green indicator background (applicable while no icon is referenced)	
	xxxxxxx000	Black text label (applicable while no icon is referenced)	
	xxxxxxx001	White text label (applicable while no icon is referenced)	
	xxxxxxx010	Red text label (applicable while no icon is referenced)	
	xxxxxxx011	Blue text label (applicable while no icon is referenced)	
	xxxxxxx100	Green text label (applicable while no icon is referenced)	
	xxxxxxx101	Yellow text label (applicable while no icon is referenced)	
	xxxxxxx110	Light red text label (applicable while no icon is referenced)	
	xxxxxxx111	Light green text label (applicable while no icon is referenced)	

8.1.47 M_K_ETCS

Name	Confidence level		
Description	The confidence level (K) is defined as a level of probability that the true position is inside the confidence interval.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
3 bits			
Special/Reserved Values	0	reserved for non-statistical model.	
	1	68%	
	2	95%	
	3	99.7%	
	4	99.99%	
	5	99.9999%	
	6	99.999999%	
	7	99.999999999%	

8.1.48 M_LEVEL

Name	Current ETCS level		
Description	Tell the current ETCS level of operation.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
3 bits			
Special/Reserved Values	0	Level 0	
	1	Level STM	
	2	Level 1	
	3	Level 2	
	4	Level 3	
	5-7	Spare	

8.1.49 M_LOADINGGAUGE

Name	Load profile		
Description	Defining the loading gauge profile Values to be assigned according to 6.1.1.2.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits			
Special/Reserved Values	xxxx xxx1	Profile X	
	xxxx xx1x	Profile Y	
	xxxx x1xx	etc ...	
	xxxx 1xxx		
	xxx1 xxxx		
	xx1x xxxx		
	x1xx xxxx		
	1xxx xxxx		

8.1.50 M_MAXSUMVAR

Name	Maximum Sum of Variance		
Description	Maximum Sum of Variance, adding to the positive movement direction of the confidence interval.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	0 cm²	4 294 967 295 cm²	1 cm²
Special/Reserved Values			

8.1.51 M_MINSUMVAR

Name	Minimum Sum of Variance		
Description	Minimum Sum of Variance, adding to the negative movement direction of the confidence interval.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	0 cm²	4 294 967 295 cm²	1 cm²
Special/Reserved Values			

8.1.52 M_MODE

Name	Current ETCS mode		
Description	Tell the current technical mode of the ETCS.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
4 bits			
Special/Reserved Values	0	Full Supervision	
	1	On Sight	
	2	Staff Responsible	
	3	Shunting	
	4	Unfitted	
	5	Sleeping	
	6	Stand By	
	7	Trip	
	8	Post Trip	
	9	System Failure	
	10	Isolation	
	11	Non Leading	
	12	STM European	
	13	STM National	
	14	Reversing	
	15	Spare	

8.1.53 M_SUP

Name	STM-customised supervision information		
Description	The definition of the variable content is a national issue for both STM and customised DMI function.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	0	4 294 967 295	
Special/Reserved Values			

8.1.54 M_TICAB_STATUS

Name	Cab train interface state		
Description	Boolean information defining the driving desk is activated in cabin A or B.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
3 bits			
Special/Reserved Values	000	Fail state	
	001	Desk A opened	
	010	Desk A & B closed	
	011	Reserved	
	100	Desk B opened	
	101	Desk A & B opened	
	110	Reserved	
	111	Status information not available	

8.1.55 M_TIDIR_STATUS

Name	Direction handle train interface status		
Description	Boolean information defining the position of the driver direction handle.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
3 bits			
Special/Reserved Values	000	Fail state	
	001	Forward	
	010	Neutral	
	011	Reserved	
	100	Backward	
	101	Reserved	
	110	Reserved	
	111	Status information not available	

8.1.56 M_TIEDCB_CMD

Name	Eddy current brake train interface command		
Description	Boolean information telling if the eddy current brake system use is allowed or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Allow eddy current brake (on)	
	10	Suppress eddy current brake (off)	
	11	No command from STM->Keep current output status	

8.1.57 M_TIEDCB_CMD_AVAIL

Name	Eddy current brake train interface command availability		
Description	Boolean information telling if the eddy current brake system command is available or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	Eddy current brake system command is not available	
	1	Eddy current brake system command is available	

8.1.58 M_TIFLAP_CMD

Name	Air tightness/Flap control train interface command		
Description	Boolean information for opening or closing the Flap control (air conditioning).		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Flap open (air conditioning on)	
	10	Flap close (air conditioning off)	
	11	No command from STM->Keep current output status	

8.1.59 M_TIFLAP_CMD_AVAIL

Name	Air tightness train interface command availability		
Description	Boolean information telling if the Air tightness system command is available or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	Air tightness system command is not available	
	1	Air tightness system command is available	

8.1.60 M_TIMS_CMD

Name	Main switch/Circuit breaker train interface command		
Description	Boolean information for closing or opening the Main switch.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Main switch close (on)	
	10	Main switch open (off)	
	11	No command from STM->Keep current output status	

8.1.61 M_TIMS_CMD_AVAIL

Name	Main switch/Circuit breaker train interface command availability		
Description	Boolean information telling if the Main switch/Circuit breaker system command is available or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	Main switch/Circuit breaker system command is not available	
	1	Main switch/Circuit breaker system command is available	

8.1.62 M_TIMSH_CMD

Name	Magnetic brake system train interface command		
Description	Boolean information telling if the magnetic brake system use is allowed or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Allow MB (on)	
	10	Suppress MB (off)	
	11	No command from STM->Keep current output status	

8.1.63 M_TIMSH_CMD_AVAIL

Name	Magnetic shoe brake train interface command availability		
Description	Boolean information telling if the magnetic shoe brake system command is available or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	Magnetic shoe brake system command is not available	
	1	Magnetic shoe brake system command is available	

8.1.64 M_TIPAEB_CMD

Name	Inhibit passenger emergency brake train interface command		
Description	Boolean information telling if the passenger emergency brake request is allowed or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Allow passenger emergency brake (on)	
	10	Inhibit passenger emergency brake (off)	
	11	No command from STM->Keep current output status	

8.1.65 M_TIPAEB_CMD_AVAIL

Name	Inhibit passenger emergency brake train interface command availability		
Description	Boolean information telling if the Inhibit passenger emergency brake system command is available or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	Inhibit passenger emergency brake system command is not available	
	1	Inhibit passenger emergency brake system command is available	

8.1.66 M_TIPANTO_CMD

Name	Pantograph train interface command		
Description	Boolean information for lifting or lowering a pantograph.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Pantograph lift	
	10	Pantograph lower	
	11	No command from STM->Keep current output status	

8.1.67 M_TIPANTO_CMD_AVAIL

Name	Pantograph train interface command availability		
Description	Boolean information telling if the Pantograph system command is available or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	Pantograph system command is not available	
	1	Pantograph system command is available	

8.1.68 M_TIRB_CMD

Name	Regenerative brake train interface command		
Description	Boolean information telling if the regenerative brake system use is allowed or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Allow regenerative brake (on)	
	10	Suppress regenerative brake (off)	
	11	No command from STM->Keep current output status	

8.1.69 M_TIRB_CMD_AVAIL

Name	Regenerative brake train interface command availability		
Description	Boolean information telling if the regenerative brake system command is available or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	Regenerative brake system command is not available	
	1	Regenerative brake system command is available	

8.1.70 M_TITR_C_CMD

Name	Traction cut off train interface command		
Description	Boolean information for cutting the traction power.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Reserved	
	01	Traction cut off	
	10	No traction cut off	
	11	No command from STM->Keep current output status	

8.1.71 M_TITR_C_CMD_AVAIL

Name	Traction cut-off train interface command availability		
Description	Boolean information telling if the Traction cut-off system command is available or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	Traction cut-off system command is not available	
	1	Traction cut-off system command is available	

8.1.72 M_TITR_C_STATUS

Name	Traction cut off train interface status		
Description	Boolean information defining if the traction power is cut off.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	00	Fail status	
	01	Traction cut off	
	10	No traction cut off	
	11	Status information not available	

8.1.73 M_TRACTION

Name	Traction System Type		
Description	It defines the traction system to be used on a specific line (diesel/electric/kind of power pickup etc.) or respectively that can be used by a train. Values to be assigned according to 6.1.1.2.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	
Special/Reserved Values			

8.1.74 M_XATTRIBUTE

Name	Text message attribute		
Description	Attributes for text messages.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits			
Special/Reserved Values	0xxxxxxxxx	Reserved	
	x0xxxxxxxx	Normal flashing	
	x1xxxxxxxx	Counterphase flashing	
	xx00xxxxxx	No flashing	
	xx01xxxxxx	Slow flashing	
	xx10xxxxxx	Fast flashing	
	xx11xxxxxx	Reserved	
	xxxx000xxx	Black text background	
	xxxx001xxx	White text background	
	xxxx010xxx	Red text background	
	xxxx011xxx	Blue text background	
	xxxx100xxx	Green text background	
	xxxx101xxx	Yellow text background	
	xxxx110xxx	Light red text background	
	xxxx111xxx	Light green text background	
	xxxxxxx000	Black text	
	xxxxxxx001	White text	
	xxxxxxx010	Red text	
	xxxxxxx011	Blue text	
	xxxxxxx100	Green text	
	xxxxxxx101	Yellow text	
	xxxxxxx110	Light red text	
	xxxxxxx111	Light green text	

8.1.75 N_035_VERMAJOR

Name	High figure of the FFFIS STM (Subset-035) compatibility number: X		
Description	Figure of the high digit of the FFFIS STM (Subset-035) compatibility number.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Integer
Special/Reserved Values			

8.1.76 N_035_VERMID

Name	Middle figure of the FFFIS STM (Subset-035) compatibility number: Y		
Description	Figure of the middle digit of the FFFIS STM (Subset-035) compatibility number.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Integer
Special/Reserved Values			

8.1.77 N_035_VERMINOR

Name	Lowest figure of the FFFIS STM (Subset-035) compatibility number: Z		
Description	Figure of the lowest digit of the FFFIS STM (Subset-035) compatibility number.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Integer
Special/Reserved Values			

8.1.78 N_058_VERMAJOR

Name	High figure of the application layer compatibility number: X		
Description	Figure of the high digit of the application layer compatibility number.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Integer
Special/Reserved Values			

8.1.79 N_058_VERMID

Name	Middle figure of the application layer compatibility number: Y		
Description	Figure of the middle digit of the application layer compatibility number.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Integer
Special/Reserved Values			

8.1.80 N_058_VERMINOR

Name	Lowest figure of the application layer compatibility number: Z		
Description	Figure of the lowest digit of the application layer compatibility number.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Integer
Special/Reserved Values			

8.1.81 N_ADDR_BI

Name	Address of Brake Interface function		
Description	Declares at what address the Brake Interface function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.82 N_ADDR_CAB_A

Name	Address of DMI CAB A function		
Description	Declares at what address the DMI CAB A function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.83 N_ADDR_CAB_A_RED

Name	Address of DMI CAB A redundant function		
Description	Declares at what address the DMI CAB A redundant function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.84 N_ADDR_CAB_B

Name	Address of DMI CAB B function		
Description	Declares at what address the DMI CAB B function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.85 N_ADDR_CAB_B_RED

Name	Address of DMI CAB B redundant function		
Description	Declares at what address the DMI CAB B redundant function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.86 N_ADDR_CLOCK

Name	Address of Reference Clock function		
Description	Declares at what address the Reference Clock function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.87 N_ADDR_DRU

Name	Address of DRU function		
Description	Declares at what address the DRU function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.88 N_ADDR_EUROSUP

Name	Address of European Supervision function		
Description	Declares at what address the European Supervision function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.89 N_ADDR_JRU

Name	Address of JRU function		
Description	Declares at what address the JRU function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.90 N_ADDR_ODO

Name	Address of the odometer function		
Description	Declares at what address the odometer function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.91 N_ADDR_TI

Name	Address of Train Interface function		
Description	Declares at what address the Train Interface function is allocated.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0	19	
Special/Reserved Values	2	STM Control function	
	20-126	Reserved	
	127	Reserved for multicast	

8.1.92 N_ITER

Name	Number of iterations of a data set following this variable in a packet		
Description	If 0 then no data set is following. Two nested levels of iterations can exist.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
5 bits	0	31	Integers
Special/Reserved Values			

8.1.93 N_L_ITER

Name	Number of iterations of a data set following this variable in a packet		
Description	If 0 then no data set is following. Two nested levels of iterations can exist.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	As allowed by maximum length of application data.	Integers
Special/Reserved Values			

8.1.94 N_SRS_VERMAJOR

Name	High figure of the version number of [Ref. 1 SRS]: X		
Description	Figure of the high digit of the version number.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Integer
Special/Reserved Values			

8.1.95 N_SRS_VERMINOR

Name	Lowest figure of the version number of [Ref. 1 SRS]: Y		
Description	Figure of the lowest digit of the version number.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Integer
Special/Reserved Values			

8.1.96 NC_DIFF

Name	International Train categories		
Description	It is the international class of train for which a differential value for the static line speed exists. Used together with V_DIFF to permit certain trains to go faster or lower than the “international basic static speed” given by V_STATIC. Value 0 of NC_DIFF corresponds to the LSB of NC_TRAIN, number 14 of NC_DIFF to MSB (15-bit variable) of NC_TRAIN. Values to be assigned according to 6.1.1.2.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
4 bits			
Special/Reserved Values	0	Active tilting SSP	
	1	Passive tilting SSP	
	2	Cross wind sensitivity	
	3 – 15	Spare	

8.1.97 NC_TRAIN

Name	Train Category to which belong the train.		
Description	Train category used for the static speed profile calculation. Each bit represents one category. A train can belong to various categories. Values to be assigned according to 6.1.1.2.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/ formula***
15 bits			
Special/Reserved Values	`000 0000 0000 0000`	Basic static speed profile (default value)	
	`XXX XXXX XXXX XXX1`	Active tilting SSP	
	`XXX XXXX XXXX XX1X`	Passive tilting SSP	
	`XXX XXXX XXXX X1XX`	Cross wind sensitivity	
	`XXX XXXX XXXX 1XXX`	Spare	
	`XXX XXXX XXX1 XXXX`	Spare	
	`XXX XXXX XX1X XXXX`	Spare	
	`XXX XXXX X1XX XXXX`	Spare	
	`XXX XXXX 1XXX XXXX`	Spare	
	`XXX XXX1 XXXX XXXX`	Spare	
	`XXX XX1X XXXX XXXX`	Spare	
	`XXX X1XX XXXX XXXX`	Spare	
	`XXX 1XXX XXXX XXXX`	Spare	
	`XX1 XXXX XXXX XXXX`	Spare	
	`X1X XXXX XXXX XXXX`	Spare	
	`1XX XXXX XXXX XXXX`	Spare	

8.1.98 NID_BUTPOS

Name	Button position		
Description	Give the appropriate position to display the button on DMI. A unique screen location shall be associated to each value of this variable for each possible layout. This screen location for the button has to be defined by the corresponding layout specification.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
4 bits	1	10	
Special/Reserved Values	0	Reserved	
	11-15	Reserved	

8.1.99 NID_BUTTON

Name	Button identifier		
Description	Functional identity of requested button. Allows DMI to apply customisation, if defined within the DMI. Functional identity is independent of button state. The combination of NID_STM + NID_BUTTON relates to a unique button.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	
Special/Reserved Values			

8.1.100 NID_DATA

Name	Identifier of a STM data		
Description	One value of this variable represent a Specific STM data required by the STM.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	
Special/Reserved Values			

8.1.101 NID_DRIVER

Name	Identifier number of the Driver		
Description	Identifier of the Driver.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	0	4 294 967 294	1
Special/Reserved Values	4 294 967 295	Unknown	

8.1.102 NID_DRV_LANG

Name	Driver language identifier		
Description	Driver Language Selection Defined according to [Ref. 6 Codes for the representation of names of languages-Part 1: Alpha-2 Code], ISO 639-1:2002(E/F) This table includes a subset of the language identifiers included in the norm.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits (2 characters)			
Special/Reserved Values	en	ENGLISH	
	de	GERMAN	
	fr	FRENCH	
	es	SPANISH	
	it	ITALIAN	
	nl	DUTCH	
	hu	HUNGARIAN	
	da	DANISH	
	fi	FINNISH	
	no	NORWEGIAN	
	sv	SWEDISH	
	bg	BULGARIAN	
	hr	CROATIAN	
	cs	CZECH	
	et	ESTONIAN	
	el	GREEK	
	pl	POLISH	
	pt	PORTUGUESE	
	ro	ROMANIAN	
	ru	RUSSIAN	
	sr	SERBIAN	
	sh	SERBO-CROATIAN	
	sk	SLOVAK	
	sl	SLOVENIAN	
	tr	TURKISH	
	lv	LATVIAN	
	lt	LITHUANIAN	

8.1.103 NID_ENGINE

Name	Onboard ETCS identity		
Description	The ETCS identity number is uniquely defined for ERTMS/ETCS purposes. This variable is also transmitted to the STM to be re-used for STM purposes. Values to be assigned according to 6.1.1.2.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
24 bits	0	16 777 215	
Special/Reserved Values			

8.1.104 NID_ICON

Name	Icon identifier		
Description	Visual identity of requested icon. Allows DMI to apply customisation, if defined within the DMI. Functional identity is part of state of button or indicator. The combination of NID_STM + NID_ICON relates to a unique icon.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/Formula***
8 bits	1	255	
Special/Reserved Values	0	No icon referenced	

8.1.105 NID_INDICATOR

Name	Indicator identifier		
Description	Functional identity of requested indicator. Allows DMI to apply customisation, if defined within the DMI. Functional identity is independent of indicator state. The combination of NID_STM + NID_INDICATOR relates to a unique indicator.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	
Special/Reserved Values			

8.1.106 NID_INDPOS

Name	Indicator position		
Description	Give the appropriate position to display the indicator on DMI. A unique screen location shall be associated to each value of this variable for each possible layout. This screen location for the indicator has to be defined by the corresponding layout specification.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
5 bits	1	24	
Special/Reserved Values	0	Reserved	
	25-31	Reserved	

8.1.107 NID_OPERATIONAL

Name	Train Running Number		
Description	This is the operational train running number. Values to be assigned according to 6.1.1.2.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	0	9999 9999	Binary Coded Decimal
Special/Reserved Values	For each digit ;		
	Values A – E	Reserved	
	F	Use value F for digit to indicate no digit (if number shorter than 8 digits)	
	Exception: FFFF FFFF	Unknown	

8.1.108 NID_PACKET

Name	Packet identifier		
Description	This is used in each packet, allowing the receiving equipment to identify the data, which follows.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Numbers
Special/Reserved Values			

8.1.109 NID_SOUND

Name	Sound identifier		
Description	Functional identity of sound from sound palette given by NID_STM. National sounds shall have unique identifiers. A Sound is identified by NID_STM + NID_SOUND. This allows for up to 254 sounds per target system.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	1	254	
Special/Reserved Values	0	Silence, turn off ongoing sound	
	255	Use only M_FREQ + T_SOUND	

8.1.110 NID_STM

Name	STM identity		
Description	Identity of a national infrastructure. If there are more than one implementation of STM for an infrastructure, they share the same NID_STM as it is an identifier of the infrastructure. Values to be assigned according to 6.1.1.2.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	(UIC control)
Special/Reserved Values			

8.1.111 NID_STMBG

Name	Identity of position defined by the target system.		
Description	Defines an identity of the balise group. If possible, the number may be taken from the target system and the related identification scheme. Otherwise location references may be assigned numbers sequentially		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
14 bits	1	16382	Identity number
Special/Reserved Values	0	Undefined	
	16383	Reserved	

8.1.112 NID_STMSTATE

Name	Actual STM state		
Description	Tell the current state of the STM.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
4 bits			
Special/Reserved Values	0	Reserved (mapped to NP for consistency)	
	1	Power On (PO)	
	2	Configuration (CO)	
	3	*Data Entry (DE)*	
	4	Cold Standby (CS)	
	5	Reserved (mapped to CS for consistency)	
	6	Hot Standby (HS)	
	7	Data Available (DA)	
	8	Failure (FA)	
	9	*Spare value*	
	10	*Spare value*	
	11	*Spare value*	
	12	Spare value	
	13	Spare value	
	14	Spare value	
	15	*Spare value*	

8.1.113 NID_STMSTATEORDER

Name	STM state order		
Description	Tell the STM state ordered by the ERTMS/ETCS on-board		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
4 bits			
Special/Reserved Values	0	Reserved (mapped to NP for consistency)	
	1	Reserved (mapped to PO for consistency)	
	2	Configuration (CO)	
	3	*Data Entry (DE)*	
	4	Unconditional Cold Standby (U-CS)	
	5	Conditional Cold Standby (C-CS)	
	6	Hot Standby (HS)	
	7	Data Available (DA)	
	8	Failure (FA)	
	9	*Spare value*	
	10	*Spare value*	
	11	*Spare value*	
	12	*Spare value*	
	13	*Spare value*	
	14	*Spare value*	
	15	*Spare value*	

8.1.114 NID_STMSTATEREQUEST

Name	STM state request		
Description	State requested by the STM, in which the STM is intended to pass.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
4 bits			
Special/Reserved Values	0	Reserved (mapped to NP for consistency)	
	1	Reserved (mapped to PO for consistency)	
	2	Configuration (CO)	
	3	*Data Entry (DE)*	
	4	Cold Standby (CS)	
	5	Reserved (mapped to CS for consistency)	
	6	Reserved (mapped to HS for consistency)	
	7	Reserved (mapped to DA for consistency)	
	8	Reserved (mapped to FA for consistency)	
	9	*Spare value*	
	10	*Spare value*	
	11	*Spare value*	
	12	Spare value	
	13	Spare value	
	14	Spare value	
	15	*Spare value*	

8.1.115 NID_STMTYPE

Name	STM type identity		
Description	Tell if the STM is of National type (SN) or from European type (SN).		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	SE	
	1	SN	

8.1.116 NID_XMESSAGE

Name	XMESSAGE identity		
Description	Identity of a text message.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	Integer
Special/Reserved Values			

8.1.117 Q_ACK

Name	Acknowledgement qualifier		
Description	Tell if a text message (NID_XMESSAGE) must be acknowledged or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			Boolean
Special/Reserved Values	0	No acknowledgement required	
	1	Acknowledgement required	

8.1.118 Q_ADDR_BI

Name	Safety level of Brake Interface connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_BI.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	SL0	
	1	SL2	
	2	SL4	
	3	Reserved	

8.1.119 Q_ADDR_CAB_A

Name	Safety level of DMI CAB A connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_CAB_A.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	SL0	
	1	SL2	
	2	SL4	
	3	Reserved	

8.1.120 Q_ADDR_CAB_A_RED

Name	Safety level/Availability of redundant DMI CAB A connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_CAB_A_RED or if the function is not available.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	SL0	
	1	SL2	
	2	SL4	
	3	Function not available	

8.1.121 Q_ADDR_CAB_B

Name	Safety level/Availability of DMI CAB B connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_CAB_B or if the function is not available.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	SL0	
	1	SL2	
	2	SL4	
	3	Function not available	

8.1.122 Q_ADDR_CAB_B_RED

Name	Safety level/Availability of redundant DMI CAB B connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_CAB_B_RED B or if the function is not available.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	SL0	
	1	SL2	
	2	SL4	
	3	Function not available	

8.1.123 Q_ADDR_CLOCK

Name	Safety level of Reference Clock connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_CLOCK.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	Reserved	
	1	Reserved	
	2	SL4	
	3	Reserved	

8.1.124 Q_ADDR_DRU

Name	Safety level/Availability of DRU connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_DRU or if the function is not available.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	SL0	
	1	SL2	
	2	SL4	
	3	Function not available	

8.1.125 Q_ADDR_EUROSUP

Name	Safety level/Availability of European Supervision connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_EUROSUP or if the function is not available.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	Reserved	
	1	Reserved	
	2	SL4	
	3	Function not available	

8.1.126 Q_ADDR_JRU

Name	Safety level/Availability of JRU connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_JRU or if the function is not available.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	SL0	
	1	SL2	
	2	SL4	
	3	Function not available	

8.1.127 Q_ADDR_ODO

Name	Safety level of Odometer connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_ODO.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	Reserved	
	1	Reserved	
	2	SL4	
	3	Reserved	

8.1.128 Q_ADDR_TI

Name	Safety level of Train Interface connection		
Description	Declares the highest safety level for the connection to the function at the address N_ADDR_TI.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/ Reserved Values	0	SL0	
	1	SL2	
	2	SL4	
	3	Reserved	

8.1.129 Q_BUTTON

Name	Button Event		
Description	Qualifier for the button event		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/ Reserved Values	0	Push event	
	1	Release event	

8.1.130 Q_D_ABS

Name	Absolute Distance Accuracy		
Description	Absolute Distance Accuracy, typical. Defined as N_D_ABS in [Ref. 2 FFFIS STM], SUBSET-035 Issue 2.1.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255cm	1 cm
Special/Reserved Values			

8.1.131 Q_D_REL

Name	Relative Distance Accuracy		
Description	Relative Distance Accuracy, typical. Defined as N_D_REL in [Ref. 2 FFFIS STM], SUBSET-035 Issue 2.1.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	25.5%	0.1%
Special/Reserved Values			

8.1.132 Q_DANGERPOINT

Name	Qualifier for danger point description.		
Description	This variable is set to 1 if either a danger point exists or a release speed has to be specified		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	No danger point information	
	1	Danger point information to follow	

8.1.133 Q_DATAENTRY

Name	Need for Specific STM Data Entry		
Description	Qualifier indicating if the STM still need Specific STM Data Entry or not		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/ Reserved Values	0	No (more) data entry needed: "End of Specific Data entry"	
	1	STM Specific Data entry still needed	

8.1.134 Q_DRIVERINT

Name	Need for driver intervention during Specific STM Data Entry		
Description	Qualifier indicating if the STM still need Specific STM Data Entry or not		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/ Reserved Values	0	No driver intervention is requested	
	1	Driver intervention is requested	

8.1.135 Q_ENDTIMER

Name	Qualifier to indicate whether end section timer information exists for the End section in the MA		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	No End section timer information	
	1	End section timer information to follow	

8.1.136 Q_FOLLOWING

Name	Indicate a following request		
Description	Due to the possible length of an STM request for Specific STM Data, this qualifier is used to indicate to the ETCS On-board whether there is a request for Specific STM Data following that has to be managed together with the current request by the ETCS On-board or not. Q_FOLLOWING shall be used to fulfil the requirement that 5 requests for Specific STM Data may be sent at the same time. It shall also be used for the Specific STM data view values as they may have to be displayed together and may not be transmitted in the same message.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	No following request to be managed together with the current one.	
	1	There is a following request to be managed together with the current one.	

8.1.137 Q_FRONT

Name	Qualifier to profile discontinuity		
Description	Qualifier to indicate whether a profile attribute is to be applied for the front end of the train (no train length delay) or for rear end of the train (train length delay)		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	Train length delay if the speed profile at the k-th discontinuity becomes less restrictive, else no train length delay.	
	1	No train length delay at the k-th discontinuity	

8.1.138 Q_GDIR

Name	Qualifier for gradient slope.		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	downhill	
	1	uphill	

8.1.139 Q_INDICATE

Name	Inhibition of DMI indication		
Description	The Q_INDICATE variable is a flag field that controls what DMI objects should be inhibited and not displayed.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
12 bits			
Special/ Reserved Values	xxxx xxxx xxx1	Reserved	
	xxxx xxxx xx1x	Inhibit Permitted Speed	
	xxxx xxxx x1xx	Inhibit Target Speed	
	xxxx xxxx 1xxx	Inhibit Target Distance	
	xxxx xxx1 xxxx	Inhibit Intervention Speed	
	xxxx xx1x xxxx	Slippery track selected indication	
	xxxx x1xx xxxx	Inhibit Release Speed	
	xxxx 1xxx xxxx	Inhibit Warning Status	
	xxx1 xxxx xxxx	Inhibit Indication Status	
	xx1x xxxx xxxx	Track data/condition: Balise transmission control	
	x1xx xxxx xxxx	Override status	
	1xxx xxxx xxxx	ETCS Override request	

8.1.140 Q_INDICATIONLIMIT

Name	Indication limit status qualifier		
Description	Indication status qualifier to indicate that the indication limit has been reached		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/ Reserved Values	0	No indication status to be displayed	
	1	Indication status to be displayed	

8.1.141 Q_NOM_ODO

Name	Nominal odometer qualifier		
Description	Indicate if the odometer configuration is nominal (all sensors available) or not.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	Not nominal	
	1	Nominal	

8.1.142 Q_NVDRIVER_ADHES

Name	Qualifier for the modification of trackside adhesion factor by driver		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	Not allowed	
	1	Allowed	

8.1.143 Q_OVERLAP

Name	Qualifier to tell whether there is an overlap		
Description	This variable is set to 1 if either an overlap exists or a release speed has to be specified		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	No overlap information	
	1	Overlap information to follow	

8.1.144 Q_OVREOA_STATUS

Name	ETCS override status		
Description	Indicate to all STMs that an override EOA has been triggered		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bits			
Special/Reserved Values	0	ETCS override status not active	
	1	ETCS override status active	

8.1.145 Q_SAFEDIR

Name	Direction ambiguity		
Description	Define if the direction information is ambiguous or not		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	Not ambiguous	
	1	Ambiguous	

8.1.146 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			
Special/Reserved Values	0	10 cm scale	
	1	1 m scale	
	2	10 m scale	
	3	Spare	

8.1.147 Q_SECTIONTIMER

Name	Qualifier to indicate whether there is a Section Time Out related to the section		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	No Section Timer information	
	1	Section Timer information to follow	

8.1.148 Q_SOUND

Name	Sound qualifier		
Description	Qualifier for the sound generation		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
2 bits			
Special/Reserved Values	0	Stop sound generation	
	1	One shot play (Sound is played once)	
	2	Continuous play (Sound is played again when definition ends)	
	3	Reserved	

8.1.149 Q_V_ABS

Name	Absolute Speed Accuracy		
Description	Absolute Speed Accuracy, typical. Defined as N_V_ABS in [Ref. 2 FFFIS STM], SUBSET-035 Issue 2.1.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	12.75km/h	0.05 km/h
Special/Reserved Values			

8.1.150 Q_V_REL

Name	Relative Speed Accuracy		
Description	Relative Speed Accuracy, typical. Defined as N_V_REL in [Ref. 2 FFFIS STM], SUBSET-035 Issue 2.1.1		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	25.5%	0.1%
Special/Reserved Values			

8.1.151 Q_WARNINGLIMIT

Name	Warning limit status qualifier		
Description	Warning status qualifier to indicate that the warning limit has been reached		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
1 bit			
Special/Reserved Values	0	No warning to be displayed	
	1	Warning status has to be displayed	

8.1.152 T_BEGIN_EB_EF

Name	Brake delay time for starting emergency brake effort counting from the time the brake command is issued by the ETCS On-board and ending when the braking effort begins.		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	10 ms	655350 ms	10 ms
Special/Reserved Values	0	Reserved	

8.1.153 T_BEGIN_SB_EF

Name	Brake delay time for starting service brake effort counting from the time the brake command is issued by the ETCS On-board and ending when the braking effort begins.		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	10 ms	655350 ms	10 ms
Special/Reserved Values	0	Reserved	

8.1.154 T_BUTTONEVENT

Name	Timestamping of a button event		
Description	Reference time value of the button event		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	0	4 294 967 295	1 ms
Special/Reserved Values			

8.1.155 T_DAY

Name	Official day UTC		
Description	.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
5 bits	1	31	1 day
Special/Reserved Values	0	Day unknown	

8.1.156 T_EB_MAXDELAY

Name	Brake interface maximum emergency brake command issue time		
Description	This is the maximum processing of the STM brake command by the ETCS Brake interface function. This is the time from the moment the Brake interface receive the STM command on the Profibus and the time the brake command is issued by the brake interface. Max EB command issue time delay used to check if the configuration of the brake interface (performances) matches		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	1 ms	65535 ms	1 ms
Special/Reserved Values	0	Reserved	

8.1.157 T_ENDTIMER

Name	Validity time for the End section in the MA		
Description	Time for which the End section is valid measured from the moment the train reaches the location defined by D_ENDTIMERSTARTLOC.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits	0s	1022s	1 s
Special/Reserved Values	1023	∞	

8.1.158 T_FULL_EB_EF

Name	Brake delay time for full emergency brake effort		
Description	Brake delay time for full emergency brake effort counting from the time the brake command is issued by the ETCS On-board and ending when the full brake effort is reached.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	10 ms	655350 ms	10 ms
Special/Reserved Values	0	Reserved	

8.1.159 T_FULL_SB_EF

Name	Brake delay time for full service brake effort		
Description	Brake delay time for full service brake effort counting from the time the brake command is issued by the ETCS On-board and ending when the full brake effort is reached.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	10 ms	655350 ms	10 ms
Special/Reserved Values	0	Reserved	

8.1.160 T_HOUR

Name	Official hour UTC		
Description	.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
5 bits	00	23	1 hour
Special/Reserved Values	24-30	Reserved	
	31	Unknown	

8.1.161 T_JRU

Name	Timestamping of a JRU message		
Description	Reference time value when the data sent to the JRU was valid.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	0	4 294 967 295	1ms
Special/Reserved Values			

8.1.162 T_LOA

Name	Validity time for the target speed at the LOA		
Description	Time for which the target speed is valid measured from the moment information is received		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits	0s	1022s	1 s
Special/Reserved Values	1023	∞ -> “no time out“	

8.1.163 T_MINUTES

Name	Official minutes UTC		
Description	.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
6 bits	00	59	1 minute
Special/Reserved Values	60-62	Reserved	
	63	Unknown	

8.1.164 T_MONTH

Name	Official month UTC		
Description	.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
4 bits	01	12	1 month
Special/Reserved Values	0	Reserved	
	13-14	Reserved	
	15	Unknown	

8.1.165 T_NVOVTRP

Name	Maximum time for overriding the train trip		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0 s	255 s	1 s
Special/Reserved Values			

8.1.166 T_ODO

Name	Timestamping of an Odometer measurement		
Description	Reference time value when the odometer data were valid.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
32 bits	0	4 294 967 295	1ms
Special/Reserved Values			

8.1.167 T_ODOCYCLE

Name	Typical cycle time of ETCS On-board odometer function		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0 ms	2550 ms	Step of 10 ms
Special/Reserved Values			

8.1.168 T_ODOMAXPROD

Name	Maximum production delay time		
Description	Refer to [Ref. 2 FFFIS STM], SUBSET-035 §8.7.1.11		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	10 ms	2550 ms	Step of 10ms
Special/Reserved Values	0	Reserved	

8.1.169 T_OL

Name	Overlap validity time		
Description	The time span the train can expect the overlap to be available, measured from the moment the train reaches the location defined by D_STARTOL.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits	0s	1022 s	1 s
Special/Reserved Values	1023	∞	

8.1.170 T_SB_MAXDELAY

Name	Brake interface maximum service brake command issue time		
Description	This is the maximum processing of the STM brake command by the ETCS Brake interface function. This is the time from the moment the Brake interface receive the STM command on the Profibus and the time the brake command is issued by the brake interface. Max SB command issue time delay used to check if the configuration of the brake interface (performances) matches		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	1 ms	65 535 ms	1 ms
Special/Reserved Values	0	Reserved	

8.1.171 T_SECONDS

Name	Official seconds UTC		
Description	.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
6 bits	00	59	1 second
Special/Reserved Values	60-62	Reserved	
	63	Unknown	

8.1.172 T_SECTIONTIMER

Name	Validity time of a section in the MA		
Description	Time for which the section is valid.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits	0s	1022s	1 s
Special/Reserved Values	1023	∞	

8.1.173 T_SOUND

Name	Sound segment duration		
Description	Duration of a sound segment. Need not be highly accurate		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	100 ms	10 000 ms	T = T_SOUND * 100 ms Range 100 ms to 10 seconds
Special/Reserved Values	0	Reserved	
	101-255	Spare	

8.1.174 T_TRACTION_CUT_OFF

Name	Traction cut off time		
Description	Traction cut off time counting from the time the command is issued by the ETCS On-board and ending when no traction effort has been reached..		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	1 ms	65535 ms	1 ms
Special/Reserved Values	0	Reserved	

8.1.175 T_TTS

Name	Official hundredth of second UTC		
Description	Used only in conjunction with HOUR, MINUTES and SECONDS.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
5 bits	000 ms	950 ms	050 ms
Special/Reserved Values	20-30	Reserved	
	31	Unknown	

8.1.176 T_YEAR

Name	Official year UTC		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	00	99	1 year
Special/Reserved Values	100-126	Reserved	
	127	Unknown	

8.1.177 V_DIFF

Name	Absolute Positive Speed associated to a train category.		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121–127	Spare	

8.1.178 V_EB_CHAR

Name	Emergency brake deceleration characteristic speed		
Description	Unsigned.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits	0 km/h	600 km/h	1 km/h
Special/Reserved Values	601-1023	Spare	

8.1.179 V_INTERV

Name	Intervention speed		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-126	Spare	
	127	Unknown value/Not displayed	

8.1.180 V_LOA

Name	Permitted speed at the limit of authority		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-127	Spare	

8.1.181 V_MAIN

Name	Signalling related speed restriction		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-127	Spare	
	V_MAIN = 0 means “trip order”		

8.1.182 V_MAX

Name	Upper bound of the functional confidence interval of a measured speed		
Description	Signed value of the upper bound of the functional confidence interval of a measured speed provided by the odometer to STM. Coded as one’s complement with highest bit as sign (=travel direction).		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	- 32 768 cm/s	+ 32 767 cm/s	Signed, unit 1 cm/s.
Special/Reserved Values			

8.1.183 V_MAXTRAIN

Name	Maximum permitted train speed.		
Description	Maximum permitted speed for the train, taking into account the maximum speed of every vehicle contained in the train set.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121 – 127	Spare	

8.1.184 V_MIN

Name	Lower bound of the functional confidence interval of a measured speed		
Description	Signed value of the lower bound of the functional confidence interval of a measured speed provided by the odometer to STM. Coded as one's complement with highest bit as sign (=travel direction).		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	- 32 768 cm/s	+ 32 767 cm/s	Signed, unit 1 cm/s
Special/Reserved Values			

8.1.185 V_NOM

Name	Nominal value of a measured speed		
Description	Signed nominal value of a measured speed provided by the odometer to STM. Coded as one's complement with highest bit as sign (=travel direction).		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
16 bits	- 32 768 cm/s	+ 32 767 cm/s	Signed, unit 1 cm/s
Special/Reserved Values			

8.1.186 V_NVALLOWOVTRP

Name	Maximum speed limit allowing the driver to select the "override EOA" function		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600km/h	5 km/h
Special/Reserved Values	121 – 127	Spare	

8.1.187 V_NVONSIGHT

Name	On Sight mode (permitted) speed limit		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-127	Spare	

8.1.188 V_NVREL

Name	Release Speed (permitted) speed limit		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-127	Spare	

8.1.189 V_NVSHUNT

Name	Shunting mode (permitted) speed limit		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-127	Spare	

8.1.190 V_NVSTFF

Name	Staff Responsible mode (permitted) speed limit		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-127	Spare	

8.1.191 V_NVSUPOVTRP

Name	Permitted speed limit to be supervised when the “override EOA” function is active		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600km/h	5 km/h
Special/Reserved Values	121 – 127	Spare	

8.1.192 V_NVUNFIT

Name	Unfitted mode (permitted) speed limit		
Description	This variable is part of the National Values		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-127	Spare	

8.1.193 V_PERMIT

Name	Permitted speed		
Description	For displaying permitted speed, may be ceiling speed, braking curve speed limit. SN mode		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits	0 Km/h	600 Km/h	1 Km/h
Special/Reserved Values	601-1023	Spare	

8.1.194 V_RELEASE

Name	Release speed		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-126	Spare	
	127	Unknown value/Not displayed	

8.1.195 V_RELEASEDP

Name	Release speed associated with the danger point		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-125	Spare	
	126	Use onboard calculated release speed	
	127	Use national value	

8.1.196 V_RELEASEOL

Name	Release speed associated with the overlap		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-125	Spare	
	126	Use onboard calculated release speed	
	127	Use national value	

8.1.197 V_SB_CHAR

Name	Service brake deceleration characteristic speed		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
10 bits	0 km/h	600 km/h	1 km/h
Special/Reserved Values	601-1023	Spare	

8.1.198 V_STATIC

Name	Static speed profile		
Description	Static speed profile speed after discontinuity (k).		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 Km/h	600 km/h	5 km/h
Special/Reserved Values	121-126	Spare	
	127	Non numerical value telling that the static speed profile description ends at D_STATIC(n)	

8.1.199 V_STMMAX

Name	STM max speed		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-126	Spare	
	127	No STM max speed to be supervised.	

8.1.200 V_STMSYS

Name	STM system speed		
Description			
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 km/h	600 km/h	5 km/h
Special/Reserved Values	121-126	Spare	
	127	No STM max speed to be supervised.	

8.1.201 V_TARGET

Name	Target speed		
Description	For displaying target speed. SN mode		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
7 bits	0 Km/h	600	5 km/h
Special/Reserved Values	121-126	Spare	
	127	Unknown value/Not displayed	

8.1.202 X_CAPTION

Name	Character string for label		
Description	Character used for button label, indicator label and data label. Character set is ISO 8859-1, also known as Latin Alphabet #1.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	
Special/Reserved Values			

8.1.203 X_TEXT

Name	Text character		
Description	Character used for text string. Character set is ISO 8859-1, also known as Latin Alphabet #1.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	
Special/Reserved Values			

8.1.204 X_VALUE

Name	Character for value		
Description	Character used for data value, default value of data and for pick-up list values. Character set is ISO 8859-1, also known as Latin Alphabet #1.		
Length of variable	***Minimum Value***	***Maximum Value***	***Resolution/formula***
8 bits	0	255	
Special/Reserved Values			