



**ERTMS/ETCS**

**FFFIS STM  
Application Layer**

REF : SUBSET-058

ISSUE : 3.2.0

DATE : 2015-12-16

| Company    | Technical Approval | Management approval |
|------------|--------------------|---------------------|
| ALSTOM     |                    |                     |
| ANSALDO    |                    |                     |
| AZD        |                    |                     |
| BOMBARDIER |                    |                     |
| CAF        |                    |                     |
| SIEMENS    |                    |                     |
| THALES     |                    |                     |

## 1. MODIFICATION HISTORY

| Issue Number<br>Date | Section Number                                                                                                              | Modification / Description                                                                                                                                                                                                                                                                                 | Author                 |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| 0.0.4<br>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<br>10-05-00    | Most sections                                                                                                               | All variables moved to new chapter 23.<br><br>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.<br><br>Alstom “Review and comment on Application Layer” 25-04-2000 has been integrated. | J. Näsström            |
| 0.0.6<br>30-05-00    | General<br><br>General<br><br>Picture 6.1.1.3<br>17.1.1.1<br>4.2.1.2<br>19.1<br>17.4.4<br>17.6.5 & 23.1.1.144<br><br>22.2.1 | Editorial corrections<br><br>Empty lines in packets Deleted.<br><br>Editorial Updated<br><br>Legend of drawings<br><br>Clarified JRU introduction<br><br>Configuration clarified<br><br>Added variable for Availability of Additional TI.<br><br>NID_STM added                                             | J. Näsström            |
| 2.0.0<br>31-05-00    |                                                                                                                             | Final version.                                                                                                                                                                                                                                                                                             | J. Näsström            |
| 2.0.1<br>17-12-02    |                                                                                                                             | Modified during the STM Meeting in Brussels- 17.12.02                                                                                                                                                                                                                                                      | R. Ramos<br>(Invensys) |
| 2.0.2<br>14-01-03    |                                                                                                                             | Modified during the STM Meeting in Paris                                                                                                                                                                                                                                                                   | R. Ramos<br>(Invensys) |

| Issue Number<br>Date | Section Number | Modification / Description                                                                                                                                                                                                                                                                                                                                | Author                    |
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| 2.0.3<br>26/01/03    |                | Modification according to agreed comments                                                                                                                                                                                                                                                                                                                 | M. Deladrière<br>(Alstom) |
| 2.0.4<br>2003-01-30  |                | Modified during the Meeting of the STM Workgroup in Brussels.                                                                                                                                                                                                                                                                                             | R. Ramos<br>(Invensys)    |
| 2.0.5<br>2003-03-13  |                | Modified during the Meeting of the STM Workgroup in Brussels.                                                                                                                                                                                                                                                                                             | P. Lührs<br>(Siemens)     |
| 2.0.6<br>2003-03-26  |                | JRU requirements moved to SUBSET-035.<br><br>Modified during the Meeting of the STM Workgroup in Braunschweig.                                                                                                                                                                                                                                            | P. Lührs<br>(Siemens)     |
| 2.0.7<br>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.<br><br>Suppress T_INTERVENT & N_EOAOVERPASS according to Als058-39/40<br><br>D_NOMODO_LRBG variable added according to comment SIE058-035.<br><br>Packet STM-37 deleted according to comment SIE058-045 | M. Deladrière<br>(Alstom) |
| 2.0.8<br>27/05/2003  | All            | Up-date according to new Subset-035 and comments proposals.                                                                                                                                                                                                                                                                                               | M. Deladrière<br>(Alstom) |
| 2.0.9<br>25/06/2003  | All            | Traceability and consistency to Subset-035 A-27 has been performed.<br><br>Taking into accounts Invensys comments to the previous issue.                                                                                                                                                                                                                  | M. Deladrière<br>(Alstom) |
| 2.0.10<br>25/06/2003 | All            | Modification performed during WG meeting in Stockholm:<br><br>Added STM provider within the packet for DRU                                                                                                                                                                                                                                                | M. Deladrière<br>(Alstom) |



| Issue Number<br>Date | Section Number | Modification / Description                                                                                                                                           | Author                    |
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| 2.0.11<br>25/07/2003 | All            | Modification performed during WG meeting in Brussels                                                                                                                 | M. Deladrière<br>(Alstom) |
| 2.0.12<br>12-08-03   | All            | Modification according to review process and review sheet<br>UNISIG_ALL_COM_WP_STM_S<br>UBSET058_V2011_v001.doc                                                      | M. Deladrière<br>(Alstom) |
| 2.0.13               | All            | Modification according to review process and review sheet<br>UNISIG_ALL_COM_WP_STM_S<br>UBSET058_V2012_v001.doc                                                      | M. Deladrière<br>(Alstom) |
| 2.0.14               | All            | Modification done during the meeting in Stuttgart on the 7-8/10/2003                                                                                                 | M. Deladrière<br>(Alstom) |
| 2.0.15               | All            | Modification done after the meeting in Stuttgart on the 7-8/10/2003 and agreed during the meeting according to<br>UNISIG_ALL_COM_WP_STM_S<br>UBSET058_V2012_v002.doc | M. Deladrière<br>(Alstom) |
| 2.0.16               | All            | Modification done at the meeting in Madrid on the 22-23/10/2003 and agreed during the meeting according to<br>UNISIG_ALL_COM_WP_STM<br>_SUBSET058_V2015_v002.doc     | M. Deladrière<br>(Alstom) |
| 2.1.0                | All            | Modification according to comment sheet<br>UNISIG_ALL_COM_WP_STM_S<br>UBSET058_V2016_v001.doc                                                                        | M. Deladrière<br>(Alstom) |



| Issue Number<br>Date | Section Number                                                                                                 | Modification / Description                                    | Author                    |
|----------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------|
| 2.1.1                | 7.2.3<br>7.2.16<br>8.1.36<br>8.1.44<br>8.1.48<br>8.1.68<br>8.1.109<br>8.1.152<br>8.1.153<br>8.1.158<br>8.1.159 | Modification according to EEIG<br>comments on the issue 2.1.0 | M. Deladrière<br>(Alstom) |

| Issue Number<br>Date | Section Number                     | Modification / Description             | Author                        |
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| 2.2.0                | 5.2.1.2                            | Compatibility version                  | A.<br>Schoevaerts<br>(Alstom) |
|                      | 7.2.17                             | WG-10: § updated                       |                               |
|                      | 7.8.2 , 7.8.3 ,<br>8.1.14 , 8.1.16 | WG-4, § updated                        |                               |
|                      | 8.1.19                             | WG-7 § updated.                        |                               |
|                      | 8.1.17 , 8.1.27 ,<br>8.1.50        | WG-8: § updated.                       |                               |
|                      | 7.1.1<br>7.2.16                    | WG-12: Note added<br>WG-13: § updated. |                               |
|                      | 8.1.3                              | WG-15 : § updated.                     |                               |
|                      | 8.1.102 , 8.1.104 ,<br>8.1.105     | WG-16: § updated.                      |                               |
|                      | 7.1.1 , 8.1.68, 8.1.69             | WG-20 : § updated.                     |                               |
|                      | NID_DRIVER,<br>7.2.14              | WG-5 : § updated.                      |                               |
|                      | 7.2.16 , 7.2.17                    | WG-22 : § updated.                     |                               |
|                      | 7.9.1.                             | WG-21: § updated and added             |                               |
|                      | 8.1.112 , 8.1.113 ,<br>8.1.110     | WG-11 : § updated.                     |                               |
|                      | 7.2.21                             | WG-23 : § updated                      |                               |

| Issue Number<br>Date | Section Number                                                                                                                                                | Modification / Description                                                                                                                                                                                                                                                                        | Author                          |
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| 2.2.0                | 8.1.14, 8.1.16,<br>7.8.2, 7.8.3<br><br>7.3.1<br>8<br><br>7.7.1, 7.7.4,<br>8.1.33, 8.1.34<br>8.1.32, 8.1.35<br><br>7.5.10, 8.1.72,<br>8.1.80<br><br>7.3.2<br>8 | WG-27: Requirements updated.<br><br>WG-29: Requirement updated,<br>the associated variables deleted.<br><br>WG-28, Requirements updated,<br><br>New requirements.<br><br>WG-24, Requirements updated,<br>new requirement.<br><br>WG-31: Requirement updated,<br>the associated variables deleted. | A. Fanea<br>(Ansaldo<br>Signal) |
| 2.2.0.               | 7.2                                                                                                                                                           | WG-32 packet STM-45 deleted.                                                                                                                                                                                                                                                                      | A.<br>Schoevaerts<br>(Alstom)   |
| 2.2.0.               | 1                                                                                                                                                             | Change manual to automatic<br>references.                                                                                                                                                                                                                                                         | A.<br>Schoevaerts<br>(Alstom)   |
| 2.2.0                | 6.1.4.11.1                                                                                                                                                    | WG-32 packet STM-45 deleted.                                                                                                                                                                                                                                                                      | P. Lührs<br>(Siemens)           |



| Issue Number<br>Date | Section Number                   | Modification / Description                                      | Author            |
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| 2.2.0                | 7.9.1                            | WG-38 packet STM-161 updated                                    | J. Sukup<br>(AZD) |
|                      | 1.1.1                            | WG-45 variable M_MODE updated, new modes PS, LS added           |                   |
|                      | 7.4                              | mode SE deleted, variables connected to mode SE deleted,        |                   |
|                      | 7.5.8                            | STM-42 deleted                                                  |                   |
|                      | 8.1.84                           | Variable NID_STMTYPE updated                                    |                   |
|                      | 7.2.2                            | STM-4 updated                                                   |                   |
|                      | 7.2.14                           | WG-5 NID_DRIVER updated                                         |                   |
|                      | M_BRAKE_POSITION, 8.1.17, 7.2.13 | WG-35 brake percentage and position added                       |                   |
|                      | 8.1.8                            | WG-39 variable updated                                          |                   |
|                      | 7.2.12, 8.1.49                   | WG-40 STM-175 updated, variables updated and added              |                   |
|                      | 7.2.5, 7.2.15, 8.1.100           | WG-43 Override EOA -> Override                                  |                   |
|                      | 7.2.15                           | WG-44 STM-178 updated, new variables added and updated          |                   |
|                      | M_ADHESION 7.2.22, 8.1.2         | WG-47 variable updated<br>WG-48 STM-45 brought back and updated |                   |
|                      | 7.2.10                           | WG-49 STM-18 name updated                                       |                   |
|                      | 7.2.14                           | WG-50 STM-177 updated                                           |                   |



| Issue Number<br>Date | Section Number                                                                           | Modification / Description                                 | Author           |
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| 2.2.0                | 8.1.115, 7.5.9                                                                           | WG-51 variable and STM-43 updated                          | J.Sukup<br>(AZD) |
|                      | 8.1.111, 7.5.9                                                                           | WG-52 variable and STM-43 updated                          |                  |
|                      | 7.2.13                                                                                   | WG-53 STM-176 name updated                                 |                  |
|                      | 7.2.13                                                                                   | WG-56 STM-176 and variable updated                         |                  |
|                      | 7.9.1                                                                                    | WG-57 STM-161 updated                                      |                  |
|                      | 8.1.102                                                                                  | WG-54 Q_INDICATE updated                                   |                  |
|                      | 6.1.4.13.1                                                                               | WG-36 requirement added                                    |                  |
|                      | 8.1.49, 8.1.97                                                                           | WG-59 variables updated                                    |                  |
|                      | 5.2.1.2                                                                                  | WG-60 final version TBD                                    |                  |
|                      | 7.2.15, 7.5.9, 8.1.17,<br>7.2.1, 7.2.3, 8.1.112,<br>8.1.113, 8.1.110,<br>8.1.117, 8.1.61 | WG-62 editorial changes                                    |                  |
|                      | 7.2.21                                                                                   | WG-63 STM-184 updated                                      |                  |
|                      | NID_DRIVER                                                                               | WG-64 variable updated                                     |                  |
|                      | 8.1.102, 8.1.104,<br>8.1.105                                                             | WG-65 variables updated                                    |                  |
|                      | 6.1.12.1                                                                                 | WG-66 note deleted                                         |                  |
|                      | 7.2.1, 8.1.63, 8.1.94                                                                    | WG-67 STM-2 and variables updated                          |                  |
|                      | 7.2.13                                                                                   | WG-68 Figure 3 updated                                     |                  |
|                      | figure 3                                                                                 | WG-69 variables and STM-176 updated                        |                  |
|                      | A_EB_CHAR,<br>A_SB_CHAR,<br>V_EB_CHAR,<br>V_SB_CHAR, 7.2.13                              |                                                            |                  |
|                      | NID_OPERATIONAL                                                                          | WG-70 variable updated                                     |                  |
|                      | 7.2.15                                                                                   | WG-71 variables and STM-178 updated                        |                  |
|                      | 6.1.4.15                                                                                 | WG-72 chapter updated                                      |                  |
| 2.2.0                | 7                                                                                        | WG-30 references in packets updated, relevant states added | J.Sukup<br>(AZD) |



| Issue Number<br>Date | Section Number                                                                                                                                                                                                                     | Modification / Description                                                                                                                                                                                                                                                                                                                           | Author           |
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| 2.2.0                | 8.1.1, 8.1.2, 8.1.3,<br>8.1.4<br>T_YEAR<br>First page<br>8.1.10<br>7.2.15<br>6.1.4.6, 6.1.4.7,<br>7.2.3, 7.2.17, 7.2.18,<br>7.2.20, 7.5.2, 7.5.3,<br>7.5.4, 7.5.10, 8.1.9,<br>8.1.64, 8.1.68,<br>8.1.69, 8.1.72,<br>8.1.80, 8.1.84 | WG-73 variables updated<br><br>WG-74 variable updated<br>WG-75 first page updated<br>WG-76 variable updated<br>WG-61 note to STM-178 added<br>WG-78 CR802 Level STM -><br>Level NTC, NID_STM -<br>>NID_NTC, STM national -><br>National system                                                                                                       | J.Sukup<br>(AZD) |
| 2.2.0<br>2010-12-17  | 7.2.12<br>V_NVALLOWOVTR<br>P<br>7.9.1, 8                                                                                                                                                                                           | WG-79 variable updated (CR953)<br>WG-80 variable updated<br><br>WG-77 STM-161 updated,<br>variables NID_JRUMESSAGE,<br>L_JRUMESSAGE, NID_LRBG,<br>D_LRBG, Q_DIRLRBG,<br>Q_DLRBG, L_DOUBTOVER,<br>L_DOUBTUNDER, V_TRAIN<br>deleted                                                                                                                    | J.Sukup<br>(AZD) |
| 2.9.1                | 7, 8<br><br>7.2.15<br><br>7.2.12                                                                                                                                                                                                   | ERA comment #1 on v2.2.0:<br><br>Description of variables that may<br>be referenced to SRS were<br>deleted. They are now referenced<br>in packet description.<br><br>CR927, CR1003 impact<br>considered: update of National<br>Value packet<br><br>CR 731 impact considered:<br>Variable M_TRACTION is<br>replaced with M_VOLTAGE &<br>NID_CTRACTION | J.Sukup<br>(AZD) |



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|                      | 7.2.13, 8.1.101,<br>8.1.102                                                                                                     | WG-89 A_MAX is removed and the brake delays are transmitted as T_EQUIVALENT_EB_EF & T_EQUIVALENT_SB_EF (covers ERA comment #22)                                                   |                  |
|                      | 7.3.2, 8                                                                                                                        | WG-90 variables Q_NOM_ODO, Q_SAFE_DIR removed (covers ERA comment #29)                                                                                                            |                  |
|                      | 7.2.22, 8.1.2                                                                                                                   | CR904: STM-45 updated, D_NOMODO_BG updated                                                                                                                                        |                  |
|                      | 6.1.4.16, 7.2.1,<br>7.2.2, 8.1.71                                                                                               | CR 1042: STM-2 updated, STM-4 deleted, NID_PACKET updated                                                                                                                         |                  |
| 2.9.1                | 5, 7.1.1, 8.1.51,<br>8.1.52                                                                                                     | CR 1043: chapter 5 deleted, STM-1 updated, relevant variables deleted/updated, paragraph under history about compatibility deleted                                                | J.Sukup<br>(AZD) |
|                      | 7.2.23, 7.2.24,<br>7.2.25, 8.1.29,<br>8.1.77                                                                                    | CR 1045: new packets STM-21, STM-22, STM-23 added, new variables NID_TEST, M_TESTOK added                                                                                         |                  |
|                      | 7.2.1, 7.2.27, 7.6,<br>8.1.66, 8.1.54,<br>8.1.55, 8.1.56,<br>8.1.57, 8.1.58,<br>8.1.81, 8.1.82,<br>8.1.83, 8.1.84,<br>8.1.85, 8 | CR 1073: packet STM-2 updated, new packet STM-31, packet STM-77 deleted, new variable NID_DMICHANNEL, variables updated (DMI, JD), unused variables (DRU, EUROSUP, CLOCK) deleted |                  |
|                      | 7.2.16, 7.2.17,<br>7.2.18, 7.2.19,<br>7.2.20, 7.2.21,<br>8.1.92, 8.1.99,<br>8.1.25, 8.1.65,<br>8.1.12, 8.1.121                  | CR 1074: packets STM-181, 179, 180, 182, 183, 184 updated and corresponding variables updated                                                                                     |                  |

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|                      | 6.1.3.12, 6.1.3.13,<br>6.1.3.15                                                                                                                                                                                                                                                                                   | CR1066:<br>Text transmitted in 1 or 2 bytes                                                                                                                                                                                                                                                                                                                                                                                                                                                    |        |
|                      | 7.5.2, 7.5.3, 7.5.4,<br>7.5.5, 7.5.6, 7.5.7,<br>7.5.9, 7.5.10,<br>8,                                                                                                                                                                                                                                              | STM-32, 34, 35, 38, 39, 40, 43,<br>46 updated,<br><br>M_SUP, Q_INDICATE,<br>Q_INDICATIONLIMIT,<br>Q_WARNINGLIMIT deleted,<br>D_TARGET, L_CAPTION,<br>L_TEXT, M_BUT_ATTRIB,<br>M_FREQ, M_IND_ATTRIB,<br>M_XATTRIBUTE, NID_BUTPOS,<br>NID_BUTTON, NID_ICON,<br>NID_INDICATOR, NID_INDPOS,<br>NID_SOUND, NID_XMESSAGE,<br>Q_SOUND, T_SOUND,<br>V_INTERV, V_PERMIT,<br>V_RELEASE, V_TARGET,<br>X_CAPTION, X_TEXT updated,<br>new variables<br>M_COLOUR_SP/PS/TS/RS/IS,<br>Q_DISPLAY_IS/PS/TS/RS/TD |        |
|                      | 8.1.7, 8.1.8, 8.1.11,<br>8.1.18, 8.1.26,<br>8.1.27, 8.1.50,<br>8.1.63, 8.1.64,<br>8.1.68, 8.1.69,<br>8.1.70, 8.1.72,<br>8.1.78, 8.1.101,<br>8.1.109, 8.1.111,<br>8.1.114, 8.1.115,<br>8.1.118, 8.1.119,<br>8.1.120,<br>8.1.19, 8.1.20,<br>8.1.21, 8.1.22,<br>8.1.23, 8.1.94,<br>8.1.95, 8.1.96,<br>8.1.97, 8.1.98 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |
|                      | 8.1.73                                                                                                                                                                                                                                                                                                            | CR 1044: NID_STM updated                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |        |
|                      | 4.1                                                                                                                                                                                                                                                                                                               | Table of references and all<br>references updated                                                                                                                                                                                                                                                                                                                                                                                                                                              |        |
|                      | 6.1.1.2.1                                                                                                                                                                                                                                                                                                         | ERA comment #2 on v2.2.0:<br>Paragraphs deleted (obsolete)                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |
|                      | 6.1.2.3, 6.1.2.4,<br>6.1.2.12.x                                                                                                                                                                                                                                                                                   | Paragraphs deleted (obsolete)                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |
|                      | 6.1.4.11.4,<br>6.1.4.11.5                                                                                                                                                                                                                                                                                         | Exceptions deleted (obsolete)                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |        |
|                      | 6.1.4.11.7                                                                                                                                                                                                                                                                                                        | ERA comment #4 on v2.2.0:<br>Note deleted                                                                                                                                                                                                                                                                                                                                                                                                                                                      |        |
|                      | 6.1.4.11.6                                                                                                                                                                                                                                                                                                        | Exception updated (JRU → JD)                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |        |

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| 2.9.1<br>2012-01-21  | 6.1.4.13                                    | ERA comment #6 on v2.2.0:<br>Wording improved                                                                     |        |
|                      | 6.1.4.14, 6.1.4.16                          | Wording improved                                                                                                  |        |
|                      | 6.1.4.6, 6.1.4.8                            | ERA comment #3 on v2.2.0:<br>References to Subset-035<br>deleted (obsolete)                                       |        |
|                      | 6.1.3.9, 6.1.3.10,<br>7.2.22, 7.9.1, 8.1.61 | ERA comment #14 on v2.2.0:<br>N_L_ITER → N_LITER                                                                  |        |
|                      | 7.7.1, 7.7.4, 8                             | ERA comment #20/28 on v2.2.0:<br>Passenger EB deleted                                                             |        |
|                      | 8                                           | ERA comment #21 on v2.2.0:<br>Term "Boolean" deleted wherever<br>wrong                                            |        |
|                      | 7.2.3, 1.1.1                                | New variable M_MODESTM and<br>STM-5 updated, because<br>M_MODE of SRS does not<br>contain PS mode                 |        |
|                      | 7.2.11                                      | Packet STM-19 deleted (CR1045<br>additional impact)                                                               |        |
|                      | 7.5.1, 7.2.26                               | Packet STM-30 moved from DMI<br>function to STM Control Function<br>(CR1073 additional impact)                    |        |
|                      | 7.2.14, 8                                   | Packet STM-177 updated:<br>NID_DRIVER removed                                                                     |        |
|                      | 8                                           | Variables A_EB_CHAR,<br>A_SB_CHAR, V_EB_CHAR,<br>V_SB_CHAR deleted                                                |        |
|                      | 8.1.14, 8.1.16                              | Variables M_BIEB_STATUS &<br>M_BISB_STATUS updated as<br>availability status                                      |        |
|                      | 7                                           | Unified text in packet description<br>(Direction of information)<br>References to SS035 in all<br>packets updated |        |
|                      | 8.1.15                                      | Variable M_BISB_CMD updated<br>(value 00)                                                                         |        |

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|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
|                      | 7.2.17                                                                                                                                                                                                  | "Maximum value = 16 if the maximum length has been used for all caption texts." removed: no added value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |
| 2.9.2<br>2012-02-18  | Front Page<br>7.7.3, 8.1.48, 8.1.30<br><br>7.8.2<br><br>[10]<br><br>6.1.4.12<br><br>7.1.2, 8.1.74<br><br>7.2.12<br><br>7.2.13, 8, 8.1.17<br><br>7.2.22, 8.1.2<br><br>7.3.1<br><br>7.3.2, 8.1.1, 8.1.110 | ERA/SG comment #1 on v2.9.1<br>ERA comment #2 on v2.9.1:<br>Definition of packet 139, variables<br>M_TITR_STATUS &<br>M_TICAB_STATUS updated<br>ERA comment #3 on v2.9.1:<br>brake command status -> brake<br>status<br>ERA comment #4 on v2.9.1:<br>Formal change of referenced<br>document<br>ERA comment #5 on v2.9.1:<br>requirement deleted<br>ERA comment #6 on v2.9.1:<br>description updated<br>ERA comment #7 on v2.9.1:<br>variable name updated<br>ERA comment #8 on v2.9.1:<br>variables refer to SS027,<br>variables deleted,<br>M_BRAKE_PERCENTAGE<br>renamed to<br>M_BRAKE_PERCENTAGE_STM<br>ERA comment #9 on v2.9.1:<br>DNOMODO_BG =><br>D_ESTODO_BG, comment<br>updated<br>ERA comment #10 on v2.9.1:<br>Description updated<br>ERA comment #11 on v2.9.1:<br>D_NOM replaced with D_EST,<br>V_NOM replaced with V_EST | T.Mandry<br>(Alstom),<br>J.Sukup<br>(AZD) |



| Issue Number<br>Date | Section Number                    | Modification / Description                                                                         | Author |
|----------------------|-----------------------------------|----------------------------------------------------------------------------------------------------|--------|
|                      | 7.8.3                             | ERA comment #12 on v2.9.1:<br>M_BIEB_STATUS and<br>M_BISB_STATUS removed                           |        |
|                      | 8.1.108                           | T_SBMAXDELAY updated                                                                               |        |
|                      | 7.8.3                             | Last sentence in description<br>deleted                                                            |        |
|                      | 8.1.3, 8.1.4                      | ERA comment #13 on v2.9.1:<br>variables updated                                                    |        |
|                      | 8.1.1                             | ERA comment #14 on v2.9.1:<br>variable renamed and updated                                         |        |
|                      | 8.1.2                             | ERA comment #15 on v2.9.1:<br>variable renamed and updated                                         |        |
|                      | 6.1.2.12                          | SG comment #2 on v2.9.1:<br>Subchapters where part of<br>intentionally deleted part                |        |
|                      | 6.1.4.13                          | SG comment #3 on v2.9.1:<br>editorial                                                              |        |
|                      | 7.5.2                             | SG comment #6 on v2.9.1:<br>X_CAPTION(k)-><br>X_CAPTION(k,j)                                       |        |
|                      | 8.1.18, 8.1.27,<br>8.1.50         | SG comments #7/#8 on v2.9.1:<br>variables description<br>added/updated                             |        |
|                      | 7.2.28, 8.1.92,<br>8.1.88, 8.1.62 | CR1049: STM-20 added,<br>variables Q_CHECKNEEDED,<br>Q_ANTN_BTMM_ACTIVE,<br>NID_ANTENNA_BTMM added |        |
|                      | 7.2.29, 8.1.90,<br>8.1.89         | CR1126: STM-47 added,<br>variables Q_BTMM_ALARM,<br>Q_BMM_ANNOUNCED added                          |        |
|                      | All                               | Reference documents are<br>referenced with numbers only.                                           |        |
|                      | 4.1                               | Reference to Subsets 027 and<br>034 added, title of Subset-059<br>corrected                        |        |

| Issue Number<br>Date | Section Number                                          | Modification / Description                                                                                                                   | Author                 |
|----------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
|                      | All                                                     | Consolidation of Capital letters in the names of functions                                                                                   |                        |
|                      | All                                                     | Minor editorial corrections                                                                                                                  |                        |
|                      | 7.2.1, 7.7, 7.8,<br>8.1.53, 8.1.60,<br>8.1.103, 8.1.108 | "Train Interface" replaced by "TIU" ; "Brake Interface" replaced by "BIU"                                                                    |                        |
|                      | 7.2.14, 8                                               | Variables for Date & Time defined by reference to SS027, variables deleted                                                                   |                        |
|                      | 7.2.26                                                  | "DE & CS" state added as allowed for sending                                                                                                 |                        |
|                      | 7.2.27                                                  | "All states" replaced by "PO, CO, DE, CS, HS, DA"                                                                                            |                        |
|                      | 7.8.3<br>8.1.103, 8.1.108                               | Packet STM-143 renamed<br>Resolution changed (was too high compared to SS059 requirement)                                                    |                        |
| 2.9.3<br>2012-02-29  | 7.2.22, 7.9.1                                           | Add "Maximum value = 228" in comment to N_LITER (limitation resulting from lower layers)                                                     | Thomas Mandry (Alstom) |
| 2.9.4<br>2012-03-02  | 7.2.22                                                  | Change to "Maximum value = 222" in comment to N_LITER (limitation resulting from lower layers for a SIL4 STM, limitation used in Subset-040) | Thomas Mandry (Alstom) |
| 3.0.0<br>2012-03-02  | No change                                               | Baseline 3 release version                                                                                                                   | Thomas Mandry (Alstom) |
| 3.0.1<br>2013-10-31  | 7.2.14, 8.1.70.1<br>6.1.3.18, 7.2.22                    | Update according to CR1173 #4<br>Update according to CR1173 #6                                                                               | J. Sukup (AZD)         |
| 3.0.2<br>2014-03-04  | 7.5.2, 8.1.63, 8.1.70                                   | Update according to CR1173 #8                                                                                                                | J. Sukup (AZD)         |
| 3.0.3<br>2014-04-24  | 6.1.3.18<br>8.1.70.1<br>Front page                      | Requirement wording update<br>Numbering correction<br>Baseline 3 1 <sup>st</sup> Maintenance pre-release version                             | Thomas Mandry (Alstom) |
| 3.1.0<br>2014-05-09  | -                                                       | Baseline 3 1 <sup>st</sup> Maintenance release version                                                                                       | Philippe Prieels       |



| Issue Number<br>Date | Section Number                                                                                                                                  | Modification / Description                 | Author                       |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------------------------|
| 3.1.1<br>2015-11-12  | 7.1.1, 7.1.2, 7.2.7,<br>7.2.10, 7.2.16,<br>7.2.17, 7.2.19,<br>7.2.22, 7.2.25,<br>7.2.27, 7.5.2, 7.5.4,<br>7.5.5, 7.8.1, 7.8.2,<br>7.8.3, 8.1.57 | CR1242                                     | J. Sukup<br>(AZD)            |
| 3.2.0<br>2015-12-16  | -                                                                                                                                               | Baseline 3 2 <sup>nd</sup> release version | Thomas<br>Mandry<br>(Alstom) |



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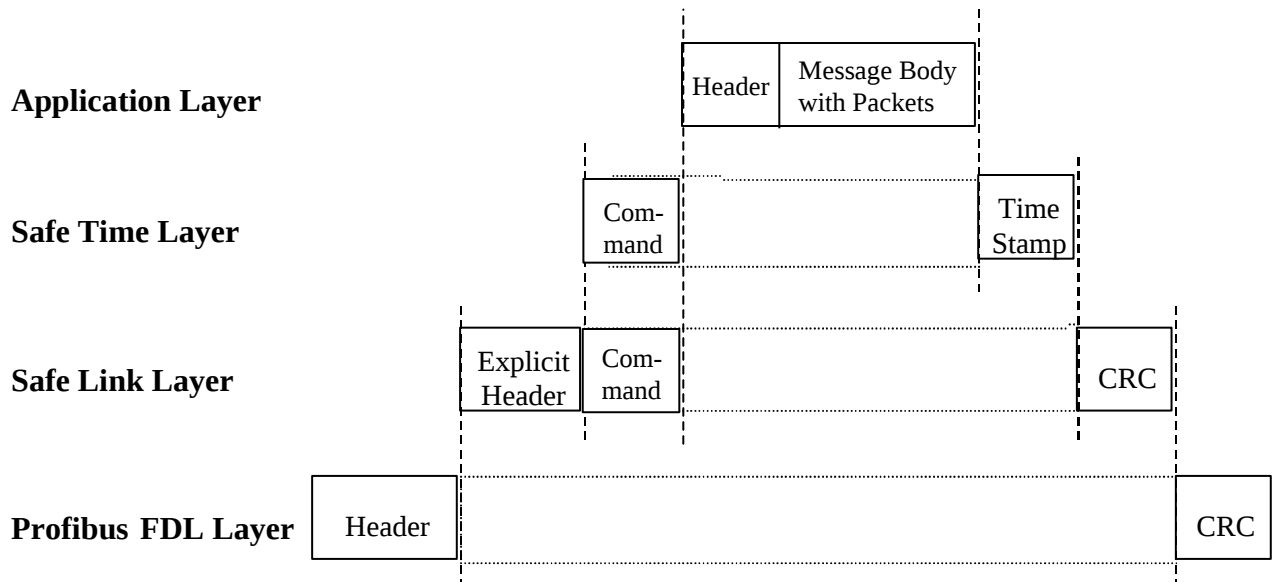
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## 3. SCOPE

- 3.1.1.1 The FFFIS STM Application Layer specifies data formats that shall be used in the communication between Specific Transmission Module STM and ERTMS/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 ERTMS/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 [5] and [6]).



**Figure 1: FFFIS STM Layers**



## 4. INTRODUCTION

### 4.1 References

| Ref. N° | Document Reference  | Title                                                                                                             |
|---------|---------------------|-------------------------------------------------------------------------------------------------------------------|
| [1]     | SUBSET-026          | System Requirements Specification                                                                                 |
| [2]     | SUBSET-027          | FIS Juridical Recording                                                                                           |
| [3]     | SUBSET-034          | Train Interface FIS                                                                                               |
| [4]     | SUBSET-035          | Specific Transmission Module FFFIS                                                                                |
| [5]     | SUBSET-056          | STM FFFIS Safe Time Layer                                                                                         |
| [6]     | SUBSET-057          | STM FFFIS Safe Link Layer                                                                                         |
| [7]     | SUBSET-059          | Performance requirements for STMs                                                                                 |
| [8]     | ISO 639-1:2002(E/F) | Codes for the representation of names of languages-Part 1: Alpha-2 Code                                           |
| [9]     | ISO 10646 Annex R   | Information technology — Universal Multiple-Octet Coded Character Set (UCS) - UCS Transformation Format 8 (UTF-8) |
| [10]    | ERA_ERTMS_015560    | ETCS Driver Machine interface                                                                                     |



## 5. INTENTIONALLY DELETED

## 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 ERTMS/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 §6.1.3.18).

6.1.1.2.1 Intentionally deleted

|                     |                                                      |                                 |
|---------------------|------------------------------------------------------|---------------------------------|
| Application message | Message Header                                       | NID_STM                         |
|                     |                                                      | L_MESSAGE                       |
|                     | First Packet                                         | NID_PACKET                      |
|                     |                                                      | L_PACKET                        |
|                     |                                                      | Other variables in First Packet |
|                     | Other packets in application message if any          |                                 |
|                     | Packet-N last data packet if different from Packet-1 | NID_PACKET                      |
|                     |                                                      | L_PACKET                        |
|                     |                                                      | Other variables in Packet       |
|                     | Padding bits                                         | 0 to 7 bits                     |

**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 Intentionally deleted



- 6.1.2.4 Intentionally deleted
- 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 Intentionally deleted
- 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:

|                    |                                                                |               |                                                                                                                                                                                                                                            |
|--------------------|----------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b> | This is the format of packets when transmitted over FFFIS STM. |               |                                                                                                                                                                                                                                            |
| <b>Content</b>     | <b>Variable</b>                                                | <b>Length</b> | <b>Comment</b>                                                                                                                                                                                                                             |
|                    | 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.<br><br>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                               | <i>N</i>      | <i>Refer to packet definition in §7</i>                                                                                                                                                                                                    |

- 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\_LITER in a packet shall specify the number of iterations of a variable or group of variables, which follow.
- 6.1.3.10 If N\_LITER is 0 then no variable(s) which belong to the iteration given by N\_LITER 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 bytes 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 bytes 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 bytes 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.
- 6.1.3.18 If the full ETCS packet 44 to transmit through packet STM-45 is not composed of an integer number of bytes, padding shall be added at the end of the last iteration of M\_DATA(k) within this packet.

#### **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 ERTMS/ETCS on-board function and an STM or between an STM and an ERTMS/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 ERTMS/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.
- 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.
- 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 messages 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 Intentionally deleted
- 6.1.4.11.5 Intentionally deleted
- 6.1.4.11.6 Exception 4: It shall be possible that a message contains several STM information to Juridical Data Function (packet STM-161)
- 6.1.4.11.7 Intentionally deleted
- 6.1.4.12 Intentionally deleted
- 6.1.4.13 The receiver of a message shall process the packets of this message in a way that the result is the same as if each packet has been processed separately in the received order.
- 6.1.4.14 Packets within a message depend on what has to be transmitted according to the requirements in [4].
- 6.1.4.15 The message shall be completed by arbitrary padding bits to have the whole message length to be byte aligned for transmission through the safety layers. (See [5] and [6]).
- 6.1.4.16 Transmission of non standard packets (i.e. packets which are not described in this document, but whose numbers are within the allocated range of non standard packets, see NID\_PACKET definition): in case a message includes such non standard packet(s) unknown to the receiver, the non standard packet(s) shall be ignored and the message shall not be rejected.

## 7. PACKET DEFINITIONS

### 7.1 Packets related to all on-board functions (ETCS+STM)

#### 7.1.1 Packet STM-1 STM/ETCS function version number

|                                  |                                                                                                                                                                                               |               |                                           |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------|
| <b>Subset-035 Ref.</b>           | §.7.1, 7.1.2.1, 7.1.2.2, 7.1.2.3, 7.1.2.4, 8.2.1.3, 16.3                                                                                                                                      |               |                                           |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA, FA                                                                                                                                                                    |               |                                           |
| <b>Description</b>               | This packet contains implicitly the connection request from the STM or the connection confirmation from the ERTMS/ETCS on-board function and provide also FFFIS STM version number for check. |               |                                           |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b><br><b>From ERTMS/ETCS on-board function to STM</b>                                                                                            |               |                                           |
| <b>Content</b>                   | <b>Variable</b>                                                                                                                                                                               | <b>Length</b> | <b>Comment</b>                            |
|                                  | NID_PACKET                                                                                                                                                                                    | 8             | Packet identifier<br>Value=1              |
|                                  | L_PACKET                                                                                                                                                                                      | 13            | Packet length                             |
|                                  | N_VERMAJOR                                                                                                                                                                                    | 8             | FFFIS STM version number, major number: X |
|                                  | N_VERMINOR                                                                                                                                                                                    | 8             | FFFIS STM version number, minor number: Y |

## 7.1.2 Packet STM-15: State report from STM

|                                  |                                                                                                                                                       |               |                                 |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.1, 9.3.1.4, 9.3.1.4.1, 10.1.1.2, 10.3.2.3, 10.3.2.4, 10.3.3.1, 10.3.3.2, 10.3.3.3, 10.3.3.4, 10.3.3.6, 10.3.3.7, 10.14.1.1, 13.2.1.5, 13.2.1.6 |               |                                 |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA, FA                                                                                                                            |               |                                 |
| <b>Description</b>               | Indicates to the ERTMS/ETCS on-board the STM state.                                                                                                   |               |                                 |
| <b>Direction of information</b>  | From STM to ERTMS/ETCS on-board function                                                                                                              |               |                                 |
| <b>Content</b>                   | <b>Variable</b>                                                                                                                                       | <b>Length</b> | <b>Comment</b>                  |
|                                  | NID_PACKET                                                                                                                                            | 8             | Packet identifier<br>Value = 15 |
|                                  | L_PACKET                                                                                                                                              | 13            | Packet length                   |
|                                  | NID_STMSTATE                                                                                                                                          | 4             | Current STM state               |



## 7.2 Packets related to the STM Control Function

### 7.2.1 Packet STM-2: ERTMS/ETCS on-board physical addresses and safety levels

|                                 |                                                                                                       |               |                                                      |
|---------------------------------|-------------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------|
| <b>Subset-035 Ref.</b>          | §5.2.7.9, 6.2.1.1, 6.4, 8.2.1.5, 10.1.1.4                                                             |               |                                                      |
| <b>Allowed to send in state</b> | PO                                                                                                    |               |                                                      |
| <b>Description</b>              | Message defining each ERTMS/ETCS on-board function physical bus address, and associated safety level. |               |                                                      |
| <b>Direction of information</b> | From ERTMS/ETCS on-board function to STM                                                              |               |                                                      |
| <b>Content</b>                  | <b>Variable</b>                                                                                       | <b>Length</b> | <b>Comment</b>                                       |
|                                 | NID_PACKET                                                                                            | 8             | Packet identifier<br>Value = 2                       |
|                                 | L_PACKET                                                                                              | 13            | Packet length                                        |
|                                 | N_ADDR_JD                                                                                             | 7             | Address of Juridical Data Function                   |
|                                 | Q_ADDR_JD                                                                                             | 2             | Safety level/Availability of Juridical Data Function |
|                                 | N_ADDR_DMI_CHANNEL1                                                                                   | 7             | Address of DMI channel 1                             |
|                                 | Q_ADDR_DMI_CHANNEL1                                                                                   | 2             | Safety level of DMI channel 1                        |
|                                 | N_ADDR_DMI_CHANNEL2                                                                                   | 7             | Address of DMI channel 2                             |
|                                 | Q_ADDR_DMI_CHANNEL2                                                                                   | 2             | Safety level/Availability of DMI channel 2           |
|                                 | N_ADDR_DMI_CHANNEL3                                                                                   | 7             | Address of DMI channel 3                             |
|                                 | Q_ADDR_DMI_CHANNEL3                                                                                   | 2             | Safety level/Availability of DMI channel 3           |
|                                 | N_ADDR_DMI_CHANNEL4                                                                                   | 7             | Address of DMI channel 4                             |
|                                 | Q_ADDR_DMI_CHANNEL4                                                                                   | 2             | Safety level/Availability of DMI channel 4           |
|                                 | N_ADDR_ODO                                                                                            | 7             | Address of Odometer Function                         |
|                                 | Q_ADDR_ODO                                                                                            | 2             | Safety level of Odometer Function                    |
|                                 | N_ADDR_TI                                                                                             | 7             | Address of TIU Function                              |
|                                 | Q_ADDR_TI                                                                                             | 2             | Safety level of TIU Function                         |
|                                 | N_ADDR_BI                                                                                             | 7             | Address of BIU Function                              |
|                                 | Q_ADDR_BI                                                                                             | 2             | Safety level of BIU Function                         |



### 7.2.2 Intentionally deleted

### 7.2.3 Packet STM-5: ETCS status data

|                                  |                                                                                                                  |               |                                                                                                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.3, 8.2.1.6, 10.5.1.1                                                                                      |               |                                                                                                                  |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                                                                           |               |                                                                                                                  |
| <b>Description</b>               | This packet contains the ERTMS/ETCS on-board current status (ETCS mode and ETCS level of operation) for the STM. |               |                                                                                                                  |
| <b>Direction of information</b>  | <b>From ERTMS/ETCS on-board function to STM</b>                                                                  |               |                                                                                                                  |
| <b>Content</b>                   | <b>Variable</b>                                                                                                  | <b>Length</b> | <b>Comment</b>                                                                                                   |
|                                  | NID_PACKET                                                                                                       | 8             | Packet identifier<br>Value=5                                                                                     |
|                                  | L_PACKET                                                                                                         | 13            | Packet length                                                                                                    |
|                                  | M_LEVEL                                                                                                          |               | Defined in Chapter 7 of [1]                                                                                      |
|                                  | NID_NTC                                                                                                          |               | If M_LEVEL = 1 (NTC), this value shall be transmitted only in Level NTC.<br>Variable defined in Chapter 7 of [1] |
|                                  | M_MODESTM                                                                                                        | 4             | ETCS mode                                                                                                        |

### 7.2.4 Packet STM-6: Override activation

|                                 |                                                                                                                      |               |                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------|
| <b>Subset-035 Ref.</b>          | §5.2.7.6, 10.10.1.2, 10.10.2.1, 10.10.2.2                                                                            |               |                                |
| <b>Allowed to send in state</b> | DA                                                                                                                   |               |                                |
| <b>Description</b>              | Report of the activation of the STM Override procedure from the STM to the ERTMS/ETCS on-board STM Control Function. |               |                                |
| <b>Direction of information</b> | <b>From STM to ERTMS/ETCS on-board function</b>                                                                      |               |                                |
| <b>Content</b>                  | <b>Variable</b>                                                                                                      | <b>Length</b> | <b>Comment</b>                 |
|                                 | NID_PACKET                                                                                                           | 8             | Packet identifier<br>Value = 6 |
|                                 | L_PACKET                                                                                                             | 13            | Packet length                  |

## 7.2.5 Packet STM-7: Override status

|                                  |                                                                                                             |               |                                |
|----------------------------------|-------------------------------------------------------------------------------------------------------------|---------------|--------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.6, 10.10.1.2, 10.10.2.3                                                                              |               |                                |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                                                                      |               |                                |
| <b>Description</b>               | Reports a change of the ETCS Override status from the ERTMS/ETCS on-board STM Control Function to the STMs. |               |                                |
| <b>Direction of information</b>  | <b>From ERTMS/ETCS on-board function to STM</b>                                                             |               |                                |
| <b>Content</b>                   | <b>Variable</b>                                                                                             | <b>Length</b> | <b>Comment</b>                 |
|                                  | NID_PACKET                                                                                                  | 8             | Packet identifier<br>Value = 7 |
|                                  | L_PACKET                                                                                                    | 13            | Packet length                  |
|                                  | Q_OVR_STATUS                                                                                                | 1             | ETCS Override status           |

## 7.2.6 Packet STM-13: State request from STM

|                                  |                                                                                                    |               |                                 |
|----------------------------------|----------------------------------------------------------------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.1, 8.2.1.6, 8.3.1.3, 8.3.1.4, 8.3.1.5, 8.4.1.3, 8.4.1.4, 10.3.2.4                           |               |                                 |
| <b>Allowed to send in states</b> | PO, CO, DE                                                                                         |               |                                 |
| <b>Description</b>               | Reports a request for a state change from the STM to the ERTMS/ETCS on-board STM Control Function. |               |                                 |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b>                                                    |               |                                 |
| <b>Content</b>                   | <b>Variable</b>                                                                                    | <b>Length</b> | <b>Comment</b>                  |
|                                  | NID_PACKET                                                                                         | 8             | Packet identifier<br>Value = 13 |
|                                  | L_PACKET                                                                                           | 13            | Packet length                   |
|                                  | NID_STMSTATEREQUEST                                                                                | 4             | Request to change state         |

## 7.2.7 Packet STM-14: State order to STM

| <b>Subset-035 Ref.</b>           | §5.2.7.1, 8.6.1.4, 8.7.1.2, 9.2.1.2.1, 10.2.1.2, 10.3.2.2, 10.3.2.4, 10.3.2.6, 10.3.2.6.1, 10.3.2.6.2, , 10.3.2.7, 10.3.3.1, 10.3.3.2, 10.3.3.3, 10.14.1.1 |               |                                 |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------|
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA, FA                                                                                                                                 |               |                                 |
| <b>Description</b>               | State order to STM.                                                                                                                                        |               |                                 |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM                                                                                                                   |               |                                 |
| <b>Content</b>                   | <b>Variable</b>                                                                                                                                            | <b>Length</b> | <b>Comment</b>                  |
|                                  | NID_PACKET                                                                                                                                                 | 8             | Packet identifier<br>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

| <b>Subset-035 Ref.</b>          | §5.2.7.8, 8.6.1.2, 10.12.1.1, 10.12.1.2, 10.12.1.3, 10.12.1.6, 10.12.2.1, 10.12.2.2, 10.12.2.3 |               |                                 |
|---------------------------------|------------------------------------------------------------------------------------------------|---------------|---------------------------------|
| <b>Allowed to send in state</b> | HS                                                                                             |               |                                 |
| <b>Description</b>              | Transmit to the ERTMS/ETCS on-board the STM max speed.                                         |               |                                 |
| <b>Direction of information</b> | From STM to ERTMS/ETCS on-board function                                                       |               |                                 |
| <b>Content</b>                  | <b>Variable</b>                                                                                | <b>Length</b> | <b>Comment</b>                  |
|                                 | NID_PACKET                                                                                     | 8             | Packet identifier<br>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

|                                 |                                                                        |               |                                 |
|---------------------------------|------------------------------------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>          | §5.2.7.8, 8.6.1.3, 10.12.1.4, 10.12.1.5, 10.12.1.6                     |               |                                 |
| <b>Allowed to send in state</b> | HS                                                                     |               |                                 |
| <b>Description</b>              | Transmit to the ERTMS/ETCS on-board the STM system speed and distance. |               |                                 |
| <b>Direction of information</b> | From STM to ERTMS/ETCS on-board function                               |               |                                 |
| <b>Content</b>                  | <b>Variable</b>                                                        | <b>Length</b> | <b>Comment</b>                  |
|                                 | NID_PACKET                                                             | 8             | Packet identifier<br>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: National Trip Procedure

|                                 |                                                                                              |               |                                 |
|---------------------------------|----------------------------------------------------------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>          | §9.2.1.2.1, 9.2.1.3, 10.3.2.4, 10.3.3.3, 10.13.1.1                                           |               |                                 |
| <b>Allowed to send in state</b> | DA                                                                                           |               |                                 |
| <b>Description</b>              | Indicates to the ERTMS/ETCS on-board that the STM is currently in a National Trip Procedure. |               |                                 |
| <b>Direction of information</b> | From STM to ERTMS/ETCS on-board function                                                     |               |                                 |
| <b>Content</b>                  | <b>Variable</b>                                                                              | <b>Length</b> | <b>Comment</b>                  |
|                                 | NID_PACKET                                                                                   | 8             | Packet identifier<br>Value = 18 |
|                                 | L_PACKET                                                                                     | 13            | Packet length                   |

## 7.2.11 Intentionally deleted

## 7.2.12 Packet STM-175: Train Data

| <b>Subset-035 Ref.</b>           | §5.2.7.2, 8.3.1.1, 8.3.1.2, 8.3.1.2.1, 10.4.1.1, 10.4.1.2, 10.4.1.7, 10.7.4.4, 10.7.4.9 |               |                                                                                   |
|----------------------------------|-----------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------|
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                                                  |               |                                                                                   |
| <b>Description</b>               | Validated train data.                                                                   |               |                                                                                   |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM                                                |               |                                                                                   |
| <b>Content</b>                   | <b>Variable</b>                                                                         | <b>Length</b> | <b>Comment</b>                                                                    |
|                                  | NID_PACKET                                                                              | 8             | Packet identifier<br>Value =175                                                   |
|                                  | L_PACKET                                                                                | 13            | Packet length                                                                     |
|                                  | NC_CDTRAIN                                                                              |               | Defined in Chapter 7 of [1]                                                       |
|                                  | NC_TRAIN                                                                                |               | Defined in Chapter 7 of [1]                                                       |
|                                  | L_TRAIN                                                                                 |               | Defined in Chapter 7 of [1]                                                       |
|                                  | V_MAXTRAIN                                                                              |               | Defined in Chapter 7 of [1]                                                       |
|                                  | M_LOADINGGAUGE                                                                          |               | Defined in Chapter 7 of [1]                                                       |
|                                  | M_AXLELOADCAT                                                                           |               | Defined in Chapter 7 of [1]                                                       |
|                                  | M_AIRTIGHT                                                                              |               | Defined in Chapter 7 of [1]                                                       |
|                                  | M_TRAINTYPE                                                                             | 8             | Train type                                                                        |
|                                  | N_ITER                                                                                  |               | Defined in Chapter 7 of [1]                                                       |
|                                  | M_VOLTAGE(k)                                                                            |               | Defined in Chapter 7 of [1]                                                       |
|                                  | NID_CTRACTION(k)                                                                        |               | NID_CTRACTION(k) given only if<br>M_VOLTAGE(k) ≠ 0<br>Defined in Chapter 7 of [1] |

### 7.2.13 Packet STM-176: Train data traction/brake parameters to STM

|                                  |                                                                                          |               |                                  |
|----------------------------------|------------------------------------------------------------------------------------------|---------------|----------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.2, 8.3.1.1, 8.3.1.2, 8.3.1.2.1, 8.3.1.2.2, 10.4.1.1, 10.4.1.4, 10.4.1.7, 10.7.1.2 |               |                                  |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                                                   |               |                                  |
| <b>Description</b>               | Validated train data traction/brake parameters.                                          |               |                                  |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM                                                 |               |                                  |
| <b>Content</b>                   | <b>Variable</b>                                                                          | <b>Length</b> | <b>Comment</b>                   |
|                                  | NID_PACKET                                                                               | 8             | Packet identifier<br>Value = 176 |
|                                  | L_PACKET                                                                                 | 13            | Packet length                    |
|                                  | T_BRAKE_SERVICE                                                                          |               | Defined in [2]                   |
|                                  | T_BRAKE_EMERGENCY                                                                        |               | Defined in [2]                   |
|                                  | T_TRACTION_CUT_OFF                                                                       |               | Defined in [2]                   |
|                                  | M_BRAKE_POSITION                                                                         |               | Defined in [2]                   |
|                                  | M_BRAKE_PERCENTAGE_STM                                                                   | 8             | Brake percentage                 |

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

|                                  |                                                                               |               |                                  |
|----------------------------------|-------------------------------------------------------------------------------|---------------|----------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.2, 8.3.1.1, 8.3.1.2, 8.3.1.2.1, 10.4.1.5, 10.4.1.7, 10.4.1.8, 10.7.1.2 |               |                                  |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                                        |               |                                  |
| <b>Description</b>               | ETCS additional data and date / time.                                         |               |                                  |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM                                      |               |                                  |
| <b>Content</b>                   | <b>Variable</b>                                                               | <b>Length</b> | <b>Comment</b>                   |
|                                  | NID_PACKET                                                                    | 8             | Packet identifier<br>Value = 177 |
|                                  | L_PACKET                                                                      | 13            | Packet length                    |
|                                  | NID_ENGINE                                                                    |               | Defined in Chapter 7 of [1]      |
|                                  | M_ADHESION                                                                    |               | Defined in Chapter 7 of [1]      |
|                                  | YEAR                                                                          |               | Defined in [2]                   |
|                                  | MONTH                                                                         |               | Defined in [2]                   |
|                                  | DAY                                                                           |               | Defined in [2]                   |
|                                  | HOUR                                                                          |               | Defined in [2]                   |
|                                  | MINUTES                                                                       |               | Defined in [2]                   |
|                                  | SECONDS                                                                       |               | Defined in [2]                   |
|                                  | TTS                                                                           |               | Defined in [2]                   |
|                                  | <b>NID_OPERATIONAL_ST<br/>M</b>                                               | 32            | Train Running Number             |



## 7.2.15 Packet STM-178: National Values to STM

|                                  |                                                                                                            |               |                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------|---------------|----------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.2, 8.3.1.1, 8.3.1.2.1, 10.4.1.6, 10.4.1.7, 10.4.1.9, 10.7.1.2                                       |               |                                  |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                                                                     |               |                                  |
| <b>Description</b>               | Downloads a set of National Values.<br>Note: See [1] chapter 7.4.2.1.1 [Packet Number 3: National Values]. |               |                                  |
| <b>Direction of information</b>  | <b>From ERTMS/ETCS on-board function to STM</b>                                                            |               |                                  |
| <b>Content</b>                   | <b>Variable</b>                                                                                            | <b>Length</b> | <b>Comment</b>                   |
|                                  | NID_PACKET                                                                                                 | 8             | Packet identifier<br>Value = 178 |
|                                  | L_PACKET                                                                                                   | 13            | Packet length                    |
|                                  | Q_SCALE                                                                                                    |               | Defined in Chapter 7 of [1]      |
|                                  | V_NVSHUNT                                                                                                  |               | Defined in Chapter 7 of [1]      |
|                                  | V_NVSTFF                                                                                                   |               | Defined in Chapter 7 of [1]      |
|                                  | V_NVONSIGHT                                                                                                |               | Defined in Chapter 7 of [1]      |
|                                  | V_NVLIMSUPERV                                                                                              |               | Defined in Chapter 7 of [1]      |
|                                  | V_NVUNFIT                                                                                                  |               | Defined in Chapter 7 of [1]      |
|                                  | V_NVREL                                                                                                    |               | Defined in Chapter 7 of [1]      |
|                                  | D_NVROLL                                                                                                   |               | Defined in Chapter 7 of [1]      |
|                                  | Q_NVSBTSMPerm                                                                                              |               | Defined in Chapter 7 of [1]      |
|                                  | Q_NVEMRRLS                                                                                                 |               | Defined in Chapter 7 of [1]      |
|                                  | Q_NVGUIPERM                                                                                                |               | Defined in Chapter 7 of [1]      |
|                                  | Q_NVSBFBPerm                                                                                               |               | Defined in Chapter 7 of [1]      |
|                                  | Q_NVINHSMICPerm                                                                                            |               | Defined in Chapter 7 of [1]      |
|                                  | V_NVALLOWOVTRP                                                                                             |               | Defined in Chapter 7 of [1]      |
|                                  | V_NVSUPOVTRP                                                                                               |               | Defined in Chapter 7 of [1]      |
|                                  | D_NVOVTRP                                                                                                  |               | Defined in Chapter 7 of [1]      |
|                                  | T_NVOVTRP                                                                                                  |               | Defined in Chapter 7 of [1]      |
|                                  | D_NVPOTRP                                                                                                  |               | Defined in Chapter 7 of [1]      |
|                                  | M_NVCONTACT                                                                                                |               | Defined in Chapter 7 of [1]      |
|                                  | T_NVCONTACT                                                                                                |               | Defined in Chapter 7 of [1]      |
|                                  | M_NVDERUN                                                                                                  |               | Defined in Chapter 7 of [1]      |
|                                  | D_NVSTFF                                                                                                   |               | Defined in Chapter 7 of [1]      |
|                                  | Q_NVDRIVER_ADHES                                                                                           |               | Defined in Chapter 7 of [1]      |

|  |                 |  |                                                                                                            |
|--|-----------------|--|------------------------------------------------------------------------------------------------------------|
|  | A_NVMAXREDADH1  |  | Defined in Chapter 7 of [1]                                                                                |
|  | A_NVMAXREDADH2  |  | Defined in Chapter 7 of [1]                                                                                |
|  | A_NVMAXREDADH3  |  | Defined in Chapter 7 of [1]                                                                                |
|  | Q_NVLOCACC      |  | Defined in Chapter 7 of [1]                                                                                |
|  | M_NVAVADH       |  | Defined in Chapter 7 of [1]                                                                                |
|  | M_NVEBCL        |  | Defined in Chapter 7 of [1]                                                                                |
|  | Q_NVKINT        |  | Defined in Chapter 7 of [1]                                                                                |
|  | Q_NVKVINTSET    |  | Only if Q_NVKINT = 1,<br>Q_NVKVINTSET and the following<br>variables follow<br>Defined in Chapter 7 of [1] |
|  | A_NVP12         |  | Only if Q_NVKVINTSET = 1<br>Defined in Chapter 7 of [1]                                                    |
|  | A_NVP23         |  | Only if Q_NVKVINTSET = 1<br>Defined in Chapter 7 of [1]                                                    |
|  | V_NVKVINT       |  | = 0 km/h<br>Defined in Chapter 7 of [1]                                                                    |
|  | M_NVKVINT       |  | Valid between V_NVKVINT and<br>V_NVKVINT(1)<br>Defined in Chapter 7 of [1]                                 |
|  | M_NVKVINT       |  | Only if Q_NVKVINTSET = 1<br>Valid between V_NVKVINT and<br>V_NVKVINT(1)<br>Defined in Chapter 7 of [1]     |
|  | N_ITER          |  | Defined in Chapter 7 of [1]                                                                                |
|  | V_NVKVINT(n)    |  | Defined in Chapter 7 of [1]                                                                                |
|  | M_NVKVINT(n)    |  | Defined in Chapter 7 of [1]                                                                                |
|  | M_NVKVINT(n)    |  | Only if Q_NVKVINTSET = 1<br>Defined in Chapter 7 of [1]                                                    |
|  | N_ITER          |  | Defined in Chapter 7 of [1]                                                                                |
|  | Q_NVKVINTSET(k) |  | Defined in Chapter 7 of [1]                                                                                |
|  | A_NVP12(k)      |  | Only if Q_NVKVINTSET(k) = 1<br>Defined in Chapter 7 of [1]                                                 |
|  | A_NVP23(k)      |  | Only if Q_NVKVINTSET(k) = 1<br>Defined in Chapter 7 of [1]                                                 |
|  | V_NVKVINT(k)    |  | Defined in Chapter 7 of [1]                                                                                |

|  |                |  |                                                            |
|--|----------------|--|------------------------------------------------------------|
|  | M_NVKVINT(k)   |  | Defined in Chapter 7 of [1]                                |
|  | M_NVKVINT(k)   |  | Only if Q_NVKVINTSET(k) = 1<br>Defined in Chapter 7 of [1] |
|  | N_ITER(k)      |  | Defined in Chapter 7 of [1]                                |
|  | V_NVKVINT(k,m) |  | Defined in Chapter 7 of [1]                                |
|  | M_NVKVINT(k,m) |  | Defined in Chapter 7 of [1]                                |
|  | M_NVKVINT(k,m) |  | Only if Q_NVKVINTSET(k) = 1<br>Defined in Chapter 7 of [1] |
|  | L_NVKRINT      |  | Defined in Chapter 7 of [1]                                |
|  | M_NVKRINT      |  | Defined in Chapter 7 of [1]                                |
|  | N_ITER         |  | Defined in Chapter 7 of [1]                                |
|  | L_NVKRINT(l)   |  | Defined in Chapter 7 of [1]                                |
|  | M_NVKRINT(l)   |  | Defined in Chapter 7 of [1]                                |
|  | M_NVKTINT      |  | Defined in Chapter 7 of [1]                                |

## 7.2.16 Packet STM-181: Specific NTC Data Need

|                                  |                                                                                                                                                                                                                                                                       |               |                                  |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------|
| <b>Subset-035 Ref.</b>           | §8.2.1.4, 10.3.2.4, 10.7.3.2, 10.7.3.4, 10.7.5                                                                                                                                                                                                                        |               |                                  |
| <b>Allowed to send in states</b> | PO, CO, CS, HS, DA                                                                                                                                                                                                                                                    |               |                                  |
| <b>Description</b>               | STM need for Specific NTC Data Entry.<br>Note: At PO state STM-181 indicates that the STM will request for a Specific NTC Data during a Specific NTC Data Entry procedure. In all other states STM-181 indicates the current need of Specific NTC Data to the driver. |               |                                  |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b>                                                                                                                                                                                                                       |               |                                  |
| <b>Content</b>                   | <b>Variable</b>                                                                                                                                                                                                                                                       | <b>Length</b> | <b>Comment</b>                   |
|                                  | NID_PACKET                                                                                                                                                                                                                                                            | 8             | Packet identifier<br>Value = 181 |
|                                  | L_PACKET                                                                                                                                                                                                                                                              | 13            | Packet length                    |
|                                  | Q_DATAENTRY                                                                                                                                                                                                                                                           | 1             | Need for Specific NTC Data Entry |

## 7.2.17 Packet STM-179: Specific NTC Data Entry request

|                                  |                                                                                                                                                                                                                                                                                                                  |               |                                                                                                                                         |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §8.3.1.3, 8.4.1.1, 10.7.3.3, 10.7.3.6, 10.7.4.3, 10.7.4.5, 10.7.4.6, 10.7.4.8, 10.7.4.9, 10.7.5, 15.2.1.1, 15.2.1.4                                                                                                                                                                                              |               |                                                                                                                                         |
| <b>Allowed to send in states</b> | DE, CS, HS, DA                                                                                                                                                                                                                                                                                                   |               |                                                                                                                                         |
| <b>Description</b>               | <p>Request for Specific NTC Data Entry.</p> <p>This packet can be grouped with other STM-179 packets by using the Q_FOLLOWING indicator in order to form one common Specific NTC Data Entry request.</p> <p>Note: The STM indicates the "End of Specific NTC Data Entry" by a packet STM-179, with N_ITER=0.</p> |               |                                                                                                                                         |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b>                                                                                                                                                                                                                                                                  |               |                                                                                                                                         |
| <b>Content</b>                   | <b>Variable</b>                                                                                                                                                                                                                                                                                                  | <b>Length</b> | <b>Comment</b>                                                                                                                          |
|                                  | NID_PACKET                                                                                                                                                                                                                                                                                                       | 8             | Packet identifier<br>Value = 179                                                                                                        |
|                                  | L_PACKET                                                                                                                                                                                                                                                                                                         | 13            | Packet length                                                                                                                           |
|                                  | Q_FOLLOWING                                                                                                                                                                                                                                                                                                      | 1             | Indicate a following STM-179 packet                                                                                                     |
|                                  | N_ITER                                                                                                                                                                                                                                                                                                           | 5             | Maximum iteration data<br>=0 if there is "End of Specific NTC Data Entry"<br>Maximum value = 15<br>Variable defined in Chapter 7 of [1] |
|                                  | NID_DATA(j)                                                                                                                                                                                                                                                                                                      | 8             | Identifier of a Specific NTC Data to be entered.                                                                                        |
|                                  | L_CAPTION(j)                                                                                                                                                                                                                                                                                                     | 6             | Length of X_CAPTION for data label in bytes<br>Maximum value = 40                                                                       |
|                                  | X_CAPTION(j,q)                                                                                                                                                                                                                                                                                                   | 8             | Data label caption text byte string                                                                                                     |
|                                  | L_VALUE(j)                                                                                                                                                                                                                                                                                                       | 5             | Length of X_VALUE for default value in bytes.<br>Maximum value = 20                                                                     |
|                                  | X_VALUE(j,i)                                                                                                                                                                                                                                                                                                     | 8             | Data value caption text byte string                                                                                                     |

|  |                |   |                                                                                                                                           |
|--|----------------|---|-------------------------------------------------------------------------------------------------------------------------------------------|
|  | N_ITER(j)      |   | Maximum iteration data<br>dedicated keyboard values<br>=0 if there is no dedicated<br>keyboard<br>Variable defined in Chapter<br>7 of [1] |
|  | L_VALUE(j,i)   | 5 | Length of X_VALUE for<br>dedicated keyboard value<br>in bytes<br>Maximum value = 20                                                       |
|  | X_VALUE(j,i,k) | 8 | Data for dedicated<br>keyboard value caption text<br>byte string                                                                          |

## 7.2.18 Packet STM-180: Specific NTC Data values

|                                  |                                                                                        |               |                                                                                      |
|----------------------------------|----------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §10.7.5, 15.2.1.2, 15.2.1.4                                                            |               |                                                                                      |
| <b>Allowed to send in states</b> | DE, CS, HS, DA                                                                         |               |                                                                                      |
| <b>Description</b>               | ERTMS/ETCS on-board report of the Specific NTC Data Entry values requested by the STM. |               |                                                                                      |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM                                               |               |                                                                                      |
| <b>Content</b>                   | <b>Variable</b>                                                                        | <b>Length</b> | <b>Comment</b>                                                                       |
|                                  | NID_PACKET                                                                             | 8             | Packet identifier<br>Value = 180                                                     |
|                                  | L_PACKET                                                                               | 13            | Packet length                                                                        |
|                                  | N_ITER                                                                                 |               | Maximum iteration data<br>Maximum value = 15<br>Variable defined in Chapter 7 of [1] |
|                                  | NID_DATA(j)                                                                            | 8             | Identifier of a Specific NTC Data to be selected by the driver.                      |
|                                  | L_VALUE(j)                                                                             | 5             | Length of X_VALUE in bytes<br>Maximum value = 20                                     |
|                                  | X_VALUE(j,k)                                                                           | 8             | Data value caption text byte string selected by the driver                           |



### 7.2.19 Packet STM-182: Request for Specific NTC Data View values

|                                  |                                                                                                                          |               |                                  |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.2, 10.8.1.1, 10.8.1.2, 10.8.1.5                                                                                   |               |                                  |
| <b>Allowed to send in states</b> | CS, HS, DA                                                                                                               |               |                                  |
| <b>Description</b>               | Request for Specific NTC Data View values.<br>This request is sent to the STM when the Data View procedure is triggered. |               |                                  |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM                                                                                 |               |                                  |
| <b>Content</b>                   | <b>Variable</b>                                                                                                          | <b>Length</b> | <b>Comment</b>                   |
|                                  | NID_PACKET                                                                                                               | 8             | Packet identifier<br>Value = 182 |
|                                  | L_PACKET                                                                                                                 | 13            | Packet length                    |



## 7.2.20 Packet STM-183: Specific NTC Data View values

|                                  |                                                                                                                                                                                                                                                                                                                                                   |               |                                                                                                                                  |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.2, 10.3.2.4, 10.8.1.1, 10.8.1.3, 10.8.1.4, 10.8.1.5, 15.2.1.3, 15.2.1.4                                                                                                                                                                                                                                                                    |               |                                                                                                                                  |
| <b>Allowed to send in states</b> | CS, HS, DA                                                                                                                                                                                                                                                                                                                                        |               |                                                                                                                                  |
| <b>Description</b>               | <p>Specific NTC Data View values.</p> <p>Those data are sent by the STM when the data view procedure is triggered and the ERTMS/ETCS on-board has requested for the data.</p> <p>This packet can be grouped with other STM-183 packets by using the Q_FOLLOWING indicator in order to form one common set of “Specific NTC Data View values”.</p> |               |                                                                                                                                  |
| <b>Direction of information</b>  | From STM to ERTMS/ETCS on-board function                                                                                                                                                                                                                                                                                                          |               |                                                                                                                                  |
| <b>Content</b>                   | <b>Variable</b>                                                                                                                                                                                                                                                                                                                                   | <b>Length</b> | <b>Comment</b>                                                                                                                   |
|                                  | NID_PACKET                                                                                                                                                                                                                                                                                                                                        | 8             | Packet identifier<br>Value = 183                                                                                                 |
|                                  | L_PACKET                                                                                                                                                                                                                                                                                                                                          | 13            | Packet length                                                                                                                    |
|                                  | Q_FOLLOWING                                                                                                                                                                                                                                                                                                                                       | 1             | Indicate a following STM-183 packet                                                                                              |
|                                  | N_ITER                                                                                                                                                                                                                                                                                                                                            |               | Maximum iteration data<br>=0 if there is “No Specific Data Values”<br>Maximum value = 15<br>Variable defined in Chapter 7 of [1] |
|                                  | NID_DATA(j)                                                                                                                                                                                                                                                                                                                                       | 8             | Identifier of the Specific NTC Data                                                                                              |
|                                  | L_CAPTION(j)                                                                                                                                                                                                                                                                                                                                      | 6             | Length of X_CAPTION for data label in bytes<br>Maximum value = 40                                                                |
|                                  | X_CAPTION(j,q)                                                                                                                                                                                                                                                                                                                                    | 8             | Data label caption text byte string                                                                                              |
|                                  | L_VALUE(j)                                                                                                                                                                                                                                                                                                                                        | 5             | Length of X_VALUE for current value in bytes.<br>Maximum value = 20<br>=0 if there is no current value                           |
|                                  | X_VALUE(j,i)                                                                                                                                                                                                                                                                                                                                      | 8             | Data value caption text byte string                                                                                              |



## 7.2.21 Packet STM-184: Specific NTC Data Entry flag

|                                  |                                                                                                                                                                                                                                               |               |                                                                                         |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §8.3.1.5, 8.4.1.2, 8.4.1.3, 8.4.1.4, 10.7.3.1, 10.7.3.3, 10.7.4.1, 10.7.4.2, 10.7.4.3, 10.7.4.4, 10.7.5                                                                                                                                       |               |                                                                                         |
| <b>Allowed to send in states</b> | CO, DE, CS, HS, DA                                                                                                                                                                                                                            |               |                                                                                         |
| <b>Description</b>               | Specific NTC Data Entry flag<br>ERTMS/ETCS on-board shall indicate to the STM the beginning of its Specific NTC Data Entry procedure by sending the START flag and the end of its Specific NTC Data Entry procedure by sending the STOP flag. |               |                                                                                         |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM                                                                                                                                                                                                      |               |                                                                                         |
| <b>Content</b>                   | <b>Variable</b>                                                                                                                                                                                                                               | <b>Length</b> | <b>Comment</b>                                                                          |
|                                  | NID_PACKET                                                                                                                                                                                                                                    | 8             | Packet identifier<br>Value = 184                                                        |
|                                  | L_PACKET                                                                                                                                                                                                                                      | 13            | Packet length                                                                           |
|                                  | M_DATAENTRYFLAG                                                                                                                                                                                                                               | 1             | Indicate the beginning or the end of the Specific NTC Data Entry procedure to each STM. |

## 7.2.22 Packet STM-45: ETCS airgap message for STM

|                                  |                                                     |               |                                                                                                                                                                                                                                                                       |
|----------------------------------|-----------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.7, 10.2.1.2, 10.11.1.1, 10.11.1.2, 10.11.1.3 |               |                                                                                                                                                                                                                                                                       |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                              |               |                                                                                                                                                                                                                                                                       |
| <b>Description</b>               | ETCS airgap packet that is forwarded to STM.        |               |                                                                                                                                                                                                                                                                       |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM            |               |                                                                                                                                                                                                                                                                       |
| <b>Content</b>                   | <b>Variable</b>                                     | <b>Length</b> | <b>Comment</b>                                                                                                                                                                                                                                                        |
|                                  | NID_PACKET                                          | 8             | Packet identifier<br>Value = 45                                                                                                                                                                                                                                       |
|                                  | L_PACKET                                            | 13            | Packet length                                                                                                                                                                                                                                                         |
|                                  | D_ESTODO_BG                                         | 32            | Value of the estimated distance given from the ERTMS/ETCS on-board Odometer Function (D_EST) at the location reference of the balise group, which transmitted the airgap message included within this packet, or the LRBG of the message if it was received by radio. |
|                                  | N_LITER                                             | 8             | Number of bytes in ETCS packet<br>Maximum value = 222                                                                                                                                                                                                                 |
|                                  | M_DATA(k)                                           | 8             | Full ETCS packet 44 (containing also ETCS packet number...)<br>See also 6.1.3.18                                                                                                                                                                                      |



### 7.2.23 Packet STM-21: Test Procedure Permission Request

|                                  |                                          |               |                                 |
|----------------------------------|------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.5, 10.9.1.1, 10.9.1.2             |               |                                 |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                   |               |                                 |
| <b>Description</b>               | Request to perform a Test Procedure      |               |                                 |
| <b>Direction of information</b>  | From STM to ERTMS/ETCS on-board function |               |                                 |
| <b>Content</b>                   | <b>Variable</b>                          | <b>Length</b> | <b>Comment</b>                  |
|                                  | NID_PACKET                               | 8             | Packet identifier<br>Value = 21 |
|                                  | L_PACKET                                 | 13            | Packet length                   |
|                                  | NID_TEST                                 | 8             | Test Identity                   |

### 7.2.24 Packet STM-22: Test Procedure Permission

|                                  |                                               |               |                                 |
|----------------------------------|-----------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.5, 10.9.1.2, 10.9.1.3                  |               |                                 |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                        |               |                                 |
| <b>Description</b>               | Grant permission to perform a Test Procedure. |               |                                 |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM      |               |                                 |
| <b>Content</b>                   | <b>Variable</b>                               | <b>Length</b> | <b>Comment</b>                  |
|                                  | NID_PACKET                                    | 8             | Packet identifier<br>Value = 22 |
|                                  | L_PACKET                                      | 13            | Packet length                   |

## 7.2.25 Packet STM-23: End of Test Procedure

|                                  |                                                |               |                                                      |
|----------------------------------|------------------------------------------------|---------------|------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.5, 10.9.1.3                             |               |                                                      |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                         |               |                                                      |
| <b>Description</b>               | Reports the end and result of a Test Procedure |               |                                                      |
| <b>Direction of information</b>  | From STM to ERTMS/ETCS on-board function       |               |                                                      |
| <b>Content</b>                   | <b>Variable</b>                                | <b>Length</b> | <b>Comment</b>                                       |
|                                  | NID_PACKET                                     | 8             | Packet identifier<br>Value = 23                      |
|                                  | L_PACKET                                       | 13            | Packet length                                        |
|                                  | M_TESTOK                                       | 1             | 1=Test(s) successful                                 |
|                                  | L_TEXT                                         | 8             | Number of bytes in text string<br>Maximum value = 80 |
|                                  | X_TEXT(k)                                      | 8             | Text character                                       |

## 7.2.26 Packet STM-30: Driver language transmission

|                                  |                                          |               |                                 |
|----------------------------------|------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.4, 10.6.1.1                       |               |                                 |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                   |               |                                 |
| <b>Description</b>               | Driver language selection.               |               |                                 |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM |               |                                 |
| <b>Content</b>                   | <b>Variable</b>                          | <b>Length</b> | <b>Comment</b>                  |
|                                  | NID_PACKET                               | 8             | Packet identifier<br>Value = 30 |
|                                  | L_PACKET                                 | 13            | Packet length                   |
|                                  | NID_DRV_LANG                             | 16            | Driver language selection       |

### 7.2.27 Packet STM-31: Active DMI channel

|                                  |                                                 |               |                                 |
|----------------------------------|-------------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>           | §10.1.1.5, 13.3.1.1, 13.3.1.2                   |               |                                 |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                          |               |                                 |
| <b>Description</b>               | Informs the STM about the active DMI channel    |               |                                 |
| <b>Direction of information</b>  | <b>From ERTMS/ETCS on-board function to STM</b> |               |                                 |
| <b>Content</b>                   | <b>Variable</b>                                 | <b>Length</b> | <b>Comment</b>                  |
|                                  | NID_PACKET                                      | 8             | Packet identifier<br>Value = 31 |
|                                  | L_PACKET                                        | 13            | Packet length                   |
|                                  | NID_DMICHANNEL                                  | 3             | Active DMI channel identifier   |

### 7.2.28 Packet STM-20: Antenna/BTM ID

|                                  |                                                                                              |               |                                                                        |
|----------------------------------|----------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.11, 10.15                                                                             |               |                                                                        |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                                                       |               |                                                                        |
| <b>Description</b>               | Identifier of the ERTMS/ETCS on-board Antenna/BTM that is currently active on Interface 'K'. |               |                                                                        |
| <b>Direction of information</b>  | <b>From ERTMS/ETCS on-board function to STM</b>                                              |               |                                                                        |
| <b>Content</b>                   | <b>Variable</b>                                                                              | <b>Length</b> | <b>Comment</b>                                                         |
|                                  | NID_PACKET                                                                                   | 8             | Packet identifier<br>Value = 20                                        |
|                                  | L_PACKET                                                                                     | 13            | Packet length                                                          |
|                                  | Q_CHECKNEEDED                                                                                | 1             | Indicates if KER STM has to perform the check                          |
|                                  | Q_ANTN_BTMT_ACTIVE                                                                           | 1             | Only if Q_CHECKNEEDED=1<br>Indicates if there is an Antenna/BTM active |
|                                  | NID_ANTENNA_BTMT                                                                             | 2             | Only if Q_ANTN_BTMT_ACTIVE=1<br>Valid Antenna/BTM ID                   |

## 7.2.29 Packet STM-47: ETCS BTM status message to STM

|                                  |                                                                                                                            |               |                                                       |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.7.12, 10.16                                                                                                           |               |                                                       |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                                                                                     |               |                                                       |
| <b>Description</b>               | Indicates the start and stop of BTM alarms and if a Big Metal Mass track condition has been announced in case of BTM alarm |               |                                                       |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM                                                                                   |               |                                                       |
| <b>Content</b>                   | <b>Variable</b>                                                                                                            | <b>Length</b> | <b>Comment</b>                                        |
|                                  | NID_PACKET                                                                                                                 | 8             | Packet identifier<br>Value = 47                       |
|                                  | L_PACKET                                                                                                                   | 13            | Packet length                                         |
|                                  | Q_BT_M_ALARM                                                                                                               | 1             | BTM alarm status                                      |
|                                  | Q_BMM_ANNOUNCED                                                                                                            | 1             | Only if Q_BT_M_ALARM = 1,<br>Announced Big Metal Mass |



## 7.3 Packets related to the Odometer Function

### 7.3.1 Packet STM-9: Odometer parameters to STM

|                                  |                                                                                                                                            |               |                                            |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.3.1, 6.5.1.5, 8.3.1.2, 12.4.1.1, 12.4.1.2, 12.4.1.4                                                                                   |               |                                            |
| <b>Allowed to send in states</b> | any state, multicast                                                                                                                       |               |                                            |
| <b>Description</b>               | Configuration data and performance parameters from the odometer.<br>The packet is multicast by ERTMS/ETCS on-board from Odometer Function. |               |                                            |
| <b>Direction of information</b>  | <b>From ERTMS/ETCS on-board function to STM</b>                                                                                            |               |                                            |
| <b>Content</b>                   | <b>Variable</b>                                                                                                                            | <b>Length</b> | <b>Comment</b>                             |
|                                  | NID_PACKET                                                                                                                                 | 8             | Packet identifier<br>Value = 9             |
|                                  | L_PACKET                                                                                                                                   | 13            | Packet length                              |
|                                  | T_ODOCYCLE                                                                                                                                 | 8             | Typical cycle time of<br>odometer function |
|                                  | T_ODOMAXPROD                                                                                                                               | 8             | Maximum production delay<br>time.          |

### 7.3.2 Packet STM-8: Odometer multicast

| <b>Subset-035 Ref.</b>           | §5.2.3.1, 5.3.1.1, 6.5.1.5, 12.1, 12.2, 12.3 |               |                                                     |
|----------------------------------|----------------------------------------------|---------------|-----------------------------------------------------|
| <b>Allowed to send in states</b> | any state, multicast                         |               |                                                     |
| <b>Description</b>               | Periodic transmission of odometer data.      |               |                                                     |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM     |               |                                                     |
| <b>Content</b>                   | <b>Variable</b>                              | <b>Length</b> | <b>Comment</b>                                      |
|                                  | NID_PACKET                                   | 8             | Packet identifier<br>Value = 8                      |
|                                  | L_PACKET                                     | 13            | Packet length                                       |
|                                  | T_ODO                                        | 32            | Timestamp                                           |
|                                  | V_MAX                                        | 16            | Upper bound of the measured speed.                  |
|                                  | V_EST                                        | 16            | Estimated speed value.                              |
|                                  | V_MIN                                        | 16            | Lower bound of the measured speed.                  |
|                                  | D_MAX                                        | 32            | Positive direction side of the confidence interval. |
|                                  | D_EST                                        | 32            | Estimated value of distance.                        |
|                                  | D_MIN                                        | 32            | Negative direction side of the confidence interval. |
|                                  | D_RES                                        | 8             | Resolution of distance measurement.                 |



## 7.4 Intentionally deleted



## 7.5 Packets related to the DMI Function

### 7.5.1 Intentionally deleted

### 7.5.2 Packet STM-32: Button Request

|                                 |                                                                                               |               |                                                            |
|---------------------------------|-----------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------|
| <b>Subset-035 Ref.</b>          | §5.2.8.1 a), 13.4.1, 13.4.4, 13.5.1.1.4, 13.5.1.1.5, 13.5.1.1.8, 15.1.1.1 b)                  |               |                                                            |
| <b>Allowed to send in state</b> | HS, DA                                                                                        |               |                                                            |
| <b>Description</b>              | Create or update the visual states of buttons by STM.<br>Only referenced buttons are updated. |               |                                                            |
| <b>Direction of information</b> | <b>From STM to ERTMS/ETCS on-board function</b>                                               |               |                                                            |
| <b>Content</b>                  | <b>Variable</b>                                                                               | <b>Length</b> | <b>Comment</b>                                             |
|                                 | NID_PACKET                                                                                    | 8             | Packet identifier<br>Value=32                              |
|                                 | L_PACKET                                                                                      | 13            | Packet length                                              |
|                                 | N_ITER                                                                                        |               | Maximum value = 24<br>Variable defined in Chapter 7 of [1] |
|                                 | NID_BUTTON(k)                                                                                 | 8             | Button identifier                                          |
|                                 | NID_BUTPOS(k)                                                                                 | 5             | Button position identifier                                 |
|                                 | NID_ICON(k)                                                                                   | 8             | Icon identifier                                            |
|                                 | M_BUT_ATTRIB(k)                                                                               | 10            | Attributes of the button                                   |
|                                 | L_CAPTION(k)                                                                                  | 6             | Length of X_CAPTION in bytes<br>Maximum value = 24         |
|                                 | X_CAPTION(k, j)                                                                               | 8             | Caption text bytestring                                    |

### 7.5.3 Packet STM-34: Button event report

|                                  |                                          |               |                                                                         |
|----------------------------------|------------------------------------------|---------------|-------------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.8.1 a), 13.4.1, 13.4.4              |               |                                                                         |
| <b>Allowed to send in states</b> | DA                                       |               |                                                                         |
| <b>Description</b>               | Report the button events.                |               |                                                                         |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM |               |                                                                         |
| <b>Content</b>                   | <b>Variable</b>                          | <b>Length</b> | <b>Comment</b>                                                          |
|                                  | NID_PACKET                               | 8             | Packet identifier<br>Value=34                                           |
|                                  | L_PACKET                                 | 13            | Packet length                                                           |
|                                  | N_ITER                                   |               | Number of events being reported<br>Variable defined in Chapter 7 of [1] |
|                                  | NID_BUTTON(k)                            | 8             | Button identifier                                                       |
|                                  | Q_BUTTON(k)                              | 1             | Button event                                                            |
|                                  | T_BUTTONEVENT(k)                         | 32            | Event timestamp                                                         |

#### 7.5.4 Packet STM-35: Indicator request

|                                  |                                                                                                     |               |                                                            |
|----------------------------------|-----------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.8.1 b), 13.4.1, 13.4.3, 13.5.1.1.2, 13.5.1.1.3, 13.5.1.1.8, 15.1.1.1 b)                        |               |                                                            |
| <b>Allowed to send in states</b> | HS, DA                                                                                              |               |                                                            |
| <b>Description</b>               | Create or update the visual states of indicators by STM.<br>Only referenced indicators are updated. |               |                                                            |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b>                                                     |               |                                                            |
| <b>Content</b>                   | <b>Variable</b>                                                                                     | <b>Length</b> | <b>Comment</b>                                             |
|                                  | NID_PACKET                                                                                          | 8             | Packet identifier<br>Value = 35                            |
|                                  | L_PACKET                                                                                            | 13            | Packet length                                              |
|                                  | N_ITER                                                                                              |               | Maximum value = 24<br>Variable defined in Chapter 7 of [1] |
|                                  | NID_INDICATOR(k)                                                                                    | 8             | Indicator identifier                                       |
|                                  | NID_INDPOS(k)                                                                                       | 5             | Indicator position identifier                              |
|                                  | NID_ICON(k)                                                                                         | 8             | Icon identifier                                            |
|                                  | M_IND_ATTRIB(k)                                                                                     | 10            | Attributes of the indicator                                |
|                                  | L_CAPTION(k)                                                                                        | 6             | Length of X_CAPTION<br>Maximum value = 24                  |
|                                  | X_CAPTION(k,j)                                                                                      | 8             | Caption text bytestring                                    |

### 7.5.5 Packet STM-38: Text message

|                                  |                                                             |               |                                                         |
|----------------------------------|-------------------------------------------------------------|---------------|---------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.8.1 d), 13.4.2, 15.1.1.1 a)                            |               |                                                         |
| <b>Allowed to send in states</b> | HS, DA                                                      |               |                                                         |
| <b>Description</b>               | Text messages for the DMI, with or without acknowledgement. |               |                                                         |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b>             |               |                                                         |
| <b>Content</b>                   | <b>Variable</b>                                             | <b>Length</b> | <b>Comment</b>                                          |
|                                  | NID_PACKET                                                  | 8             | Packet identifier<br>Value = 38                         |
|                                  | L_PACKET                                                    | 13            | Packet length                                           |
|                                  | NID_XMESSAGE                                                | 8             | Text message identifier                                 |
|                                  | M_XATTRIBUTE                                                | 10            | Attributes of text                                      |
|                                  | Q_ACK                                                       | 1             | Acknowledgement<br>qualifier                            |
|                                  | L_TEXT                                                      | 8             | Number of bytes in text<br>string<br>Maximum value = 80 |
|                                  | X_TEXT(k)                                                   | 8             | Text character                                          |

### 7.5.6 Packet STM-39: Delete text message

|                                  |                                                 |               |                                 |
|----------------------------------|-------------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.8.1 d), 13.4.2                             |               |                                 |
| <b>Allowed to send in states</b> | HS, DA                                          |               |                                 |
| <b>Description</b>               | STM commands the deletion of text message.      |               |                                 |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b> |               |                                 |
| <b>Content</b>                   | <b>Variable</b>                                 | <b>Length</b> | <b>Comment</b>                  |
|                                  | NID_PACKET                                      | 8             | Packet identifier<br>Value = 39 |
|                                  | L_PACKET                                        | 13            | Packet length                   |
|                                  | NID_XMESSAGE                                    | 8             | Text message identifier         |



### 7.5.7 Packet STM-40: Acknowledgement reply

|                                 |                                                                     |               |                                 |
|---------------------------------|---------------------------------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>          | §5.2.8.1 d), 13.4.2                                                 |               |                                 |
| <b>Allowed to send in state</b> | DA                                                                  |               |                                 |
| <b>Description</b>              | Report from ERTMS/ETCS on-board on acknowledgement of text message. |               |                                 |
| <b>Direction of information</b> | From ERTMS/ETCS on-board function to STM                            |               |                                 |
| <b>Content</b>                  | <b>Variable</b>                                                     | <b>Length</b> | <b>Comment</b>                  |
|                                 | NID_PACKET                                                          | 8             | Packet identifier<br>Value = 40 |
|                                 | L_PACKET                                                            | 13            | Packet length                   |
|                                 | NID_XMESSAGE                                                        | 8             | Text message identifier         |

### 7.5.8 Intentionally deleted

## 7.5.9 Packet STM-43: Speed and distance supervision information

|                                  |                                                                                   |               |                                 |
|----------------------------------|-----------------------------------------------------------------------------------|---------------|---------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.8.1e), 13.4.6, 13.5.1.1.7                                                    |               |                                 |
| <b>Allowed to send in states</b> | HS, DA                                                                            |               |                                 |
| <b>Description</b>               | Speed and distance supervision information with values, colours and display modes |               |                                 |
| <b>Direction of information</b>  | From STM to ERTMS/ETCS on-board function                                          |               |                                 |
| <b>Content</b>                   | <b>Variable</b>                                                                   | <b>Length</b> | <b>Comment</b>                  |
|                                  | NID_PACKET                                                                        | 8             | Packet identifier<br>Value = 43 |
|                                  | L_PACKET                                                                          | 13            | Packet length                   |
|                                  | Q_SCALE                                                                           |               | Defined in Chapter 7 of [1]     |
|                                  | V_PERMIT                                                                          | 10            | Permitted speed                 |
|                                  | V_TARGET                                                                          | 7             | Target speed                    |
|                                  | V_RELEASE                                                                         | 10            | Release speed                   |
|                                  | V_INTERV                                                                          | 10            | Intervention speed              |
|                                  | D_TARGET                                                                          | 15            | Target distance                 |
|                                  | M_COLOUR_SP                                                                       | 3             | Colour of speed pointer         |
|                                  | M_COLOUR_PS                                                                       | 3             | Colour of permitted speed       |
|                                  | Q_DISPLAY_PS                                                                      | 2             | Display of permitted speed      |
|                                  | M_COLOUR_TS                                                                       | 3             | Colour of target speed          |
|                                  | Q_DISPLAY_TS                                                                      | 2             | Display of target speed         |
|                                  | M_COLOUR_RS                                                                       | 3             | Colour of release speed         |
|                                  | Q_DISPLAY_RS                                                                      | 2             | Display of release speed        |
|                                  | M_COLOUR_IS                                                                       | 3             | Colour of intervention speed    |
|                                  | Q_DISPLAY_IS                                                                      | 2             | Display of intervention speed   |
|                                  | Q_DISPLAY_TD                                                                      | 2             | Display of target distance      |

## 7.5.10 Packet STM-46: Sound command

|                                  |                                                 |               |                                                                                                                                                                                                              |
|----------------------------------|-------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.8.1.c), 13.4.1, 13.4.5, 13.5.1.1.9         |               |                                                                                                                                                                                                              |
| <b>Allowed to send in states</b> | HS, DA                                          |               |                                                                                                                                                                                                              |
| <b>Description</b>               | Commands sound.                                 |               |                                                                                                                                                                                                              |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b> |               |                                                                                                                                                                                                              |
| <b>Content</b>                   | <b>Variable</b>                                 | <b>Length</b> | <b>Comment</b>                                                                                                                                                                                               |
|                                  | NID_PACKET                                      | 8             | Packet identifier<br>Value = 46                                                                                                                                                                              |
|                                  | L_PACKET                                        | 13            | Packet length                                                                                                                                                                                                |
|                                  | N_ITER                                          |               | Number of sounds to be generated<br>Maximum value = 2<br>The STM is able to request to the ERTMS/ETCS on-board to generate a maximum of two sounds at the same time.<br>Variable defined in Chapter 7 of [1] |
|                                  | NID_SOUND(n)                                    | 8             | Sound identifier                                                                                                                                                                                             |
|                                  | Q_SOUND(n)                                      | 2             | Continuous/ Not continuous/ Stopped                                                                                                                                                                          |
|                                  | N_ITER(n)                                       |               | Number of segments of sound<br>Variable defined in Chapter 7 of [1]                                                                                                                                          |
|                                  | M_FREQ (n,k)                                    | 8             | Frequency of a segment                                                                                                                                                                                       |
|                                  | T_SOUND(n,k)                                    | 8             | Duration of segment                                                                                                                                                                                          |



## 7.6 Intentionally deleted



## 7.7 Packets related to the TIU Function

### 7.7.1 Packet STM-129: STM specific brake control command

|                                  |                                                 |               |                                                |
|----------------------------------|-------------------------------------------------|---------------|------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.4.1, 5.2.4.3, 5.3.1.1, 6.5.1.5,            |               |                                                |
| <b>Allowed to send in states</b> | DA                                              |               |                                                |
| <b>Description</b>               | STM specific brake command control.             |               |                                                |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b> |               |                                                |
| <b>Content</b>                   | <b>Variable</b>                                 | <b>Length</b> | <b>Comment</b>                                 |
|                                  | NID_PACKET                                      | 8             | Packet identifier<br>Value = 129               |
|                                  | L_PACKET                                        | 13            | Packet length                                  |
|                                  | M_TIRB_CMD                                      | 2             | Inhibit regenerative brake                     |
|                                  | M_TIMSH_CMD                                     | 2             | Inhibit magnetic shoes brake                   |
|                                  | M_TIEDCBEB_CMD                                  | 2             | Inhibit Eddy current brake for Emergency Brake |
|                                  | M_TIEDCBSB_CMD                                  | 2             | Inhibit Eddy current brake for Service Brake   |

### 7.7.2 Packet STM-130: STM commands to train interface

|                                 |                                                          |               |                                  |
|---------------------------------|----------------------------------------------------------|---------------|----------------------------------|
| <b>Subset-035 Ref.</b>          | §5.2.4.1, 5.2.4.3, 5.3.1.1, 6.5.1.5                      |               |                                  |
| <b>Allowed to send in state</b> | DA                                                       |               |                                  |
| <b>Description</b>              | Transmission of the STM commands to the train interface. |               |                                  |
| <b>Direction of information</b> | <b>From STM to ERTMS/ETCS on-board function</b>          |               |                                  |
| <b>Content</b>                  | <b>Variable</b>                                          | <b>Length</b> | <b>Comment</b>                   |
|                                 | NID_PACKET                                               | 8             | Packet identifier<br>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

|                                  |                                                                        |               |                                  |
|----------------------------------|------------------------------------------------------------------------|---------------|----------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.4.1, 5.2.4.4, 5.3.1.1, 6.5.1.5, 8.3.1.2, 8.3.1.2.1, 11.1.1.1      |               |                                  |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                                 |               |                                  |
| <b>Description</b>               | Transmission of the train interface inputs status/availability to STM. |               |                                  |
| <b>Direction of information</b>  | <b>From ERTMS/ETCS on-board function to STM</b>                        |               |                                  |
| <b>Content</b>                   | <b>Variable</b>                                                        | <b>Length</b> | <b>Comment</b>                   |
|                                  | NID_PACKET                                                             | 8             | Packet identifier<br>Value = 139 |
|                                  | L_PACKET                                                               | 13            | Packet length                    |
|                                  | M_TITR_STATUS                                                          | 2             | Traction status                  |
|                                  | M_TIDIR_STATUS                                                         | 3             | Direction Controller position    |
|                                  | M_TICAB_STATUS                                                         | 2             | Cab status                       |

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

|                                  |                                                                   |               |                                                                     |
|----------------------------------|-------------------------------------------------------------------|---------------|---------------------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.4.1, 5.2.4.3, 5.3.1.1, 6.5.1.5, 8.3.1.2, 8.3.1.2.1, 11.1.1.1 |               |                                                                     |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                            |               |                                                                     |
| <b>Description</b>               | Transmission of the train interface commands availability to STM. |               |                                                                     |
| <b>Direction of information</b>  | <b>From ERTMS/ETCS on-board function to STM</b>                   |               |                                                                     |
| <b>Content</b>                   | <b>Variable</b>                                                   | <b>Length</b> | <b>Comment</b>                                                      |
|                                  | NID_PACKET                                                        | 8             | Packet identifier<br>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_TIEDCBEB_CMD_AVAIL                                              | 1             | Inhibit Eddy current brake for Emergency Brake command availability |
|                                  | M_TIEDCBSB_CMD_AVAIL                                              | 1             | Inhibit Eddy current brake for Service 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 BIU Function

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

|                                 |                                                                   |               |                                  |
|---------------------------------|-------------------------------------------------------------------|---------------|----------------------------------|
| <b>Subset-035 Ref.</b>          | §5.2.5.1, 10.3.3.3, 10.3.3.4, 10.3.3.6, 10.7.3.9, 11.1.1.3        |               |                                  |
| <b>Allowed to send in state</b> | DA                                                                |               |                                  |
| <b>Description</b>              | Transmission of the STM EB and SB command to the brake interface. |               |                                  |
| <b>Direction of information</b> | <b>From STM to ERTMS/ETCS on-board function</b>                   |               |                                  |
| <b>Content</b>                  | <b>Variable</b>                                                   | <b>Length</b> | <b>Comment</b>                   |
|                                 | NID_PACKET                                                        | 8             | Packet identifier<br>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

|                                  |                                                         |               |                                  |
|----------------------------------|---------------------------------------------------------|---------------|----------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.5.1, 8.3.1.2, 11.1.1.3                             |               |                                  |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                  |               |                                  |
| <b>Description</b>               | Transmission of the brake status / availability to STM. |               |                                  |
| <b>Direction of information</b>  | <b>From ERTMS/ETCS on-board function to STM</b>         |               |                                  |
| <b>Content</b>                   | <b>Variable</b>                                         | <b>Length</b> | <b>Comment</b>                   |
|                                  | NID_PACKET                                              | 8             | Packet identifier<br>Value = 136 |
|                                  | L_PACKET                                                | 13            | Packet length                    |
|                                  | M_BIEB_STATUS                                           | 2             | EB status / availability         |
|                                  | M_BISB_STATUS                                           | 2             | SB status / availability         |



### 7.8.3 Packet STM-143: Emergency and service brake parameters to STM

|                                  |                                                                     |               |                                                  |
|----------------------------------|---------------------------------------------------------------------|---------------|--------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.5.1, 8.3.1.2, 8.3.1.2.1, 11.1.1.2                              |               |                                                  |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA                                              |               |                                                  |
| <b>Description</b>               | Transmission of the train interface EB and SB configuration to STM. |               |                                                  |
| <b>Direction of information</b>  | From ERTMS/ETCS on-board function to STM                            |               |                                                  |
| <b>Content</b>                   | <b>Variable</b>                                                     | <b>Length</b> | <b>Comment</b>                                   |
|                                  | NID_PACKET                                                          | 8             | Packet identifier<br>Value = 143                 |
|                                  | L_PACKET                                                            | 13            | Packet length                                    |
|                                  | T_EB_MAXDELAY                                                       | 8             | Maximum emergency brake command issue time delay |
|                                  | T_SB_MAXDELAY                                                       | 8             | Maximum service brake command issue time delay   |



## 7.9 Packets related to the Juridical Data Function (JD)

### 7.9.1 Packet STM-161: STM information to JD

|                                  |                                                                                              |               |                                                        |
|----------------------------------|----------------------------------------------------------------------------------------------|---------------|--------------------------------------------------------|
| <b>Subset-035 Ref.</b>           | §5.2.6.1, 5.3.1.1, 6.5.1.5, 14                                                               |               |                                                        |
| <b>Allowed to send in states</b> | PO, CO, DE, CS, HS, DA, FA                                                                   |               |                                                        |
| <b>Description</b>               | National STM data transmitted to the JD.<br>(Structure of the data internal to each company) |               |                                                        |
| <b>Direction of information</b>  | <b>From STM to ERTMS/ETCS on-board function</b>                                              |               |                                                        |
| <b>Content</b>                   | <b>Variable</b>                                                                              | <b>Length</b> | <b>Comment</b>                                         |
|                                  | NID_PACKET                                                                                   | 8             | Packet identifier<br>Value = 161                       |
|                                  | L_PACKET                                                                                     | 13            | Packet length                                          |
|                                  | T_JD                                                                                         | 32            | Time Stamp                                             |
|                                  | N_LITER                                                                                      | 8             | Number of data bytes in message<br>Maximum value = 228 |
|                                  | M_DATA(k)                                                                                    | 8             | Information to JD                                      |

## 8. VARIABLES

### 8.1.1 D\_EST

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

### 8.1.2 D\_ESTODO\_BG

|                                |                                                                                                                                                                                                                                                                                                           |                      |                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Estimated distance reference of the balise group                                                                                                                                                                                                                                                          |                      |                           |
| <b>Description</b>             | Signed value of the estimated distance given from the ERTMS/ETCS on-board Odometer Function (D_EST) at the location reference of the balise group, which transmitted the airgap message included within this packet, or the LRBG of the message if it was received by radio.<br>Coded as two's complement |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                                                                      | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 32 bits                        | - 2 147 483 648 cm                                                                                                                                                                                                                                                                                        | + 2 147 483 647 cm   | 1 cm                      |
| <b>Special/Reserved Values</b> |                                                                                                                                                                                                                                                                                                           |                      |                           |

### 8.1.3 D\_MAX

|                                |                                                                                                                                                                                                                                                               |                      |                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Upper bound of the confidence interval of a measured distance                                                                                                                                                                                                 |                      |                           |
| <b>Description</b>             | D_MAX is defined as the most positive position of the vehicle in the vehicle coordinate system at the time given in the odometer packet, with all over- and under-reading amounts accumulated since the last reset of the odometry.Coded as two's complement. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                          | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 32 bits                        | - 2 147 483 648 cm                                                                                                                                                                                                                                            | + 2 147 483 647 cm   | Signed, unit 1 cm.        |
| <b>Special/Reserved Values</b> |                                                                                                                                                                                                                                                               |                      |                           |

#### 8.1.4 D\_MIN

|                                |                                                                                                                                                                                                                                                                      |                      |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Lower bound of the confidence interval of a measured distance                                                                                                                                                                                                        |                      |                           |
| <b>Description</b>             | D_MIN is defined as the most negative position of the vehicle in the vehicle coordinate system at the time given in the odometer packet, with all over- and under-reading amounts accumulated since the last reset of the odometry.<br><br>Coded as two's complement |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                                 | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 32 bits                        | - 2 147 483 648 cm                                                                                                                                                                                                                                                   | + 2 147 483 647 cm   | Signed, unit 1 cm.        |
| <b>Special/Reserved Values</b> |                                                                                                                                                                                                                                                                      |                      |                           |

#### 8.1.5 D\_RES

|                                |                                                                                                                                   |                      |                            |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------|
| <b>Name</b>                    | Distance resolution                                                                                                               |                      |                            |
| <b>Description</b>             | Current distance resolution included in the odometer data transmitted from the ERTMS/ETCS on-board Odometer Function to the STMs. |                      |                            |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                              | <b>Maximum Value</b> | <b>Resolution/ formula</b> |
| 8 bits                         | 0cm                                                                                                                               | 255cm                | 1cm                        |
| <b>Special/Reserved Values</b> |                                                                                                                                   |                      |                            |

#### 8.1.6 D\_STMSYS

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

#### 8.1.7 D\_TARGET

|                                |                      |                      |                                       |
|--------------------------------|----------------------|----------------------|---------------------------------------|
| <b>Name</b>                    | Target distance      |                      |                                       |
| <b>Description</b>             | Target distance      |                      |                                       |
| <b>Length of variable</b>      | <b>Minimum Value</b> | <b>Maximum Value</b> | <b>Resolution/formula</b>             |
| 15 bits                        | 0 m                  | 327.660 Km           | 10 cm, 1 m or 10 m depends on Q_SCALE |
| <b>Special/Reserved Values</b> | 32767                | Unknown value        |                                       |



### 8.1.8 L\_CAPTION

|                                |                                                                                                                                                                                                                                                                                         |                      |                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Length of caption text string in bytes for button, indicator and data.                                                                                                                                                                                                                  |                      |                           |
| <b>Description</b>             | L_CAPTION defines the length of a text caption bytestring (L_CAPTION * X_CAPTION)<br>Additional restrictions for maximum allowed length are specified in the respective packet.<br>Additional restrictions for maximum length in character in UTF-8 coding are found in [4] chapter 15. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                                                    | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 6 bits                         | 1                                                                                                                                                                                                                                                                                       | 63                   | 1 byte                    |
| <b>Special/Reserved Values</b> | 0                                                                                                                                                                                                                                                                                       | No X_CAPTION follows |                           |

### 8.1.9 L\_MESSAGE

|                                |                                                                                                                                                             |                      |                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Message length                                                                                                                                              |                      |                           |
| <b>Description</b>             | 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). |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                        | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 5                                                                                                                                                           | 238                  | 1 Byte                    |
| <b>Special/Reserved Values</b> | 0-4                                                                                                                                                         | Reserved             |                           |
|                                | 239-255                                                                                                                                                     | Reserved             |                           |

### 8.1.10 L\_PACKET

|                                |                                                                                                                                                        |                                                           |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Packet length                                                                                                                                          |                                                           |                           |
| <b>Description</b>             | 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. |                                                           |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                   | <b>Maximum Value</b>                                      | <b>Resolution/formula</b> |
| 13 bits                        | 0                                                                                                                                                      | 1888<br>As allowed by maximum length of application data. | 1 bit                     |
| <b>Special/Reserved Values</b> | 1889-8191                                                                                                                                              | Spare                                                     |                           |

### 8.1.11 L\_TEXT

|                                |                                                                                                                                                                                                                                                                    |                      |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Length of text string in bytes                                                                                                                                                                                                                                     |                      |                           |
| <b>Description</b>             | L_TEXT defines the length of a text string (L_TEXT * X_TEXT)<br>Additional restrictions for maximum allowed length are specified in the respective packet.<br>Additional restrictions for maximum length in character in UTF-8 coding are found in [4] chapter 15. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                               | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 1                                                                                                                                                                                                                                                                  | 255                  | 1 byte                    |
| <b>Special/Reserved Values</b> | 0                                                                                                                                                                                                                                                                  | No X_TEXT follows    |                           |



### 8.1.12 L\_VALUE

|                                |                                                                                                                                                                                              |                          |                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------|
| <b>Name</b>                    | Length of text string in bytes for value used for data value, default value of data and for dedicated keyboard values.                                                                       |                          |                            |
| <b>Description</b>             | L_VALUE defines the length of a data caption bytestring in bytes (L_VALUE * X_VALUE)<br>Additional restrictions for maximum length in character in UTF-8 coding are found in [4] chapter 15. |                          |                            |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                         | <b>Maximum Value</b>     | <b>Resolution/formula</b>  |
| 5 bits                         | 1                                                                                                                                                                                            | 20                       | 1 Text String byte Element |
| <b>Special/Reserved Values</b> | 0                                                                                                                                                                                            | No X_VALUE shall follow. |                            |
|                                | 21-31                                                                                                                                                                                        | Reserved                 |                            |

### 8.1.13 M\_BIEB\_CMD

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

### 8.1.14 M\_BIEB\_STATUS

|                                |                                                                         |                      |                           |
|--------------------------------|-------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Emergency brake availability status                                     |                      |                           |
| <b>Description</b>             | Information telling if the emergency brake is failed, available or not. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                    | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 2 bits                         |                                                                         |                      |                           |
| <b>Special/Reserved Values</b> | 00                                                                      | Fail                 |                           |
|                                | 01                                                                      | Not available        |                           |
|                                | 10                                                                      | Available            |                           |
|                                | 11                                                                      | Reserved             |                           |



### 8.1.15 M\_BISB\_CMD

|                                |                                                                  |                                                    |                           |
|--------------------------------|------------------------------------------------------------------|----------------------------------------------------|---------------------------|
| <b>Name</b>                    | Service brake command                                            |                                                    |                           |
| <b>Description</b>             | Information telling if the service brake must be applied or not. |                                                    |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                             | <b>Maximum Value</b>                               | <b>Resolution/formula</b> |
| 2 bits                         |                                                                  |                                                    |                           |
| <b>Special/Reserved Values</b> | 00                                                               | Apply SB, or EB in case the SB fails to be applied |                           |
|                                | 01                                                               | Apply SB                                           |                           |
|                                | 10                                                               | Release SB                                         |                           |
|                                | 11                                                               | No command from STM ->Keep current output status   |                           |

### 8.1.16 M\_BISB\_STATUS

|                                |                                                                       |                      |                           |
|--------------------------------|-----------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Service brake availability status                                     |                      |                           |
| <b>Description</b>             | Information telling if the service brake is failed, available or not. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                  | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 2 bits                         |                                                                       |                      |                           |
| <b>Special/Reserved Values</b> | 00                                                                    | Fail                 |                           |
|                                | 01                                                                    | Not available        |                           |
|                                | 10                                                                    | Available            |                           |
|                                | 11                                                                    | Reserved             |                           |

### 8.1.17 M\_BRAKE\_PERCENTAGE\_STM

|                                |                                                   |                      |                           |
|--------------------------------|---------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Brake percentage                                  |                      |                           |
| <b>Description</b>             | Information telling actual brake percentage value |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                              | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                 | 250                  |                           |
| <b>Special/Reserved Values</b> | 251-254                                           | Spare                |                           |
|                                | 255                                               | Unknown value        |                           |



### 8.1.18 M\_BUT\_ATTRIB

|                                |                                                                |                                                                                                                                            |                           |
|--------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Attributes for buttons.                                        |                                                                                                                                            |                           |
| <b>Description</b>             | Specifies flashing mode, text & background colour for buttons. |                                                                                                                                            |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                           | <b>Maximum Value</b>                                                                                                                       | <b>Resolution/formula</b> |
| 10 bits                        |                                                                |                                                                                                                                            |                           |
| <b>Special/Reserved Values</b> | 0xxxxxxx                                                       | Not displayed (Note: This allow to "removing" a button from display.)                                                                      |                           |
|                                | 10xxxxxxx                                                      | Button Normal flashing (only relevant in case "Button Slow flashing" or "Button Fast flashing" is transmitted in the same variable).       |                           |
|                                | 11xxxxxxx                                                      | Button Counterphase flashing (only relevant in case "Button Slow flashing" or "Button Fast flashing" is transmitted in the same variable). |                           |
|                                | 1x00xxxxx                                                      | Button No flashing                                                                                                                         |                           |
|                                | 1x01xxxxx                                                      | Button Slow flashing                                                                                                                       |                           |
|                                | 1x10xxxxx                                                      | Button Fast flashing                                                                                                                       |                           |
|                                | 1x11xxxxx                                                      | Reserved                                                                                                                                   |                           |
|                                | 1xxx000xxx                                                     | Dark blue button background                                                                                                                |                           |
|                                | 1xxx001xxx                                                     | White button background                                                                                                                    |                           |
|                                | 1xxx010xxx                                                     | Red button background                                                                                                                      |                           |
|                                | 1xxx011xxx                                                     | Blue button background                                                                                                                     |                           |
|                                | 1xxx100xxx                                                     | Green button background                                                                                                                    |                           |
|                                | 1xxx101xxx                                                     | Yellow button background                                                                                                                   |                           |
|                                | 1xxx110xxx                                                     | Light red button background                                                                                                                |                           |
|                                | 1xxx111xxx                                                     | Light green button background                                                                                                              |                           |
|                                | 1xxxxxx000                                                     | Black text label                                                                                                                           |                           |
|                                | 1xxxxxx001                                                     | White text label                                                                                                                           |                           |
|                                | 1xxxxxx010                                                     | Red text label                                                                                                                             |                           |
|                                | 1xxxxxx011                                                     | Blue text label                                                                                                                            |                           |
|                                | 1xxxxxx100                                                     | Green text label                                                                                                                           |                           |
|                                | 1xxxxxx101                                                     | Yellow text label                                                                                                                          |                           |
|                                | 1xxxxxx110                                                     | Light red text label                                                                                                                       |                           |
|                                | 1xxxxxx111                                                     | Light green text label                                                                                                                     |                           |



### 8.1.19 M\_COLOUR\_IS

|                                |                                                                                                                                        |                      |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Colour for intervention speed                                                                                                          |                      |                           |
| <b>Description</b>             | Colour of intervention speed indication for speed supervision<br>Definition of these colours is identical to the one provided in [10]. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                   | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 3 bits                         |                                                                                                                                        |                      |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                      | White                |                           |
|                                | 1                                                                                                                                      | Grey                 |                           |
|                                | 2                                                                                                                                      | Medium grey          |                           |
|                                | 3                                                                                                                                      | Dark grey            |                           |
|                                | 4                                                                                                                                      | Yellow               |                           |
|                                | 5                                                                                                                                      | Orange               |                           |
|                                | 6                                                                                                                                      | Red                  |                           |
|                                | 7                                                                                                                                      | Reserved             |                           |

### 8.1.20 M\_COLOUR\_PS

|                                |                                                                                                                                     |                      |                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Colour for permitted speed                                                                                                          |                      |                           |
| <b>Description</b>             | Colour of permitted speed indication for speed supervision<br>Definition of these colours is identical to the one provided in [10]. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 3 bits                         |                                                                                                                                     |                      |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                   | White                |                           |
|                                | 1                                                                                                                                   | Grey                 |                           |
|                                | 2                                                                                                                                   | Medium grey          |                           |
|                                | 3                                                                                                                                   | Dark grey            |                           |
|                                | 4                                                                                                                                   | Yellow               |                           |
|                                | 5                                                                                                                                   | Orange               |                           |
|                                | 6                                                                                                                                   | Red                  |                           |
|                                | 7                                                                                                                                   | Reserved             |                           |



### 8.1.21 M\_COLOUR\_RS

|                                |                                                                                                                                   |                      |                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Colour for release speed                                                                                                          |                      |                           |
| <b>Description</b>             | Colour of release speed indication for speed supervision<br>Definition of these colours is identical to the one provided in [10]. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                              | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 3 bits                         |                                                                                                                                   |                      |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                 | White                |                           |
|                                | 1                                                                                                                                 | Grey                 |                           |
|                                | 2                                                                                                                                 | Medium grey          |                           |
|                                | 3                                                                                                                                 | Dark grey            |                           |
|                                | 4                                                                                                                                 | Yellow               |                           |
|                                | 5                                                                                                                                 | Orange               |                           |
|                                | 6                                                                                                                                 | Red                  |                           |
|                                | 7                                                                                                                                 | Reserved             |                           |

### 8.1.22 M\_COLOUR\_SP

|                                |                                                                                                                        |                      |                           |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Colour for speed pointer                                                                                               |                      |                           |
| <b>Description</b>             | Colour of speed pointer for speed supervision<br>Definition of these colours is identical to the one provided in [10]. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                   | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 3 bits                         |                                                                                                                        |                      |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                      | White                |                           |
|                                | 1                                                                                                                      | Grey                 |                           |
|                                | 2                                                                                                                      | Medium grey          |                           |
|                                | 3                                                                                                                      | Dark grey            |                           |
|                                | 4                                                                                                                      | Yellow               |                           |
|                                | 5                                                                                                                      | Orange               |                           |
|                                | 6                                                                                                                      | Red                  |                           |
|                                | 7                                                                                                                      | Reserved             |                           |

### 8.1.23 M\_COLOUR\_TS

|                                |                                                                                                                                  |                      |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Colour for target speed                                                                                                          |                      |                           |
| <b>Description</b>             | Colour of target speed indication for speed supervision<br>Definition of these colours is identical to the one provided in [10]. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                             | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 3 bits                         |                                                                                                                                  |                      |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                | White                |                           |
|                                | 1                                                                                                                                | Grey                 |                           |
|                                | 2                                                                                                                                | Medium grey          |                           |
|                                | 3                                                                                                                                | Dark grey            |                           |
|                                | 4                                                                                                                                | Yellow               |                           |
|                                | 5                                                                                                                                | Orange               |                           |
|                                | 6                                                                                                                                | Red                  |                           |
|                                | 7                                                                                                                                | Reserved             |                           |

### 8.1.24 M\_DATA

|                                |                                       |                      |                           |
|--------------------------------|---------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Data                                  |                      |                           |
| <b>Description</b>             | Data to be transmitted transparently. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                  | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                     | 255                  |                           |
| <b>Special/Reserved Values</b> |                                       |                      |                           |

### 8.1.25 M\_DATAENTRYFLAG

|                                |                                                                                                                                                                        |                      |                           |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Specific NTC Data Entry flag                                                                                                                                           |                      |                           |
| <b>Description</b>             | It is sent before sending the first packet of ETCS Train Data, with the value START, and after finishing or aborting the Specific NTC Data Entry, with the value STOP. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                   | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 1 bit                          |                                                                                                                                                                        |                      |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                                                      | Stop                 |                           |
|                                | 1                                                                                                                                                                      | Start                |                           |



### 8.1.26 M\_FREQ

|                                |                             |                      |                                                 |
|--------------------------------|-----------------------------|----------------------|-------------------------------------------------|
| <b>Name</b>                    | Sound segment frequency     |                      |                                                 |
| <b>Description</b>             | Frequency of sound segment. |                      |                                                 |
| <b>Length of variable</b>      | <b>Minimum Value</b>        | <b>Maximum Value</b> | <b>Resolution/formula</b>                       |
| 8 bits                         | 128 Hz                      | 8160 Hz              | $F = M\_FREQ * 32 \text{ Hz}$ Resolution: 32 Hz |
| <b>Special/Reserved Values</b> | 0                           | Silence              |                                                 |
|                                | 1                           | Spare                |                                                 |
|                                | 2                           | Spare                |                                                 |
|                                | 3                           | Spare                |                                                 |



## 8.1.27 M\_IND\_ATTRIB

|                                |                                                                   |                                                                                                                                                     |                           |
|--------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Attributes for indicators.                                        |                                                                                                                                                     |                           |
| <b>Description</b>             | Specifies flashing mode, text & background colour for indicators. |                                                                                                                                                     |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                              | <b>Maximum Value</b>                                                                                                                                | <b>Resolution/formula</b> |
| 10 bits                        |                                                                   |                                                                                                                                                     |                           |
| <b>Special/Reserved Values</b> | 0xxxxxxx                                                          | Not displayed (Note: This allow to "removing" an indicator from display.)                                                                           |                           |
|                                | 10xxxxxxx                                                         | Indicator Normal flashing (only relevant in case "indicator slow flashing" or "Indicator Fast flashing" is transmitted in the same variable).       |                           |
|                                | 11xxxxxxx                                                         | Indicator Counterphase flashing (only relevant in case "indicator slow flashing" or "Indicator Fast flashing" is transmitted in the same variable). |                           |
|                                | 1x00xxxxx                                                         | Indicator No flashing                                                                                                                               |                           |
|                                | 1x01xxxxx                                                         | Indicator Slow flashing                                                                                                                             |                           |
|                                | 1x10xxxxx                                                         | Indicator Fast flashing                                                                                                                             |                           |
|                                | 1x11xxxxx                                                         | Reserved                                                                                                                                            |                           |
|                                | 1xxx000xxx                                                        | Dark blue indicator background                                                                                                                      |                           |
|                                | 1xxx001xxx                                                        | White indicator background                                                                                                                          |                           |
|                                | 1xxx010xxx                                                        | Red indicator background                                                                                                                            |                           |
|                                | 1xxx011xxx                                                        | Blue indicator background                                                                                                                           |                           |
|                                | 1xxx100xxx                                                        | Green indicator background                                                                                                                          |                           |
|                                | 1xxx101xxx                                                        | Yellow indicator background                                                                                                                         |                           |
|                                | 1xxx110xxx                                                        | Light red indicator background                                                                                                                      |                           |
|                                | 1xxx111xxx                                                        | Light green indicator background                                                                                                                    |                           |
|                                | 1xxxxxx000                                                        | Black text label                                                                                                                                    |                           |
|                                | 1xxxxxx001                                                        | White text label                                                                                                                                    |                           |
|                                | 1xxxxxx010                                                        | Red text label                                                                                                                                      |                           |
|                                | 1xxxxxx011                                                        | Blue text label                                                                                                                                     |                           |
|                                | 1xxxxxx100                                                        | Green text label                                                                                                                                    |                           |
|                                | 1xxxxxx101                                                        | Yellow text label                                                                                                                                   |                           |
|                                | 1xxxxxx110                                                        | Light red text label                                                                                                                                |                           |
|                                | 1xxxxxx111                                                        | Light green text label                                                                                                                              |                           |

### 8.1.28 M\_MODESTM

|                                |                                                                                            |                      |                           |
|--------------------------------|--------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | On-board operating mode                                                                    |                      |                           |
| <b>Description</b>             | ETCS mode<br>Different from M_MODE defined in [1] by the addition of Passive Shunting mode |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                       | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 4 bits                         |                                                                                            |                      |                           |
| <b>Special/Reserved Values</b> | 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                                                                                         | Limited Supervision  |                           |
|                                | 13                                                                                         | National System      |                           |
|                                | 14                                                                                         | Reversing            |                           |
|                                | 15                                                                                         | Passive Shunting     |                           |

### 8.1.29 M\_TESTOK

|                                |                                      |                        |                           |
|--------------------------------|--------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | STM Test result                      |                        |                           |
| <b>Description</b>             | Indicates the result of the STM Test |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                 | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 1 bit                          |                                      |                        |                           |
| <b>Special/Reserved Values</b> | 0                                    | Test(s) not successful |                           |
|                                | 1                                    | Test(s) successful     |                           |



### 8.1.30 M\_TICAB\_STATUS

|                                |                                                                                                                                         |                                                            |                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Cab status on Train Interface                                                                                                           |                                                            |                           |
| <b>Description</b>             | Information defining the active cab.<br>For single cab locos with only one desk, this status provides the active virtual cab (see [3]). |                                                            |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                    | <b>Maximum Value</b>                                       | <b>Resolution/formula</b> |
| 2 bits                         |                                                                                                                                         |                                                            |                           |
| <b>Special/Reserved Values</b> | 00                                                                                                                                      | Fail state (information not received from Train Interface) |                           |
|                                | 01                                                                                                                                      | Cab A active                                               |                           |
|                                | 10                                                                                                                                      | Cab B active                                               |                           |
|                                | 11                                                                                                                                      | No cab active                                              |                           |

### 8.1.31 M\_TIDIR\_STATUS

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

### 8.1.32 M\_TIEDCBEB\_CMD

|                                |                                                                                                         |                                                               |                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Train interface for Eddy Current Brake for Emergency Brake command                                      |                                                               |                           |
| <b>Description</b>             | Information telling if the eddy current brake system use is allowed for Emergency Brake command or not. |                                                               |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                    | <b>Maximum Value</b>                                          | <b>Resolution/formula</b> |
| 2 bits                         |                                                                                                         |                                                               |                           |
| <b>Special/Reserved Values</b> | 00                                                                                                      | Reserved                                                      |                           |
|                                | 01                                                                                                      | Allow eddy current brake for Emergency Brake command (on)     |                           |
|                                | 10                                                                                                      | Suppress eddy current brake for Emergency Brake command (off) |                           |
|                                | 11                                                                                                      | No command from STM->Keep current output status               |                           |



### 8.1.33 M\_TIEDCBSB\_CMD

|                                |                                                                                                       |                                                             |                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Train interface for Eddy Current Brake for Service Brake command                                      |                                                             |                           |
| <b>Description</b>             | Information telling if the eddy current brake system use is allowed for Service Brake command or not. |                                                             |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                  | <b>Maximum Value</b>                                        | <b>Resolution/formula</b> |
| 2 bits                         |                                                                                                       |                                                             |                           |
| <b>Special/Reserved Values</b> | 00                                                                                                    | Reserved                                                    |                           |
|                                | 01                                                                                                    | Allow eddy current brake for Service Brake command (on)     |                           |
|                                | 10                                                                                                    | Suppress eddy current brake for Service Brake command (off) |                           |
|                                | 11                                                                                                    | No command from STM->Keep current output status             |                           |

### 8.1.34 M\_TIEDCBEB\_CMD\_AVAIL

|                                |                                                                                                               |                                                                        |                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Train interface for Eddy Current Brake for Emergency Brake command availability                               |                                                                        |                           |
| <b>Description</b>             | Boolean information telling if the eddy current brake system for Emergency Brake command is available or not. |                                                                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                          | <b>Maximum Value</b>                                                   | <b>Resolution/formula</b> |
| 1 bit                          |                                                                                                               |                                                                        |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                             | Eddy current brake system for Emergency Brake command is not available |                           |
|                                | 1                                                                                                             | Eddy current brake system for Emergency Brake command is available     |                           |

### 8.1.35 M\_TIEDCBSB\_CMD\_AVAIL

|                                |                                                                                                             |                                                                      |                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Train interface for Eddy Current Brake for Service Brake command availability                               |                                                                      |                           |
| <b>Description</b>             | Boolean information telling if the eddy current brake system for Service Brake command is available or not. |                                                                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                        | <b>Maximum Value</b>                                                 | <b>Resolution/formula</b> |
| 1 bit                          |                                                                                                             |                                                                      |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                           | Eddy current brake system for Service Brake command is not available |                           |
|                                | 1                                                                                                           | Eddy current brake system for Service Brake command is available     |                           |

### 8.1.36 M\_TIFLAP\_CMD

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



### 8.1.37 M\_TIFLAP\_CMD\_AVAIL

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

### 8.1.38 M\_TIMS\_CMD

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

### 8.1.39 M\_TIMS\_CMD\_AVAIL

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

### 8.1.40 M\_TIMSH\_CMD

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



#### 8.1.41 M\_TIMSH\_CMD\_AVAIL

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

#### 8.1.42 M\_TIPANTO\_CMD

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

#### 8.1.43 M\_TIPANTO\_CMD\_AVAIL

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

#### 8.1.44 M\_TIRB\_CMD

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



#### 8.1.45 M\_TIRB\_CMD\_AVAIL

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

#### 8.1.46 M\_TITR\_C\_CMD

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

#### 8.1.47 M\_TITR\_C\_CMD\_AVAIL

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

#### 8.1.48 M\_TITR\_STATUS

|                                |                                                          |                                                             |                           |
|--------------------------------|----------------------------------------------------------|-------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Traction status on Train Interface                       |                                                             |                           |
| <b>Description</b>             | Information defining if the traction power is on or off. |                                                             |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                     | <b>Maximum Value</b>                                        | <b>Resolution/formula</b> |
| 2 bits                         |                                                          |                                                             |                           |
| <b>Special/Reserved Values</b> | 00                                                       | Fail status (information not received from Train Interface) |                           |
|                                | 01                                                       | Traction off                                                |                           |
|                                | 10                                                       | Traction on                                                 |                           |
|                                | 11                                                       | Spare                                                       |                           |



### 8.1.49 M\_TRAINTYPE

|                                |                                              |                      |                           |
|--------------------------------|----------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Train type                                   |                      |                           |
| <b>Description</b>             | It defines type of train as defined in [10]. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                         | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                            | 254                  |                           |
| <b>Special/Reserved Values</b> | 255                                          | Undefined            |                           |

### 8.1.50 M\_XATTRIBUTE

|                                |                                                                             |                                                                                                                       |                           |
|--------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Text message attribute                                                      |                                                                                                                       |                           |
| <b>Description</b>             | Specifies group, flashing mode, text & background colour for text messages. |                                                                                                                       |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                        | <b>Maximum Value</b>                                                                                                  | <b>Resolution/formula</b> |
| 10 bits                        |                                                                             |                                                                                                                       |                           |
| <b>Special/Reserved Values</b> | 0xxxxxxxx                                                                   | Text message shall be displayed in group 1                                                                            |                           |
|                                | 1xxxxxxxx                                                                   | Text message shall be displayed in group 2                                                                            |                           |
|                                | x0xxxxxxxx                                                                  | Normal flashing (only relevant in case "slow flashing" or "Fast flashing" is transmitted in the same variable).       |                           |
|                                | x1xxxxxxxx                                                                  | Counterphase flashing (only relevant in case "slow flashing" or "Fast flashing" is transmitted in the same variable). |                           |
|                                | xx00xxxxx                                                                   | No flashing                                                                                                           |                           |
|                                | xx01xxxxx                                                                   | Slow flashing                                                                                                         |                           |
|                                | xx10xxxxx                                                                   | Fast flashing                                                                                                         |                           |
|                                | xx11xxxxx                                                                   | Reserved                                                                                                              |                           |
|                                | xxx000xxx                                                                   | Dark blue text background                                                                                             |                           |
|                                | xxx001xxx                                                                   | White text background                                                                                                 |                           |
|                                | xxx010xxx                                                                   | Red text background                                                                                                   |                           |
|                                | xxx011xxx                                                                   | Blue text background                                                                                                  |                           |
|                                | xxx100xxx                                                                   | Green text background                                                                                                 |                           |
|                                | xxx101xxx                                                                   | Yellow text background                                                                                                |                           |
|                                | xxx110xxx                                                                   | Light red text background                                                                                             |                           |
|                                | xxx111xxx                                                                   | 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                                                                                                      |                           |



### 8.1.51 N\_VERMAJOR

|                                |                                  |                      |                           |
|--------------------------------|----------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | FFFIS STM version major number X |                      |                           |
| <b>Description</b>             |                                  |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>             | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                | 255                  | Integer                   |
| <b>Special/Reserved Values</b> |                                  |                      |                           |

### 8.1.52 N\_VERMINOR

|                                |                                  |                      |                           |
|--------------------------------|----------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | FFFIS STM version minor number Y |                      |                           |
| <b>Description</b>             |                                  |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>             | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                | 255                  | Integer                   |
| <b>Special/Reserved Values</b> |                                  |                      |                           |

### 8.1.53 N\_ADDR\_BI

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

### 8.1.54 N\_ADDR\_DMI\_CHANNEL1

|                                |                                                          |                        |                           |
|--------------------------------|----------------------------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | Address of DMI channel 1                                 |                        |                           |
| <b>Description</b>             | Declares at what address the DMI channel 1 is allocated. |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                     | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 7 bits                         | 0                                                        | 19                     |                           |
| <b>Special/Reserved Values</b> | 2                                                        | STM Control Function   |                           |
|                                | 20-126                                                   | Reserved               |                           |
|                                | 127                                                      | Reserved for multicast |                           |



### 8.1.55 N\_ADDR\_DMI\_CHANNEL2

|                                |                                                          |                        |                           |
|--------------------------------|----------------------------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | Address of DMI channel 2                                 |                        |                           |
| <b>Description</b>             | Declares at what address the DMI channel 2 is allocated. |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                     | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 7 bits                         | 0                                                        | 19                     |                           |
| <b>Special/Reserved Values</b> | 2                                                        | STM Control Function   |                           |
|                                | 20-126                                                   | Reserved               |                           |
|                                | 127                                                      | Reserved for multicast |                           |

### 8.1.56 N\_ADDR\_DMI\_CHANNEL3

|                                |                                                          |                        |                           |
|--------------------------------|----------------------------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | Address of DMI channel 3                                 |                        |                           |
| <b>Description</b>             | Declares at what address the DMI channel 3 is allocated. |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                     | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 7 bits                         | 0                                                        | 19                     |                           |
| <b>Special/Reserved Values</b> | 2                                                        | STM Control Function   |                           |
|                                | 20-126                                                   | Reserved               |                           |
|                                | 127                                                      | Reserved for multicast |                           |

### 8.1.57 N\_ADDR\_DMI\_CHANNEL4

|                                |                                                          |                        |                           |
|--------------------------------|----------------------------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | Address of DMI channel 4                                 |                        |                           |
| <b>Description</b>             | Declares at what address the DMI channel 4 is allocated. |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                     | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 7 bits                         | 0                                                        | 19                     |                           |
| <b>Special/Reserved Values</b> | 2                                                        | STM Control Function   |                           |
|                                | 20-126                                                   | Reserved               |                           |
|                                | 127                                                      | Reserved for multicast |                           |

### 8.1.58 N\_ADDR\_JD

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



### 8.1.59 N\_ADDR\_ODO

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

### 8.1.60 N\_ADDR\_TI

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

### 8.1.61 N\_LITER

|                                |                                                                                |                                                                        |                           |
|--------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Number of iterations of a data set following this variable in a packet         |                                                                        |                           |
| <b>Description</b>             | If 0 then no data set is following. Two nested levels of iterations can exist. |                                                                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                           | <b>Maximum Value</b>                                                   | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                              | As allowed by maximum length of application data but always under 255. | Integers                  |
| <b>Special/Reserved Values</b> |                                                                                |                                                                        |                           |

### 8.1.62 NID\_ANTENNA\_BT

|                                |                                                                          |                      |                           |
|--------------------------------|--------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Valid Antenna/BTM ID                                                     |                      |                           |
| <b>Description</b>             | Identifier of the Antenna/BTM that is currently active on Interface 'K'. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                     | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 2 bits                         |                                                                          |                      |                           |
| <b>Special/Reserved Values</b> | 00                                                                       | Antenna 1            |                           |
|                                | 01                                                                       | Antenna 2            |                           |
|                                | 10                                                                       | Antenna 3            |                           |
|                                | 11                                                                       | Antenna 4            |                           |



### 8.1.63 NID\_BUTPOS

|                                |                                                                                                                                                                                                                                                                                                                                          |                                            |                           |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------|
| <b>Name</b>                    | Button Position Identifier                                                                                                                                                                                                                                                                                                               |                                            |                           |
| <b>Description</b>             | <p>Specifies the position to display the button on DMI.</p> <p>For the unified DMI service special values are reserved for the available areas of the ETCS DMI layout specified in [10].</p> <p>For the customisable DMI service the available button position identifiers are specified in the DMI layout configuration of the STM.</p> |                                            |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                                                                                                     | <b>Maximum Value</b>                       | <b>Resolution/formula</b> |
| 5 bits                         | 1                                                                                                                                                                                                                                                                                                                                        | 24                                         |                           |
| <b>Special/Reserved Values</b> | Button areas used for unified DMI service                                                                                                                                                                                                                                                                                                |                                            |                           |
|                                |                                                                                                                                                                                                                                                                                                                                          | Soft key technology                        | Touch screen technology   |
|                                | 1                                                                                                                                                                                                                                                                                                                                        | F8                                         | F8                        |
|                                | 2                                                                                                                                                                                                                                                                                                                                        | F9                                         | F9                        |
|                                | 3                                                                                                                                                                                                                                                                                                                                        | F10                                        | C2                        |
|                                | 4                                                                                                                                                                                                                                                                                                                                        | H2                                         | C3                        |
|                                | 5                                                                                                                                                                                                                                                                                                                                        | H3                                         | C4                        |
|                                | 6                                                                                                                                                                                                                                                                                                                                        | H4                                         | C5                        |
|                                | 7                                                                                                                                                                                                                                                                                                                                        | Reserved                                   | C6                        |
|                                | 8                                                                                                                                                                                                                                                                                                                                        | Reserved                                   | G1                        |
|                                | 9                                                                                                                                                                                                                                                                                                                                        | Reserved                                   | G2                        |
|                                | 10                                                                                                                                                                                                                                                                                                                                       | Reserved                                   | G3                        |
|                                | 11                                                                                                                                                                                                                                                                                                                                       | Reserved                                   | G4                        |
|                                | 12                                                                                                                                                                                                                                                                                                                                       | Reserved                                   | G5                        |
|                                | 13                                                                                                                                                                                                                                                                                                                                       | Reserved                                   | G6                        |
|                                | 14                                                                                                                                                                                                                                                                                                                                       | Reserved                                   | G7                        |
|                                | 15                                                                                                                                                                                                                                                                                                                                       | Reserved                                   | G8                        |
|                                | 16                                                                                                                                                                                                                                                                                                                                       | Reserved                                   | G9                        |
|                                | 17                                                                                                                                                                                                                                                                                                                                       | Reserved                                   | G10                       |
|                                | 18-24                                                                                                                                                                                                                                                                                                                                    | Reserved, when unified DMI service is used |                           |
|                                | 25-31                                                                                                                                                                                                                                                                                                                                    | Reserved independent of used DMI service   |                           |

### 8.1.64 NID\_BUTTON

|                                |                                                                                                                                                                                                                                                                                               |                      |                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Button Identifier                                                                                                                                                                                                                                                                             |                      |                           |
| <b>Description</b>             | <p>The button identifier is used to change the state of buttons and to move or remove them. The button identifier is also used to transmit the buttons events to the STM. If the customisable DMI service is used, it is also used to retrieve the configurable properties of the button.</p> |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                                                          | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                                                                                                                                                                                                                                             | 255                  |                           |
| <b>Special/Reserved Values</b> |                                                                                                                                                                                                                                                                                               |                      |                           |



### 8.1.65 NID\_DATA

|                                |                                                                                |                      |                           |
|--------------------------------|--------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Identifier of a Specific NTC Data                                              |                      |                           |
| <b>Description</b>             | One value of this variable represents a Specific NTC Data required by the STM. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                           | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                              | 255                  |                           |
| <b>Special/Reserved Values</b> |                                                                                |                      |                           |

### 8.1.66 NID\_DMICHANNEL

|                                |                                                |                      |                           |
|--------------------------------|------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | DMI channel Identifier                         |                      |                           |
| <b>Description</b>             | Give the identifier of the active DMI channel. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                           | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 3 bits                         |                                                |                      |                           |
| <b>Special/Reserved Values</b> | 0                                              | No DMI channel       |                           |
|                                | 1                                              | DMI channel 1        |                           |
|                                | 2                                              | DMI channel 2        |                           |
|                                | 3                                              | DMI channel 3        |                           |
|                                | 4                                              | DMI channel 4        |                           |
|                                | 5-7                                            | Reserved             |                           |



## 8.1.67 NID\_DRV\_LANG

|                                |                                                                                                                                         |                      |                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Driver language Identifier                                                                                                              |                      |                           |
| <b>Description</b>             | Driver Language Selection<br>Defined according to [8]<br>This table includes a subset of the language identifiers included in the norm. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                    | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 16 bits (2 characters)         |                                                                                                                                         |                      |                           |
| <b>Special/Reserved Values</b> | 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           |                           |



### 8.1.68 NID\_ICON

|                                |                                                                                  |                      |                           |
|--------------------------------|----------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Icon Identifier                                                                  |                      |                           |
| <b>Description</b>             | Specifies bitmap to use for display of icon in case of customisable DMI service. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                             | <b>Maximum Value</b> | <b>Resolution/Formula</b> |
| 8 bits                         | 1                                                                                | 255                  |                           |
| <b>Special/Reserved Values</b> | 0                                                                                | No icon referenced   |                           |

### 8.1.69 NID\_INDICATOR

|                                |                                                                                                                                                                                                                       |                      |                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Indicator Identifier                                                                                                                                                                                                  |                      |                           |
| <b>Description</b>             | The indicator identifier is used to change the state of the indicators and to move or remove them. If the customisable DMI service is used, it is also used to retrieve the configurable properties of the indicator. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                  | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                                                                                                                                                                     | 255                  |                           |
| <b>Special/Reserved Values</b> |                                                                                                                                                                                                                       |                      |                           |

## 8.1.70 NID\_INDPOS

|                                |                                                                                                                                                                                                                                                                                                                                                              |                                            |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------|
| <b>Name</b>                    | Indicator Position Identifier                                                                                                                                                                                                                                                                                                                                |                                            |                           |
| <b>Description</b>             | <p>Specifies the appropriate position to display the indicator on DMI.</p> <p>For the unified DMI service, special values are reserved for the available areas of the ETCS DMI layout specified in [10].</p> <p>For the customisable DMI service, the available indicator position identifiers are specified in the DMI layout configuration of the STM.</p> |                                            |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                                                                                                                         | <b>Maximum Value</b>                       | <b>Resolution/formula</b> |
| 5 bits                         | 1                                                                                                                                                                                                                                                                                                                                                            | 24                                         |                           |
| <b>Special/Reserved Values</b> | Indicator areas used for unified DMI service                                                                                                                                                                                                                                                                                                                 |                                            |                           |
|                                | 1                                                                                                                                                                                                                                                                                                                                                            | B3                                         |                           |
|                                | 2                                                                                                                                                                                                                                                                                                                                                            | B4                                         |                           |
|                                | 3                                                                                                                                                                                                                                                                                                                                                            | B5                                         |                           |
|                                | 4                                                                                                                                                                                                                                                                                                                                                            | H1 (Reserved in touch screen technology)   |                           |
|                                | 5                                                                                                                                                                                                                                                                                                                                                            | C2                                         |                           |
|                                | 6                                                                                                                                                                                                                                                                                                                                                            | C3                                         |                           |
|                                | 7                                                                                                                                                                                                                                                                                                                                                            | C4                                         |                           |
|                                | 8                                                                                                                                                                                                                                                                                                                                                            | C5                                         |                           |
|                                | 9                                                                                                                                                                                                                                                                                                                                                            | C6                                         |                           |
|                                | 10                                                                                                                                                                                                                                                                                                                                                           | G1                                         |                           |
|                                | 11                                                                                                                                                                                                                                                                                                                                                           | G2                                         |                           |
|                                | 12                                                                                                                                                                                                                                                                                                                                                           | G3                                         |                           |
|                                | 13                                                                                                                                                                                                                                                                                                                                                           | G4                                         |                           |
|                                | 14                                                                                                                                                                                                                                                                                                                                                           | G5                                         |                           |
|                                | 15                                                                                                                                                                                                                                                                                                                                                           | G6                                         |                           |
|                                | 16                                                                                                                                                                                                                                                                                                                                                           | G7                                         |                           |
|                                | 17                                                                                                                                                                                                                                                                                                                                                           | G8                                         |                           |
|                                | 18                                                                                                                                                                                                                                                                                                                                                           | G9                                         |                           |
|                                | 19                                                                                                                                                                                                                                                                                                                                                           | G10                                        |                           |
|                                | 20-24                                                                                                                                                                                                                                                                                                                                                        | Reserved, when unified DMI service is used |                           |
|                                | 25-31                                                                                                                                                                                                                                                                                                                                                        | Reserved independent of used DMI service   |                           |



### 8.1.70.1 NID\_OPERATIONAL\_STM

|                                |                                                                                                                                                                                                                                                                                                                                      |                                                                              |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Train Running Number                                                                                                                                                                                                                                                                                                                 |                                                                              |                           |
| <b>Description</b>             | This is the operational train running number. The NID_OPERATIONAL_STM consists of up to 8 digits which are entered left adjusted into the data field, the leftmost digit is the digit to be entered first. In case the NID_OPERATIONAL_STM is shorter than 8 digits, the remaining space is to be filled with special character "F". |                                                                              |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                                                                                                 | <b>Maximum Value</b>                                                         | <b>Resolution/formula</b> |
| 32 bits                        | 0                                                                                                                                                                                                                                                                                                                                    | 9999 9999                                                                    | Binary Coded Decimal      |
| <b>Special/Reserved Values</b> | For each digit :                                                                                                                                                                                                                                                                                                                     |                                                                              |                           |
|                                | Values A – E                                                                                                                                                                                                                                                                                                                         | Spare                                                                        |                           |
|                                | F                                                                                                                                                                                                                                                                                                                                    | Use value F for digit to indicate no digit (if number shorter than 8 digits) |                           |
|                                | FFFF FFFF                                                                                                                                                                                                                                                                                                                            | Unknown                                                                      |                           |

### 8.1.71 NID\_PACKET

|                                |                                                                                                    |                                        |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------|---------------------------|
| <b>Name</b>                    | Packet Identifier                                                                                  |                                        |                           |
| <b>Description</b>             | This is used in each packet, allowing the receiving equipment to identify the data, which follows. |                                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                               | <b>Maximum Value</b>                   | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                                                  | 199                                    | Numbers                   |
| <b>Special/Reserved Values</b> | 200-255                                                                                            | Non standard packet, supplier specific |                           |

### 8.1.72 NID\_SOUND

|                                |                                                                                                                                                |                      |                           |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Sound Identifier                                                                                                                               |                      |                           |
| <b>Description</b>             | Specifies wave file to use for playing sound in case of customisable DMI service.<br>In case of unified DMI service only used to stop a sound. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                           | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 1                                                                                                                                              | 255                  |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                              | No Sound identifier  |                           |

### 8.1.73 NID\_STM

|                                |                                                                                                                                                                                                  |                        |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | STM identity                                                                                                                                                                                     |                        |                           |
| <b>Description</b>             | Each value of this variable represents the identifier of a Specific Transmission Module.<br>Values are equal to NID_NTC values, allocated according to the rule defined in [4], chapter 4.1.1.1. |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                             | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                                                                                                                                                | 254                    |                           |
| <b>Special/Reserved Values</b> | 255                                                                                                                                                                                              | Reserved for multicast |                           |



### 8.1.74 NID\_STMSTATE

|                                |                                    |                                         |                           |
|--------------------------------|------------------------------------|-----------------------------------------|---------------------------|
| <b>Name</b>                    | Current STM state                  |                                         |                           |
| <b>Description</b>             | Tell the current state of the STM. |                                         |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>               | <b>Maximum Value</b>                    | <b>Resolution/formula</b> |
| 4 bits                         |                                    |                                         |                           |
| <b>Special/Reserved Values</b> | 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)                            |                           |
|                                | 9-15                               | Spare values                            |                           |

### 8.1.75 NID\_STMSTATEORDER

|                                |                                                       |                                         |                           |
|--------------------------------|-------------------------------------------------------|-----------------------------------------|---------------------------|
| <b>Name</b>                    | STM state order                                       |                                         |                           |
| <b>Description</b>             | Tell the STM state ordered by the ERTMS/ETCS on-board |                                         |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                  | <b>Maximum Value</b>                    | <b>Resolution/formula</b> |
| 4 bits                         |                                                       |                                         |                           |
| <b>Special/Reserved Values</b> | 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)                            |                           |
|                                | 9-15                                                  | Spare values                            |                           |



### 8.1.76 NID\_STMSTATEREQUEST

|                                |                                                                   |                                         |                           |
|--------------------------------|-------------------------------------------------------------------|-----------------------------------------|---------------------------|
| <b>Name</b>                    | STM state request                                                 |                                         |                           |
| <b>Description</b>             | State requested by the STM, in which the STM is intended to pass. |                                         |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                              | <b>Maximum Value</b>                    | <b>Resolution/formula</b> |
| 4 bits                         |                                                                   |                                         |                           |
| <b>Special/Reserved Values</b> | 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) |                           |
|                                | 9-15                                                              | Spare values                            |                           |

### 8.1.77 NID\_TEST

|                                |                                                                                                  |                      |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | STM Test Identity                                                                                |                      |                           |
| <b>Description</b>             | Enables to identify the type of test that the STM requests.<br>Its meaning is supplier-specific. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                             | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                                                | 255                  |                           |
| <b>Special/Reserved Values</b> |                                                                                                  |                      |                           |

### 8.1.78 NID\_XMESSAGE

|                                |                                                                             |                      |                           |
|--------------------------------|-----------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Text message Identifier                                                     |                      |                           |
| <b>Description</b>             | Text message Identifier for deletion and acknowledgement of a text message. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                        | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                           | 255                  | Integer                   |
| <b>Special/Reserved Values</b> |                                                                             |                      |                           |



### 8.1.79 Q\_ACK

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

### 8.1.80 Q\_ADDR\_BI

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

### 8.1.81 Q\_ADDR\_DMI\_CHANNEL1

|                                |                                                                                                          |                      |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Safety level of DMI channel 1 connection                                                                 |                      |                           |
| <b>Description</b>             | Declares the highest safety level for the connection to the function at the address N_ADDR_DMI_CHANNEL1. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                     | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 2 bits                         |                                                                                                          |                      |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                        | SL0                  |                           |
|                                | 1                                                                                                        | SL2                  |                           |
|                                | 2                                                                                                        | SL4                  |                           |
|                                | 3                                                                                                        | Reserved             |                           |



### 8.1.82 Q\_ADDR\_DMI\_CHANNEL2

|                                |                                                                                                                                              |                        |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | Safety level/Availability of DMI channel 2 connection                                                                                        |                        |                           |
| <b>Description</b>             | Declares the highest safety level for the connection to the function at the address N_ADDR_DMI_CHANNEL2 or if the function is not available. |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                         | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 2 bits                         |                                                                                                                                              |                        |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                            | SL0                    |                           |
|                                | 1                                                                                                                                            | SL2                    |                           |
|                                | 2                                                                                                                                            | SL4                    |                           |
|                                | 3                                                                                                                                            | Function not available |                           |

### 8.1.83 Q\_ADDR\_DMI\_CHANNEL3

|                                |                                                                                                                                              |                        |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | Safety level/Availability of DMI channel 3 connection                                                                                        |                        |                           |
| <b>Description</b>             | Declares the highest safety level for the connection to the function at the address N_ADDR_DMI_CHANNEL3 or if the function is not available. |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                         | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 2 bits                         |                                                                                                                                              |                        |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                            | SL0                    |                           |
|                                | 1                                                                                                                                            | SL2                    |                           |
|                                | 2                                                                                                                                            | SL4                    |                           |
|                                | 3                                                                                                                                            | Function not available |                           |

### 8.1.84 Q\_ADDR\_DMI\_CHANNEL4

|                                |                                                                                                                                              |                        |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | Safety level/Availability of DMI channel 4 connection                                                                                        |                        |                           |
| <b>Description</b>             | Declares the highest safety level for the connection to the function at the address N_ADDR_DMI_CHANNEL4 or if the function is not available. |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                         | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 2 bits                         |                                                                                                                                              |                        |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                            | SL0                    |                           |
|                                | 1                                                                                                                                            | SL2                    |                           |
|                                | 2                                                                                                                                            | SL4                    |                           |
|                                | 3                                                                                                                                            | Function not available |                           |



### 8.1.85 Q\_ADDR\_JD

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

### 8.1.86 Q\_ADDR\_ODO

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

### 8.1.87 Q\_ADDR\_TI

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



### 8.1.88 Q\_ANTN\_BTМ\_ACTIVE

|                                |                                                                |                        |                           |
|--------------------------------|----------------------------------------------------------------|------------------------|---------------------------|
| <b>Name</b>                    | Qualifier indicating if there is an active Antenna/BTM         |                        |                           |
| <b>Description</b>             | This is dynamic information depending on e.g. cabin selection. |                        |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                           | <b>Maximum Value</b>   | <b>Resolution/formula</b> |
| 1 bit                          |                                                                |                        |                           |
| <b>Special/Reserved Values</b> | 0                                                              | No Antenna/BTM active  |                           |
|                                | 1                                                              | One Antenna/BTM active |                           |

### 8.1.89 Q\_BMM\_ANNOUNCED

|                                |                                                                           |                                             |                           |
|--------------------------------|---------------------------------------------------------------------------|---------------------------------------------|---------------------------|
| <b>Name</b>                    | Big Metal Mass announced                                                  |                                             |                           |
| <b>Description</b>             | Indicates if the train antenna is within a Big Metal Mass track condition |                                             |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                      | <b>Maximum Value</b>                        | <b>Resolution/formula</b> |
| 1 bit                          |                                                                           |                                             |                           |
| <b>Special/Reserved Values</b> | 0                                                                         | Not within a Big Metal Mass track condition |                           |
|                                | 1                                                                         | Within a Big Metal Mass track condition     |                           |

### 8.1.90 Q\_BTМ\_ALARM

|                                |                         |                      |                           |
|--------------------------------|-------------------------|----------------------|---------------------------|
| <b>Name</b>                    | BTM alarm               |                      |                           |
| <b>Description</b>             | Status of the BTM alarm |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>    | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 1 bit                          |                         |                      |                           |
| <b>Special/Reserved Values</b> | 0                       | BTM alarm not active |                           |
|                                | 1                       | BTM alarm active     |                           |

### 8.1.91 Q\_BUTTON

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

### 8.1.92 Q\_CHECKNEEDED

|                                |                                                                                                                                                                                                                                     |                      |                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Qualifier for need of checking the Interface 'K' Antenna/BTM ID                                                                                                                                                                     |                      |                           |
| <b>Description</b>             | This is static information depending on ERTMS/ETCS on-board implementation.<br>"Check needed" value is used if ERTMS/ETCS on-board cannot guarantee by its own that the interface 'K' data is coming from the intended Antenna/BTM. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 1 bit                          |                                                                                                                                                                                                                                     |                      |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                                                                                                                   | No check needed      |                           |
|                                | 1                                                                                                                                                                                                                                   | Check needed         |                           |

### 8.1.93 Q\_DATAENTRY

|                                 |                                                                |                             |                           |
|---------------------------------|----------------------------------------------------------------|-----------------------------|---------------------------|
| <b>Name</b>                     | Need for Specific NTC Data Entry                               |                             |                           |
| <b>Description</b>              | Qualifier indicating if the STM needs Specific NTC Data or not |                             |                           |
| <b>Length of variable</b>       | <b>Minimum Value</b>                                           | <b>Maximum Value</b>        | <b>Resolution/formula</b> |
| 1 bit                           |                                                                |                             |                           |
| <b>Special/ Reserved Values</b> | 0                                                              | No Specific NTC Data needed |                           |
|                                 | 1                                                              | Specific NTC Data needed    |                           |

### 8.1.94 Q\_DISPLAY\_IS

|                                |                                     |                               |                           |
|--------------------------------|-------------------------------------|-------------------------------|---------------------------|
| <b>Name</b>                    | Display mode for intervention speed |                               |                           |
| <b>Description</b>             | Display mode for intervention speed |                               |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                | <b>Maximum Value</b>          | <b>Resolution/formula</b> |
| 2 bits                         |                                     |                               |                           |
| <b>Special/Reserved Values</b> | 00                                  | No display                    |                           |
|                                | 01                                  | Display with normal bar width |                           |
|                                | 10                                  | Display with wide bar width   |                           |
|                                | 11                                  | Spare                         |                           |



### 8.1.95 Q\_DISPLAY\_PS

|                                |                                  |                                  |                           |
|--------------------------------|----------------------------------|----------------------------------|---------------------------|
| <b>Name</b>                    | Display mode for permitted speed |                                  |                           |
| <b>Description</b>             | Display mode for permitted speed |                                  |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>             | <b>Maximum Value</b>             | <b>Resolution/formula</b> |
| 2 bits                         |                                  |                                  |                           |
| <b>Special/Reserved Values</b> | 00                               | No display                       |                           |
|                                | 01                               | Hook only displayed              |                           |
|                                | 10                               | Speed bar displayed without hook |                           |
|                                | 11                               | Speed bar displayed with hook    |                           |

### 8.1.96 Q\_DISPLAY\_RS

|                                |                                                        |                                     |                           |
|--------------------------------|--------------------------------------------------------|-------------------------------------|---------------------------|
| <b>Name</b>                    | Display mode for Release Speed                         |                                     |                           |
| <b>Description</b>             | Display mode for release speed supervision information |                                     |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                   | <b>Maximum Value</b>                | <b>Resolution/formula</b> |
| 2 bits                         |                                                        |                                     |                           |
| <b>Special/Reserved Values</b> | 00                                                     | No display                          |                           |
|                                | 01                                                     | Digital indicator only displayed    |                           |
|                                | 10                                                     | Bar indication only displayed       |                           |
|                                | 11                                                     | Bar and digital indicator displayed |                           |

### 8.1.97 Q\_DISPLAY\_TD

|                                |                                                          |                                     |                           |
|--------------------------------|----------------------------------------------------------|-------------------------------------|---------------------------|
| <b>Name</b>                    | Display mode for Target Distance                         |                                     |                           |
| <b>Description</b>             | Display mode for target distance supervision information |                                     |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                     | <b>Maximum Value</b>                | <b>Resolution/formula</b> |
| 2 bits                         |                                                          |                                     |                           |
| <b>Special/Reserved Values</b> | 00                                                       | No display                          |                           |
|                                | 01                                                       | Digital indicator only displayed    |                           |
|                                | 10                                                       | Bar indication only displayed       |                           |
|                                | 11                                                       | Bar and digital indicator displayed |                           |



### 8.1.98 Q\_DISPLAY\_TS

|                                |                               |                                  |                           |
|--------------------------------|-------------------------------|----------------------------------|---------------------------|
| <b>Name</b>                    | Display mode for target speed |                                  |                           |
| <b>Description</b>             | Display mode for target speed |                                  |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>          | <b>Maximum Value</b>             | <b>Resolution/formula</b> |
| 2 bits                         |                               |                                  |                           |
| <b>Special/Reserved Values</b> | 00                            | No display                       |                           |
|                                | 01                            | Hook only displayed              |                           |
|                                | 10                            | Speed bar displayed without hook |                           |
|                                | 11                            | Speed bar displayed with hook    |                           |

### 8.1.99 Q\_FOLLOWING

|                                |                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                          |                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------|
| <b>Name</b>                    | Indicate a following request                                                                                                                                                                                                                                                                                                                                                                          |                                                                          |                           |
| <b>Description</b>             | <p>Due to the possible length of an STM request for Specific NTC Data, this qualifier is used to indicate to the ERTMS/ETCS on-board whether the request for Specific NTC Data is composed of several STM-179 packets or not.</p> <p>It shall also be used for the Specific NTC data View values to indicate to the ERTMS/ETCS on-board whether it is composed of several STM-183 packets or not.</p> |                                                                          |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                                                                                                                                                                  | <b>Maximum Value</b>                                                     | <b>Resolution/formula</b> |
| 1 bit                          |                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                          |                           |
| <b>Special/Reserved Values</b> | 0                                                                                                                                                                                                                                                                                                                                                                                                     | No following packet to be managed together with the current one.         |                           |
|                                | 1                                                                                                                                                                                                                                                                                                                                                                                                     | There is a following packet to be managed together with the current one. |                           |

### 8.1.100 Q\_OVR\_STATUS

|                                |                                                          |                                 |                           |
|--------------------------------|----------------------------------------------------------|---------------------------------|---------------------------|
| <b>Name</b>                    | ETCS Override status                                     |                                 |                           |
| <b>Description</b>             | Indicate to all STMs that an override has been triggered |                                 |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                     | <b>Maximum Value</b>            | <b>Resolution/formula</b> |
| 1 bits                         |                                                          |                                 |                           |
| <b>Special/Reserved Values</b> | 0                                                        | ETCS Override status not active |                           |
|                                | 1                                                        | ETCS Override status active     |                           |



### 8.1.101 Q\_SOUND

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

### 8.1.102 T\_BUTTONEVENT

|                                |                                                                             |                      |                           |
|--------------------------------|-----------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Time stamping of a button event                                             |                      |                           |
| <b>Description</b>             | Local Reference Time of the button event as specified in [5], chapter 3.4.8 |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                        | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 32 bits                        | 0                                                                           | 4 294 967 295        | 1 ms                      |
| <b>Special/Reserved Values</b> |                                                                             |                      |                           |

### 8.1.103 T\_EB\_MAXDELAY

|                                |                                                                                                                                                                                                                                                              |                      |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Brake interface maximum emergency brake command issue time                                                                                                                                                                                                   |                      |                           |
| <b>Description</b>             | This is the maximum processing of the STM brake command by the ERTMS/ETCS on-board BIU Function. This is the time from the moment the BIU Function receives the STM command on the Profibus and the time the brake command is issued on the Train Interface. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                         | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 10 ms                                                                                                                                                                                                                                                        | 2550 ms              | Step of 10 ms             |
| <b>Special/Reserved Values</b> | 0                                                                                                                                                                                                                                                            | Reserved             |                           |

### 8.1.104 T\_JD

|                                |                                                                                                |                      |                           |
|--------------------------------|------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Time stamping of a JD message                                                                  |                      |                           |
| <b>Description</b>             | Local Reference Time when the data sent to the JD was valid as specified in [5], chapter 3.4.8 |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                           | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 32 bits                        | 0                                                                                              | 4 294 967 295        | 1ms                       |
| <b>Special/Reserved Values</b> |                                                                                                |                      |                           |

### 8.1.105 T\_ODO

|                                |                                                                                           |                      |                           |
|--------------------------------|-------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Time stamping of an odometer measurement                                                  |                      |                           |
| <b>Description</b>             | Local Reference Time when the odometer data were valid as specified in [5], chapter 3.4.8 |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                      | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 32 bits                        | 0                                                                                         | 4 294 967 295        | 1ms                       |
| <b>Special/Reserved Values</b> |                                                                                           |                      |                           |

### 8.1.106 T\_ODOCYCLE

|                                |                                                             |                      |                           |
|--------------------------------|-------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Typical cycle time of ERTMS/ETCS on-board Odometer Function |                      |                           |
| <b>Description</b>             |                                                             |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                        | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0 ms                                                        | 2550 ms              | Step of 10 ms             |
| <b>Special/Reserved Values</b> |                                                             |                      |                           |

### 8.1.107 T\_ODOMAXPROD

|                                |                               |                      |                           |
|--------------------------------|-------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Maximum production delay time |                      |                           |
| <b>Description</b>             | Refer to [4] §12.4.1.4        |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>          | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 10 ms                         | 2550 ms              | Step of 10ms              |
| <b>Special/Reserved Values</b> | 0                             | Reserved             |                           |

### 8.1.108 T\_SB\_MAXDELAY

|                                |                                                                                                                                                                                                                                                              |                                           |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------|
| <b>Name</b>                    | Brake interface maximum service brake command issue time                                                                                                                                                                                                     |                                           |                           |
| <b>Description</b>             | This is the maximum processing of the STM brake command by the ERTMS/ETCS on-board BIU Function. This is the time from the moment the BIU Function receives the STM command on the Profibus and the time the brake command is issued on the Train Interface. |                                           |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                                                                                                                         | <b>Maximum Value</b>                      | <b>Resolution/formula</b> |
| 8 bits                         | 10 ms                                                                                                                                                                                                                                                        | 2550 ms                                   | Step of 10 ms             |
| <b>Special/Reserved Values</b> | 0                                                                                                                                                                                                                                                            | Not applicable (SB command not available) |                           |

### 8.1.109 T\_SOUND

|                                |                              |                      |                                                    |
|--------------------------------|------------------------------|----------------------|----------------------------------------------------|
| <b>Name</b>                    | Sound segment duration       |                      |                                                    |
| <b>Description</b>             | Duration of a sound segment. |                      |                                                    |
| <b>Length of variable</b>      | <b>Minimum Value</b>         | <b>Maximum Value</b> | <b>Resolution/formula</b>                          |
| 8 bits                         | 100 ms                       | 10 000 ms            | T = T_SOUND * 100 ms<br>Range 100 ms to 10 seconds |
| <b>Special/Reserved Values</b> | 0                            | Reserved             |                                                    |
|                                | 101-255                      | Spare                |                                                    |

### 8.1.110 V\_EST

|                                |                                                                                                         |                      |                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Estimated value of a measured speed                                                                     |                      |                           |
| <b>Description</b>             | Signed estimated value of a measured speed provided by the odometer to STM. Coded as two's complement . |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                    | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 16 bits                        | - 32 768 cm/s                                                                                           | + 32 767 cm/s        | Signed, unit 1 cm/s       |
| <b>Special/Reserved Values</b> |                                                                                                         |                      |                           |

### 8.1.111 V\_INTERV

|                                |                      |                      |                           |
|--------------------------------|----------------------|----------------------|---------------------------|
| <b>Name</b>                    | Intervention speed   |                      |                           |
| <b>Description</b>             |                      |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b> | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 10 bits                        | 0 km/h               | 600 km/h             | 1 km/h                    |
| <b>Special/Reserved Values</b> | 601-1022             | Spare                |                           |
|                                | 1023                 | Unknown value        |                           |

### 8.1.112 V\_MAX

|                                |                                                                                                                                                        |                      |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Upper bound of the functional confidence interval of a measured speed                                                                                  |                      |                           |
| <b>Description</b>             | Signed value of the upper bound of the functional confidence interval of a measured speed provided by the odometer to STM. Coded as two's complement . |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                   | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 16 bits                        | - 32 768 cm/s                                                                                                                                          | + 32 767 cm/s        | Signed, unit 1 cm/s.      |
| <b>Special/Reserved Values</b> |                                                                                                                                                        |                      |                           |



### 8.1.113 V\_MIN

|                                |                                                                                                                                                        |                      |                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Lower bound of the functional confidence interval of a measured speed                                                                                  |                      |                           |
| <b>Description</b>             | Signed value of the lower bound of the functional confidence interval of a measured speed provided by the odometer to STM. Coded as two's complement . |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                                   | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 16 bits                        | - 32 768 cm/s                                                                                                                                          | + 32 767 cm/s        | Signed, unit 1 cm/s       |
| <b>Special/Reserved Values</b> |                                                                                                                                                        |                      |                           |

### 8.1.114 V\_PERMIT

|                                |                      |                      |                           |
|--------------------------------|----------------------|----------------------|---------------------------|
| <b>Name</b>                    | Permitted speed      |                      |                           |
| <b>Description</b>             |                      |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b> | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 10 bits                        | 0 Km/h               | 600 Km/h             | 1 Km/h                    |
| <b>Special/Reserved Values</b> | 601-1023             | Spare                |                           |

### 8.1.115 V\_RELEASE

|                                |                      |                      |                           |
|--------------------------------|----------------------|----------------------|---------------------------|
| <b>Name</b>                    | Release speed        |                      |                           |
| <b>Description</b>             |                      |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b> | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 10 bits                        | 0 km/h               | 600 km/h             | 1 km/h                    |
| <b>Special/Reserved Values</b> | 601-1022             | Spare                |                           |
|                                | 1023                 | Unknown value        |                           |

### 8.1.116 V\_STMMAX

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

### 8.1.117 V\_STMSYS

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

### 8.1.118 V\_TARGET

|                                |                      |                      |                           |
|--------------------------------|----------------------|----------------------|---------------------------|
| <b>Name</b>                    | Target speed         |                      |                           |
| <b>Description</b>             |                      |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b> | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 7 bits                         | 0 Km/h               | 600                  | 5 km/h                    |
| <b>Special/Reserved Values</b> | 121-126              | Spare                |                           |
|                                | 127                  | Unknown value        |                           |

### 8.1.119 X\_CAPTION

|                                |                                                                                                                                 |                      |                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Caption text byte                                                                                                               |                      |                           |
| <b>Description</b>             | Byte of bytestring used for caption text of button, indicator and data.<br>Encoded in UTF-8 according to [9] with 1 or 2 bytes. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                            | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                                                                               | 255                  |                           |
| <b>Special/Reserved Values</b> |                                                                                                                                 |                      |                           |

### 8.1.120 X\_TEXT

|                                |                                                                                                          |                      |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Text byte                                                                                                |                      |                           |
| <b>Description</b>             | Byte of bytestring used for text message string.<br>Encoded in UTF-8 according to [9] with 1 or 2 bytes. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                     | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                                                        | 255                  |                           |
| <b>Special/Reserved Values</b> |                                                                                                          |                      |                           |



### 8.1.121 X\_VALUE

|                                |                                                                                                                                        |                      |                           |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|
| <b>Name</b>                    | Value byte                                                                                                                             |                      |                           |
| <b>Description</b>             | Byte of bytestring used for data value, default value of data and for dedicated keyboard values.<br>Encoded in UTF-8 according to [9]. |                      |                           |
| <b>Length of variable</b>      | <b>Minimum Value</b>                                                                                                                   | <b>Maximum Value</b> | <b>Resolution/formula</b> |
| 8 bits                         | 0                                                                                                                                      | 255                  |                           |
| <b>Special/Reserved Values</b> |                                                                                                                                        |                      |                           |