ERTMS/ETCS
Train Interface **FIS**
REF: SUBSET-034 VERSION: 3.2.0 DATE: 17/12/15

Modification history

Issue number date	Section number	Modification / Description	Editor
Draft 27.07.99	All	Initial Draft for class 1	Uwe Dräger
Draft 01 30.08.99	All	After internal review and STM meeting	U.D
0.1.1 24.09.99	All	Including review comments from Siemens, Adtranz	U.D
1.0.0 11.10.99	All	Final Version	U.D.
1.0.1 31.01.2000	All	Update to SRS 2.0.0	U.D.
1.0.2 14.02.2000	All	Including internal and Alstom comments	U.D.
1.0.3 22.02	5.2.1, 5.2.6; 5.3.2, 5.3.3, 5.3.4, 5.3.7, 5.3.8, 5.4.2, 5.4.3, 5.4.4, 5.4.5, 5.5, 6(no5.1.1),6(no5.2.6) 6(no5.3.4), 6(no5.6.2), 7(no5.3.1), 8, 9, 10	Including comments from Adtranz, Alstom	U.D.
1.1.0 23.02.2000		Final version	U.D.
1.1.1a 29.03.2000	3.2.1.2, 3.2.1.3, 4, 5, 5.1.1, 5.1.2, 5.1.3, 5.1.4, 5.2.2, 5.2.8, 5.3.1, 5.3.4, 5.3.6, 5.3.9, 5.3.10, 5.4.2, 5.4.5, 5.6.3, 6, 7, 8, 9, 10	ECSAG comments	U.D.
2.0.0 30.03.00		Final Issue to ECSAG	U.D.
2.1.0 30-11-2011	All	Complete revision of the document. First draft for Baseline 3.	RD
2.1.1 28/02/12	Various sections	As per agreements in joint meeting ERA/EEIG/UNISIG 14/02/12, subsequent SG meeting 16/02/12 and quality improvements.	LR/PP
2.1.2 02/03/12	2.3.5.2/3 2.7.1.2	Following EEIG comments in CR1136 entry EUG 29-02-2012.	LR

Issue number date	Section number	Modification / Description	Editor
3.0.0 03/03/12	-	Baseline 3 release version	LR
3.0.1 02/04/14	2.2.2.3.1, 2.2.2.3.2, 2.2.4.2, 2.6.2.1	First draft for Baseline 3 first maintenance release (CR0239, CR1153 and CR1154)	FB
3.0.2 25/04/14	Front page, 2.2.2.3.1, 2.6.2.1	Update as per ERA comments. Baseline 3 1st maintenance pre-release version	FB
3.1.0 09/05/14	-	Baseline 3 1st maintenance release version	PP
3.1.1 18/11/15	2.3.2.1, 2.3.4, 2.3.5, 2.4.1 – 2.4.8, 2.4.10, 2.5.1.4.5, 2.5.1.4.6, 2.5.5, 2.6.2.1, 2.6.2.2, and 2.8	CR0239, CR0539, CR1163, and CR1265	FB/MP
3.1.2 11/12/15	2.6.2.2, all sections	Update as per review comments agreed in EECT meeting 16 (08/12/2015)	FB
3.2.0 17/12/15	-	Baseline 3 2nd release version	PP

Table of Contents

1 Introduction

1.1 Scope

1.1.1.1 This document specifies the functional interface between the ERTMS/ETCS on-board equipment (see [1]) and the Vehicle, in which the equipment is installed.

1.1.1.2 Note: For historical reasons the interface in this document is called the train interface, even though it is actually the interface between the ETCS on-board equipment and the vehicle, in which the equipment is installed. Interfaces which might be necessary between vehicles to operate them jointly as a train are not specified here.

1.1.1.3 The Train Interface is part of the ERTMS/ETCS architecture as defined in the SRS [1].

1.2 References

1.2.1.1 The following references are used in this document:

[1] System Requirements Specification - SUBSET-026

[2] ETCS Driver Machine Interface - ERA_ERTMS_015560

[3] Specific Transmission Module FFFIS - SUBSET-035

1.3 Abbreviations

ABS	Additional Brake Status
ASC	Automatic Speed Control
ACC	Allowed Current Consumption
CTS	Change of Traction System
EBC	Emergency Brake Command
MPSO	Main Power Switch Off
SBC	Service Brake Command

2 Functional Interface Description

2.1 General

2.1.1.1 This chapter describes the functional requirements on all information which is exchanged between ERTMS/ETCS on-board and the Vehicle via the Train Interface.

2.1.1.2 The information which is exchanged between ERTMS/ETCS on-board and the Vehicle is based on the functionality defined by the ERTMS/ETCS SRS [1]

2.1.1.3 Note: Due to its complexity and characteristics, the specification of the interface between ERTMS/ETCS on-board and the recording device in the train is defined in a separate interface specification and therefore not part of the train interface specification.

2.1.1.4 With reference to the Train Interface:

- Input is defined as data flow from Vehicle to ERTMS/ETCS on-board
- Output is defined as data flow from ERTMS/ETCS on-board to Vehicle.

2.1.1.5 In this chapter all functional requirements are written as mandatory principles, i.e. using the word "shall". Whether a function is used in a specific implementation of the Train Interface may depend on the characteristics of the Vehicle.

2.2 Mode Control

2.2.1 Sleeping

2.2.1.1 The sleeping information is defined as a two state input with the following values:

- Sleeping requested
- Sleeping not requested.

2.2.1.2 Note: The input value "Sleeping requested" is used by ERTMS/ETCS on-board as one of the conditions for the transition to Sleeping mode. The other two conditions are "standstill", which is managed internally in the ERTMS/ETCS on-board and "All desks connected to the ERTMS/ETCS on-board equipment are closed", equivalent to "All cabs connected to the ERTMS/ETCS on-board equipment are not active", which is generated internally in the ERTMS/ETCS on-board based on the input values "Cab not active" as defined in 2.5.1 of this document. See also the SRS references in 2.8.

2.2.1.3 The following requirements shall apply to the rolling stock:

2.2.1.3.1 After successful train inauguration, i.e. one master vehicle exists, defined by strictly one activated cab in the train, the information about successful master definition shall be communicated train-wide to all ERTMS/ETCS on-board units by means of the value "Sleeping requested".

2.2.1.3.1.1 Exception: The ERTMS/ETCS on-board connected via the cab status input (see 2.5.1) with the active cab may be excluded from getting the "Sleeping requested" information because it is not relevant for this ERTMS/ETCS on-board.

2.2.1.3.2 If no active cab exists in the train, this information shall be communicated train-wide to all ERTMS/ETCS on-board units by means of the value "Sleeping not requested".

2.2.1.3.3 Note: By means of this configuration of the sleeping input it is ensured that the ERTMS/ETCS on-board will only go to sleeping mode if another cab in the train is active, i.e. another train control system (ETCS or national) provides the supervision of the train movement.

2.2.2 Passive shunting

2.2.2.1 The passive shunting information is defined as a two state input with the following values:

- Passive shunting permitted
- Passive shunting not permitted.

2.2.2.2 Note: The input value "Passive shunting permitted" is used by ERTMS/ETCS on-board as one of the conditions for the transition to Passive Shunting mode. The other two conditions are "desks are closed", equivalent to "Cabs are not active", which is generated internally in the ERTMS/ETCS on-board from the input values "cab not active" as defined in 2.5.1 of this document, and "Continue Shunting on desk closure”

function is active, which is generated internally in ERTMS/ETCS on-board from driver input. See also the SRS references in 2.7.

2.2.2.3 The following requirements shall apply to the rolling stock:

2.2.2.3.1 The passive shunting input shall have the value "Passive shunting permitted" if the train is immobilized by means of a braking system that can be released from another cab after its activation.

2.2.2.3.2 If the condition in 2.2.2.3.1 is not fulfilled, the passive shunting input shall have the value "Passive shunting not permitted".

2.2.2.3.3 It shall be allowed to configure the passive shunting input permanently as "Passive shunting not permitted". This is a decision made only by the Railway Undertaking e.g. based on the characteristics of the vehicle.

2.2.3 Non-Leading

2.2.3.1 The non-leading information is defined as a two state input with the following values:

- Non-leading permitted
- Non-leading not permitted.

2.2.3.2 Note: The input value "Non-leading permitted" is used by ERTMS/ETCS on-board as one of the conditions for the transition to Non Leading mode. The other two conditions are "standstill" and "Driver selects Non Leading via the DMI" which are managed internally in the ERTMS/ETCS on-board. See also the SRS references in 2.7

2.2.3.3 The following requirements shall apply to the rolling stock:

2.2.3.3.1 The non-leading input shall have the value "Non-leading permitted" if the following conditions are fulfilled:

a) Drivers train brake controller isolated

AND

b) Travel direction selected

2.2.3.3.2 If at least one of the conditions in 2.2.3.3.1 is not fulfilled, the non-leading input shall have the value "Non-leading not permitted".

2.2.4 Isolation

2.2.4.1 The isolation information is defined as a two state output with the following values:

- ETCS isolated
- ETCS not isolated.

2.2.4.2 Note: The output "ETCS isolated" is generated by the ERTMS/ETCS on-board to inform the vehicle that the ERTMS/ETCS on-board is in Isolation mode. This information may be used by some other on-board equipment/systems. It is the responsibility of the ERTMS/ETCS on-board to ensure that in isolation mode the ERTMS/ETCS on-board equipment is physically isolated from the brakes (see SRS clause 4.4.3.1.1).

2.3 Control of Brakes

2.3.1 Service brake command

2.3.1.1 The service brake command (SBC) is defined as a two state output with the following values:

- Service brake commanded
- Service brake not commanded.

2.3.1.2 Note: The SBC output is generated by ERTMS/ETCS on-board to command the service brake and to revoke this command.

2.3.1.3 The following requirements shall apply to the rolling stock:

2.3.1.3.1 The SBC output value "Service brake commanded" shall result in the train applying the full service brake and cutting off the traction.

2.3.1.3.2 Note: Full service brake means application of 100% of the installed braking performance of the train.

2.3.1.3.3 The SBC output value "Service brake not commanded" shall result in a release of the service brake, but only to the highest brake level currently commanded by other application(s) or by the driver, and shall permit the traction power to be switched on.

2.3.1.3.4 Note 1: the traction power can be switched on again only after the driver has cancelled the traction command (i.e. after a “0-position-acknowledgement” by the traction controller).”

2.3.1.3.5 Note 2: In case of no SB manually applied by the driver and in case of no ASC activated, the SB released by ETCS will automatically cancel the brake application on the train. In case of a gradient, it is possible to have forward movement which must be controlled by driver with his own action on brake. This is acceptable as it is the same situation today (without ETCS).

2.3.1.3.6 Note 3: The full service brake may be actuated by various brake systems depending on the rolling stock brake architecture (e.g. dynamic brake by substitution, blending or superposition principle with the UIC air brake).

2.3.2 Brake pressure

2.3.2.1 The brake pressure information is defined as a numerical value input with the following values:

- A range from 0 to 6 bar in steps of 0.1 bar.

2.3.2.2 Note: The brake pressure input is used by ERTMS/ETCS on-board in the service brake feedback model in [1].

2.3.2.3 The following requirements apply to the rolling stock:

2.3.2.3.1 The value of the brake pressure input shall represent either the pressure in the main brake pipe or in the brake cylinder.

2.3.2.3.2 Note: The ERTMS/ETCS on-board has to be configured for one of these two input parameters.

2.3.3 Emergency brake command

2.3.3.1 The emergency brake command (EBC) is defined as a two state output with the following values:

- Emergency brake commanded
- Emergency brake not commanded.

2.3.3.2 Note: The EBC output is generated by ERTMS/ETCS on-board to command the emergency brake and to revoke this command.

2.3.3.3 The following requirements apply to the rolling stock:

2.3.3.3.1 The EBC output value "Emergency brake commanded" shall result in the train applying the emergency brake and cutting off the traction.

2.3.3.3.2 The EBC output value "Emergency brake not commanded" shall permit release of the emergency brake (implementation dependent if brake is released automatically or not, decision made by operator) and shall permit the traction power to be switched on.

2.3.3.3.3 Note: the traction power can be switched on again only after the driver has cancelled the traction command (i.e. after a “0-position-acknowledgement” by the traction controller).

2.3.4 Special brake inhibition area – Trackside orders

2.3.4.1 The generic requirement descriptions in this section shall apply to the inhibition of the following special brakes:

- Regenerative brake
- Magnetic shoe brake
- Eddy current brake for emergency braking
- Eddy current brake for service braking.

2.3.4.2 For each special brake inhibition area, the “Special brake inhibition area” information is an output that contains the following information:

- the remaining distance from the max safe front end of the train to the start location of this special brake inhibition area
- the remaining distance from the min safe rear end of the train to the end location of this special brake inhibition area.

2.3.5 Special brake inhibit – STM Orders

2.3.5.1 The generic requirement descriptions in this section shall apply to the inhibition of the following special brakes:

- Regenerative brake
- Magnetic shoe brake
- Eddy current brake for emergency braking
- Eddy current brake for service braking.

2.3.5.2 This special brake information is defined for each special brake as a two state output with the following values:

- Not inhibited

- Inhibited.

2.3.5.3 Note: This special brake inhibit output is generated by the ERTMS/ETCS on-board to inform the train that the respective special brake application is to be allowed / inhibited due to an order from STM.

2.3.6 Special brake status

2.3.6.1 The generic requirement descriptions in this section shall apply to the status of the following special brakes:

- Regenerative brake
- Magnetic shoe brake
- Eddy current brake
- Electro Pneumatic (EP) brake.

2.3.6.2 Note: The specifications for the status of these special brakes are exactly the same and therefore given only once.

2.3.6.3 The special brake status information is defined as a two state input with the following values:

- Special brake active
- Special brake not active.

2.3.6.4 Note: The special brake status input is used by ERTMS/ETCS on-board to adapt the braking curve model for the characteristics of the service brake, the emergency brake, or both, according to the possible configurations of ERTMS/ETCS on-board as defined in [1].

2.3.6.5 The following requirements shall apply to the rolling stock:

2.3.6.5.1 The special brake status input shall have the value "Special brake active" if the special brake is available, i.e. in working condition and not inhibited.

2.3.6.5.2 The special brake status input shall have the value "Special brake not active" if the special brake is not available, i.e. not in working condition or inhibited.

2.3.7 Additional brake status

2.3.7.1 The additional brake status information (ABS) is defined as a two state input with the following values:

- Additional brakes active
- Additional brakes not active.

2.3.7.2 The "additional brakes" are defined as any brakes in the train which are independent of wheel/rail adhesion.

2.3.7.3 Note: The ABS input is used by ERTMS/ETCS on-board to adapt the braking curve model for the characteristics of the additional brakes independent of wheel/rail adhesions, as defined in [1].

2.3.7.4 The following requirements shall apply to the rolling stock:

2.3.7.4.1 The ABS input shall have the value "additional brakes active" if the additional brake(s) is/are available, i.e. in working condition and not inhibited.

2.3.7.4.2 The ABS input shall have the value "additional brakes not active" if the additional brake(s) is/are not available, i.e. not in working condition or inhibited.

2.4 Control of Train Functions

2.4.1 Change of traction system

2.4.1.1 The “Change of traction system” information is an output that contains the following information:

- the remaining distance from the max safe front end of the train to the location of change of traction system
- the identity of the new traction system.

2.4.2 Powerless section with pantograph to be lowered – Trackside orders

2.4.2.1 For each powerless section with pantograph to be lowered, the “Powerless section with pantograph to be lowered” information is an output that contains the following information:

- the remaining distance from the max safe front end of the train to the start location of this powerless section
- the remaining distance from the min safe front end of the train to the end location of this powerless section.

2.4.3 Pantograph – STM orders

2.4.3.1 The pantograph information is defined as a two state output with the following values:

- Raise
- Lower.

2.4.3.2 Note: This pantograph output is generated by the ERTMS/ETCS on-board to inform the train that the pantograph has to be raised / lowered immediately due to an order from STM.

2.4.4 Air tightness area – Trackside orders

2.4.4.1 For each air tightness area, the “Air Tightness area” information is an output that contains the following information:

- the remaining distance from the max safe front end of the train to the start location of this air tightness area
- the remaining distance from the min safe rear end of the train to the end location of this air tightness area.

2.4.5 Air tightness – STM orders

2.4.5.1 The air tightness information is defined as a two state output with the following values:

- Open
- Close.

2.4.5.2 Note: This air tightness output is generated by the ERTMS/ETCS on-board to inform the train that the flap has to be open / closed immediately due to an order from STM.

2.4.6 Station platform

2.4.6.1 For each station platform, the “Station platform” information is an output that contains the following information:

- the remaining distance from the max safe front end of the train to the start location of this station platform
- the remaining distance from the min safe front end of the train to the end location of this station platform
- the nominal height of platform above rail level (refer to TSI infrastructure)
- the position of the station platform (left side, right side, both sides) in reference to the train orientation.

2.4.7 Powerless section with main power switch to be switched off – Trackside orders

2.4.7.1 For each powerless section with main power switch to be switched off, the “Powerless section with main power switch to be switched off” information is an output that contains the following information:

- the remaining distance from the max safe front end of the train to the start location of this powerless section
- the remaining distance from the min safe front end of the train to the end location of this powerless section.

2.4.8 Main Power Switch – STM orders

2.4.8.1 The main power switch information is defined as a two state output with the following values:

- Open
- Close.

2.4.8.2 Note: This main power switch output is generated by the ERTMS/ETCS on-board to inform the train that the main switch has to be open / closed immediately due to an order from STM.

2.4.9 Traction Cut Off

2.4.9.1 The traction cut off information (TCO) is defined as a two state output with the following values:

- Cut off traction
- Do not cut off traction.

2.4.9.2 Note: The TCO output is generated by ERTMS/ETCS on-board to cut the traction as soon as it passes the warning limit of the braking curve model as defined in [1] or as a consequence of an STM command.

2.4.9.3 The following requirements shall apply to the rolling stock:

2.4.9.3.1 The TCO output value "Cut off traction" shall be used by the train to cut off the traction power.

2.4.9.3.2 The TCO output value "Do not cut off traction" shall allow the driver or an automatic system (ASC) to apply traction power.

2.4.10 Change of allowed current consumption

2.4.10.1 The “Change of allowed current consumption” information is an output that contains the following information:

- the remaining distance from the max safe front end of the train to the location of change of allowed current consumption
- the new allowed current consumption.

2.5 Train Status

2.5.1 Cab Status

2.5.1.1 The cab status information is defined as a two state input with the following values:

- Cab active
- Cab not active.

2.5.1.2 Note 1: The cab status input is used by ERTMS/ETCS on-board for various purposes as defined in [1] or by an STM as defined in [3]. The expression "desk open" in [1] is equivalent to "Cab active" and "desk closed" in [1] is equivalent to "Cab not active".

2.5.1.3 If there is more than one cab connected to a single ERTMS/ETCS on-board unit, each cab will be connected to its individual input.

2.5.1.4 The following requirements shall apply to the rolling stock:

2.5.1.4.1 The cab status input shall have the value "Cab active" if the cab connected to this input is active.

2.5.1.4.2 Note: The active cab is the cab from which the traction is controlled.

2.5.1.4.3 The cab status input shall have the value "Cab not active" if the cab connected to this input is not active.

2.5.1.4.4 For single cab locos with two desks, each related to a different train orientation, each desk will be connected to its individual cab status input.

2.5.1.4.5 For single cab locos with only one desk, the cab status shall be combined with the main running direction information to define two virtual cab status signals, connected to their individual inputs.

Virtual Cab A active = (Cab active) AND (main running direction A)

Virtual Cab B active = (Cab active) AND (main running direction B)

2.5.1.4.6 Note: The main running direction may be obtained from e.g. the head lights of the train or a dedicated switch.

2.5.1.4.7 Regardless of the vehicle layout the rolling stock shall ensure that only one cab or virtual cab is reported active at any time to a single ERTMS/ETCS on-board equipment.

2.5.2 Direction Controller

2.5.2.1 The direction controller information is defined as a three state input with the following values:

- Forward
- Neutral
- Backward.

2.5.2.2 The notion of forward direction shall correspond to the train orientation defined by the active (virtual) cab as defined in 2.5.1, i.e. when the direction controller is in forward position, this means that the train movement will be in the direction of the active (virtual) cab.

2.5.2.3 If no cab is active the direction controller information may have any value, but shall be ignored by ERTMS/ETCS on-board.

2.5.2.4 Note: The direction controller input is used by ERTMS/ETCS on-board to prevent train movement which conflicts with the current position of the direction controller in the active cab and to detect the driver's intention to reverse, which is one of the conditions for entering Reversing mode. The direction controller input is also used by an STM as defined in [3].

2.5.2.5 The following requirements shall apply to the rolling stock:

2.5.2.5.1 If the ERTMS/ETCS on-board is connected to more than one cab, it is the responsibility of the rolling stock to relate the direction controller information to the active cab.

2.5.3 Train integrity

2.5.3.1 To be harmonized.

2.5.4 Traction status

2.5.4.1 The traction status information is defined as a two state input with the following values:

- On
- Off.

2.5.4.2 Note: This traction status information is forwarded by the ERTMS/ETCS on-board to the STM.

2.5.5 Set Speed

2.5.5.1 The set speed information is defined as a two state input plus a numerical value input:

- Display set speed information
- Do not display set speed information
- A speed value within the range from 0 to 600 km/h with a resolution of 1 km/h.

2.5.5.1.1 Note: The set speed input is used by ERTMS/ETCS on-board only for display on the DMI.

2.6 Train Data

2.6.1 Type of train data entry

2.6.1.1 The type of train data entry information is defined as a three state input with the following values:

- Fixed
- Flexible
- Switchable.

2.6.2 Train data information

2.6.2.1 The train data information is an input that enables the ERTMS/ETCS on-board equipment to determine values for any of those items of train data, which are listed in §3.18.3.2 of [1].

2.6.2.2 Note: The acquisition of train data information from the train interface is an optional feature for the ERTMS/ETCS on-board equipment.

2.7 National System isolation

2.7.1.1 The National System isolation information is defined as a two state input with the following values:

- NTC isolated
- NTC not isolated.

2.7.1.2 A NTC isolation input shall be used by the ERTMS/ETCS on-board equipment in case it is interfaced to the National System through an STM and this National System requires isolation of the STM to be implemented.

2.8 Reference of functions

2.8.1.1 The following tables give the SRS, DMI, STM subsets references for each function on the Train Interface and the direction of the information (Input / Output of the ERTMS/ETCS on-board).

Chapter	Name	Reference in SRS [1]	Input / Output
2.2.1	Sleeping	4.4.6 / 4.6.3	Input
2.2.2	Passive shunting	4.4.20 / 4.6.3	Input
2.2.3	Non-Leading	4.4.15 / 4.6.3	Input
2.2.4	Isolation	4.4.3.1.1	Output
2.3.1	Service brake command	3.13.2.2.7	Output
2.3.2	Brake pressure	3.13.2.2.7 / A.3.10	Input

Chapter	Name	Reference in SRS [1]	Input / Output
2.3.3	Emergency brake command	3.13.10 / 3.14.1 / 4.4.4 / 4.4.5 / 4.4.13	Output
2.3.4	Special brake inhibition area	3.12.1	Output
2.3.6	Special brake status	3.13	Input
2.3.7	Additional brake status	3.13	Input
2.4.1	Change of traction system	3.12.1	Output
2.4.2	Powerless section with pantograph to be lowered	3.12.1	Output
2.4.4	Air tightness area	3.12.1	Output
2.4.6	Station platform	3.12.1	Output
2.4.7	Powerless section with main power switch to be switched off	3.12.1	Output
2.4.9	Traction Cut Off	3.13.2.2.8	Output
2.4.10	Change of allowed current consumption	3.12.1	Output
2.5.1	Cab Status	4.6.3	Input
2.5.2	Direction Controller	3.14.2 / 5.13.1.4	Input
2.5.3	Train integrity	3.6.5.2.1	Input
2.5.5	Set Speed	4.7.2	Input
2.6.2	Train Data information	3.18.3 / 5.17	Input

Table 1 – SRS references

Chapter	Name	Reference in DMI [2]	Input / Output
2.5.5	Set Speed	8.2.3.9	Input
2.6.1	Type of train data entry	10.3.9.6	Input

Table 2 – DMI references

Chapter	Name	Reference in STM [3]	Input / Output
2.3.1	Service brake command	5.2.5	Output
2.3.3	Emergency brake command	5.2.5	Output
2.3.5	Special brake inhibit	5.2.4.3	Output
2.4.3	Pantograph	5.2.4.3	Output
2.4.5	Air tightness	5.2.4.3	Output
2.4.8	Main power switch	5.2.4.3	Output
2.4.9	Traction Cut Off	5.2.4.3	Output
2.5.1	Cab Status	5.2.4.4	Input
2.5.2	Direction Controller	5.2.4.4	Input
2.5.4	Traction status	5.2.4.4	Input
2.7	National System isolation	10.3.3.5, 10.3.3.6 e), 10.14.1.2	Input

Table 3 – STM references