

Q9.99_V1.1 known issues

for STM ATB V1.1

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1 Introduction

1.1 Purpose of this document

STMA-76296 - Through out the project issues have been reported in a JIRA online database tool to keep track of these issues and to track resolving the issues. At the end of the project there will be some issues left that could not be resolved within the project for various reasons. This document has been created to capture these known issues and keep the issues as part of the active record of the STM ATB through out its life span.

STMA-76346 - It is recognised by the current STM ATBEG project team that the STM ATBEG will be updated during its life span and during these updates these known issues might be resolved.



STMA-76347 - There are a number of criteria an issue needs to fulfill to be added to this document, these criteria are:

- The issue may never be a safety related issue. These always need to be resolved.
- The issue may never be a reliability issue that has impact on day to day use of the STM ATBEG. These issues need to be resolved.
- The issue must be reproducible, meaning that with the correct circumstances the issue needs to occur.



STMA-81405 - This document lists the "known issues" for STM ATB version 1.1

1.2 References



STMA-14296 - Reference documents

All the documents references used in this document can be found in the document  [P6.1 Bibliography](#) available in the Polarion folder  [Processes](#)

Abbreviations, definitions and terminology

An overview of the abbreviations, definitions and terminology used in this document can be found in document  [P6.2 List of abbreviations, definitions and terms](#) available in the Polarion folder  [Processes](#)

Requirement identification

The STM ATB project makes use of an automated requirement management system. In this system each requirement has been identified as a work item. Each work item has been automatically assigned with a unique ID, with the format "STMA-<number>". As a result requirement ID's are not in logical order. An overview of all the used STMA-numbers is given in document  [P6.3 Requirement Overview](#) available in the Polarion folder  [Processes](#)

2 Functional improvements

2.1 Translate text messages

STMA-83242 - (DEV-3644/DEV-3527)

STMA-81431 - Text messages are sent in Dutch only.

Based on information from packet STM-30, the STM ATB can be changed to support more languages, e.g. English, German and French.

The default shall remain Dutch

2.2 Updates of text message STMA-80081

STMA-83243 - (DEV-3645)

STMA-81436 -

The current text message is "ontgrendel met attentie, bel tr.dienstl"

The official string for treindienstleider is TRDL

In case of a combined ATBEG + ATBVv intervention also the ontgrendelknop has to be pushed.

Therefore the text message shall be "ontgrendel (ook) met attentie, bel TRDL"

2.3 Remove version check from DRU connection process

STMA-83233 - (DEV-3638)

STMA-81415 - As for other connections, the version of the DRU is checked in the connection process against 4,0

However the DRU and packet STM-77 are only defined in baseline 2, thus a check against a baseline 3 version doesn't make sense.

Proposal is to remove the test, or check against 3.0

Further the reply with STM-1 shall also not contain version 4.0 but 3.0

2.4 Add TIVA SW version to the FP-PP interface

STMA-83234 - (DEV-3574)

STMA-81433 - The reported TIVA SW version (in packet JRU-2) is stored in the Hercules processor code. The better solution is to have it reported by the TIVA. Therefore the TIVA SW version has to be defined at the functional processor-profibus processor interface.

2.5 Invert the phase of the test signals in one of the channels

STMA-83231 - (DEV-3646)

STMA-81453 - To make the 145Hz test signal less vulnerable for external disturbances, the test signal phase in one of the channels (A or B) might be inverted, and update the SW (e.g. the reference phase from the configuration signal)

This change is only useful in case an update of the Ain board is necessary anyway

3 Bugs

STMA-81459 - Bugs are deviations in behaviour and performance from the (input) specifications.

3.1 Profibus stops working above 70oC

STMA-83232 - (DEV-3483)

STMA-81455 - During the test with the climate chamber it was found that the profibus communication stops working when the temperate exceeds 70oC (approximately).

The TIVA was changed for a type with higher temperature range, but still the maximum environmental temperature is app. 60 degrees C.

This is sufficient for most trains, however the goal was a temperature range up to 70 degrees C.

STMA-82851 - The temperature issue is caused by a known issue concerning the GPIO pins of the TIVA (Profibus Processor). This issue is more likely to occur at high temperatures and was already reported in a case where the chip was heated over 80 degrees celcius:



The SPI interface between the functional processor and profibus processor is affected by this issue, the SPI interface between the profibus processor and the netX isn't.



Possible solutions are:

- HW: limit the rise and fall time using an RC filter
- SW: change slew rate configuration

Further analysis of the issue and possible solutions are necessary to be able upgrade to the original temperature range.

3.2 Safe response in case of lost TIU connection

STMA-83238 - (DEV-3808)

STMA-81675 - In  **STMA-80831** - [Safe response when losing the TIU connection](#). it is stated that no measure is taken if the TIU loses the connection. However from set of specifications #3 there is a requirement to resent the configuration data after a reconnection ( **STMA-15913** - [11.1.1.1.1 The TIU Function shall transmit train interface commands configuratio...](#)).

Therefore the solution described in D4.9 is only necessary for the time during which the connection is not available.

Thus a text message to ask the driver to reselect the cabin is not necessary (but will not harm either).

3.3 Prescribed subD connectors in the installation manual

STMA-82861 - In the installation manual very specific connector types are prescribed, also for the subD connectors (see  **STMA-69310** - [Connector parts code type number description Manufacturer \(example\) Order code \(...\)](#)).

As the EMC tests are performed with standard metal plated connectors, it is sufficient to prescribe connectors which are metal plated and which fit to the STM ATB. Prescribing the very specific, expensive connectors is not necessary. The references in STMA-73302, STMA-68349, STMA-69227 and STMA-69219 shall therefore be changed into an advice with the restriction that the connectors should fit and shall be metal plated, with electrical connection of the shield and PCB parts with the enclosure of the connector.

3.4 Incorrect condition in start-up statemachine T57

STMA-83240 - (DEV-3807)

STMA-82863 - In case only one cabin is equipped with coils, then the other coil shall be "no coil". Thus one cabin a specific coil and one cabin "no coil" is a valid case. Coils "unknown" are not, as that could be caused by disturbances in the track current during coil recognition. Therefore T57 shall only be performed if one of the coils is unknown, or if different coils (<> no coil) are found for the cabins. This is ambiguously described in STMA-40634, which leads if no coils are connected for one of the cabins, to unintended repetition of the coil type determination. After the maximum number of loops (additional waiting time app. 2.5 minute) the system proceeds correctly. To avoid this additional waiting time in case of using the system for one cabin the definition and code shall be changed:

"STMA-40634 The coil type is valid if the coils for both cabins are equal or if the coil type for one or both cabins equals "no coil". Further none of the coil types shall be "unknown".

In addition, at transition 57 the test signal shall be switched off, to check if the track signal is clean.

To avoid further unnecessary measures selecting a cabin with no coil or a cabin with coil unknown shall be handled equally (adapt the concerning conversion factors) and no coil testing shall be done if a cabin with no coils is selected

(STMA-.40487).

3.5 Hardware revision SAP board

STMA-83235 - (DEV-3809)

STMA-83040 - The HW designs are made in Altium. The current version of the Altium dossier is "I". However the bare PCB (PCBA) in version "I" is equal to the PCBA in version "H", except that the indication at the PCB is "H" and not "I". The SAP boards with version "I" are produced with PCBA version "H" thus carry the version indication "H" at the PCB. This doesn't hamper the functionality of the system but is confusing. Therefore for the main series PCBA version "I" with indication "I" at the PCB shall be used.

3.6 wrong timing STM-15 (short loop/long loop)

STMA-83248 - (DEV-3760)

STMA-83164 - STM ATB sends packet STM-16 while reporting to be in CS state. This is due to not passing the state information in the short loop.

3.7 DRU override of digital outputs not cleared at STM state change

STMA-83249 - (DEV-3770)

STMA-83165 - The DRU can be used to test digital outputs. If the digital outputs were set and the unit goes in operation without restarting, the test values will be loaded again at a transition to CS. This can be avoided by always resetting the outputs with the DRU, but the intention is to automate this.

3.8 The maximum DRU data size (220 bytes) is too large

STMA-83246 - (DEV-3768/3769)

STMA-83163 - The result is that the orders to sent 220 bytes are declined

4 Documentation issues

4.1 STM ATB opens connections at indicated SLs

STMA-83247 - (DEV-3643)

STMA-81429 - In D4.6 paragraph 3.7 "Profibus safety levels" the following text remark shall be added (see **T** [STMA-81427](#)).

STMA-81427 - The STM ATB will open connections at the safety level as indicated by the EVC in packet STM-2 if the indicated safety level is equal to or higher than the minimum safety level.

4.2 Fault in figure with start-up state machine

STMA-83244 - (DEV-3627)

STMA-81426 - In stma-39385 (figure) the arrows T27 and T34 point in the wrong direction

4.3 D5.2.10 is missing requirement for a number of measures

STMA-83245 - (DEV-3647)

STMA-81457 - A number of measures have a definition, but no requirement (the requirement is sort of implied in the measure description).

For instance:

STMA-80075 - measure flag: "disconnect from STM controller"

4.4 Definition STMA-14060 is superfluous

STMA-81506 - Due to removal of measure (DEV-3649) the definition is superfluous. The definition is used for a safety measure. If an ATBVv beacon could have been missed (due to a fault in the input circuits) then the safe response is to lower the train speed.

However as the response will be unexpected for drivers, and it is mitigating an ATBVv issue (non-safety), and will cause far more false positives compared to real issues, the measure was removed. (20km/h in case of disturbed ATBVv frequencies).

It was forgotten to remove the variable definition: STMA-14060.

4.5 Link to a deleted work item in the user manual

STMA-81508 - Remove the link (STMA-40562) from STMA-22502

4.6 Missing "at least" in STMA-17431

STMA-81510 - The safety level to be used shall as a minimum be the level specified in STMA-17540. In STMA-17431, the words "at least" are missing.:

new text: The STM ATB shall at least use the safety level as specified in STMA-17540 in the connection with the STM controller.

4.7 Missing "not" in startup state transition T57

STMA-81513 - In STMA-80103 the condition "Coil is valid" is used, it should have been "coil is not valid". The implementation in source code is correct ("not valid").

4.8 Missing definition of EB-config

STMA-83239 - (DEV-3653)

STMA-81515 - In D5.2.1 paragraph "3.1.2 outputs" the new variable EB-config should have been defined, but is missing

4.9 Increased size of the queue's concerning connections

STMA-83241 - (DEV-3652)


STMA-81517 - The maximum number of connections is defined in STMA-13998 and STMA-14002.

STMA-64300 and D5.2 paragraph 3.4.1.2.1 Profibus Processor Application shall be updated accordingly:

- STMA-34901: shall be at least 2x the value of STMA-14002 (i.e. 20)
- STMA-34899: shall be at least 2x the value of STMA-14002 (i.e. 20)
- STMA-34906: shall be at least 2x the value of STMA-14002 (i.e. 20)

The defined size of the connection queue size in the source code are correct.

4.10 Safety level STM controller connection


STMA-81567 - In  **STMA-17352** - The minimum safety level implemented for the connection between the STM ATB and... it is stated that the minimum safety level for the STM controller connection is SL2. This is correct based on the safety analysis. However as the STM ATB opens the connection at SL4 the EVC shall support SL4 for the STM controller connection. This shall be corrected in STMA-17352 in document D4.6.

4.11 The requirement for sending JRU packet type 2

STMA-83236 - (DEV-3603)

STMA-81575 - Activity STMA-69881 doesn't describe the rerouting of JRU packet type 2

4.12 Exported constraint STMA-2716 shall be removed

STMA-81578 -  **STMA-2716** - The difference in communication time between any order to sound the "gong" and a... can be deleted because of the use of the new sound gong-bel.

4.13 Change STMA-80449 (gong-bel) shall be updated

STMA-81673 - In D4.9 it is stated that the gong-bel time is increased to 500ms to comply with the RIS, however that was not sufficient for all EVCs. Therefore now a new sound gong-bel with a fixed time between gong and bel is introduced. STMA-80449 shall be updated accordingly.

4.14 Text in figure STMA-34030 incorrect

STMA-81679 - The text at state transition 16 in figure STMA-34030 should be: EB command while ATBEG state was braking, or ATBVv state is intervention or STS.

4.15 Lower retry number

(DEV-3814)

STMA-81681 - In STMA-40062 $n_retry_count < N_MAX_RETRY_COUNT - 10$ is missing. As the STM has to try to detect the coils if the disturbance currents remain high, the loop for testing on disturbance currents has to be left one cycle before the maximum number of retries is reached. This is implemented, however not changed in the requirement.

4.16 Text not updated according to DEV-3622

STMA-81701 - STMA-21488 is not updated according to the deactivation of measure "reduce low speed to 20km/h in case of ATBVv disturbance.

4.17 Speed for code = unknown not updated

STMA-83237 - (DEV-3813)

STMA-81703 - In STMA-3077 the condition "code = unknown" should lead to loading the correct limited code speeds. The code was updated while Polarion was not available.

4.18 Rename D5.2.14

STMA-81710 - The document name should be "D5.2.14 SwRS for DRU Controller"

4.19 Add a worst case value for M_adhesion if not received

STMA-83230 - (DEV-3666)

STMA-81712 - In case the STM state is DA while the EVC mode changes from sleeping or non leading to system national, the ATB function can be activated without previously receiving the essential data from packets STM-175/176/177. Therefore acc. to STMA-2977 the concerning values shall be set to a worst case value. Only M_Adhesion in packet STM-177 is missing in STMA-2977 and shall be added. The concerning software is already updated.


4.20 Document D6.2.9 has to be updated

STMA-83228 - (DEV-3815)

STMA-81832 - The FPGA image was changed to add the revision number and the version number in the SPI communication between Hercules and IO channels. The information is added in D5.2.9, but not in (Topic Document) D6.2.9:

- The variables shall be added in table **T** **STMA-63344** - [Table: Data package specification for packager. Bytes Description Label Represen...](#)
- In **T** **STMA-63022** - [The CRC value is calculated using the following polynomial: \$x^48 + x^47 + x^46 + x^4...\$](#) it shall be added that the version and revision are added to the data block for CRC calculation.
- It shall be stated in a new work item that the version and revision are fixed values stored in the IO channels.

4.21 Version D3.4 incorrect

STMA-81833 -  **STMA-10239** - [D3.4 Additional User Requirements](#) has been updated with an additional requirement concerning logging.

Consequently the automatic assigned revision number of the document is updated. However it was forgotten to update the version which is still V5.0. This should have been: revision: 781594, version: 6.0 (instead of 5.0).

4.22 Too many transitions T22 in figure STMA-34030

STMA-82065 - In figure, STMA-34030 - Figure: STM (internal) State Machine the transition to CS in case of ETCS trip mode is shown from 4 states (HS, DA, DA+trip and DA+trip+CS). However the requirement only defines the transition from DA+trip+CS which seems to be the intention of the concerning unisig requirement (subset035 V3.2.0 9.2.1.3).

4.23 Reducing low speed level in case of disturbed Vv removed

STMA-82213 - On customer (NS drivers expert team) the measure to lower the low speed level for 200m to 20km/h in case the Vv signal could have been corrupted, was removed from the code. This is implemented by decoupling event STMA-29003 from measure STMA-10731. However the concerning requirement, STMA-29866, has not been updated, nor has the change been mentioned in document D4.9. This shall be corrected.

4.24 Companion chip configuration

STMA-83229 - (DEV-3810)



STMA-82265 - The variable "PWD_THR[3:0]" (number of resets allowed) is set to 5. However the concerning requirement states a number of 15 times (STMA-22399). This shall be corrected

Further the description of NO_SAFE_TO (STMA-22400) is not clear NO_SAFE_TO=1 means that the concerning value is false (according to the code), this is correct, however may be confusing /* set NO_SAFE_TO bit to 1 */:

```
initstruct.blsafe_state_timeout = false;
```

4.25 Logo

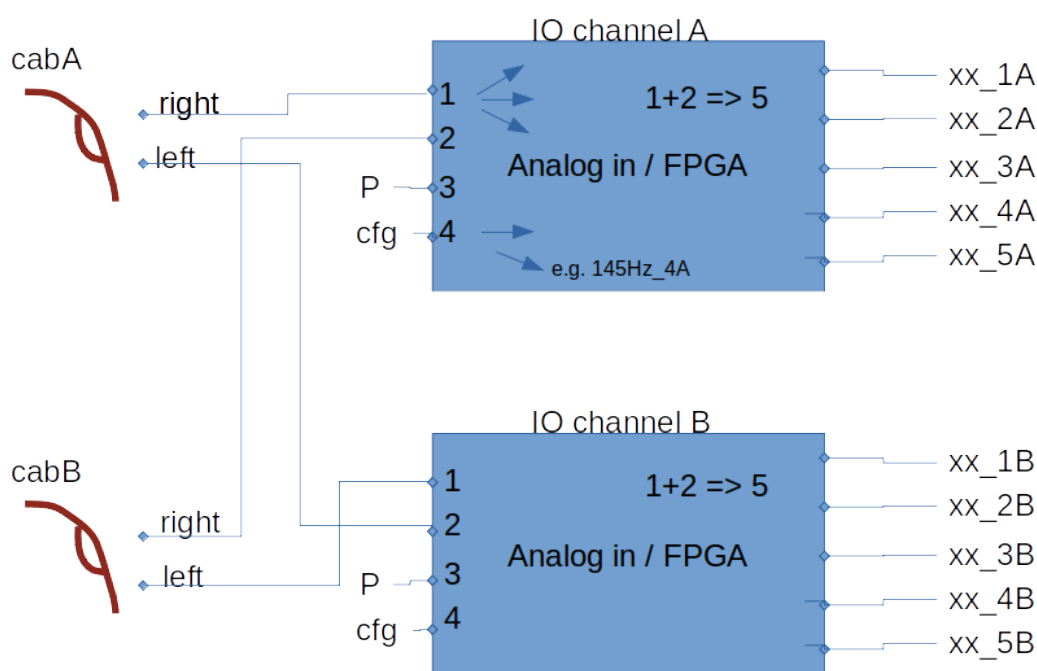
STMA-83226 - (DEV-3812)

STMA-82267 - In  [STMA-7864](#) - On the front panel of the enclosure markings will be applied: * ERTMS program lo... it is specified that the ERTMS logo shall be printed at the front panel. According to  [STMA-80868](#) - Remove logo from the front panel. this logo shall be removed, however STMA-7864 wasn't updated.


4.26 Picture to explain the definition of input variables

STMA-82855 - Coil signals are related to a cabin, to an IO channel and to a number in the AD range. The differences in numbering should be clarified with an additional picture in D5.2.1.

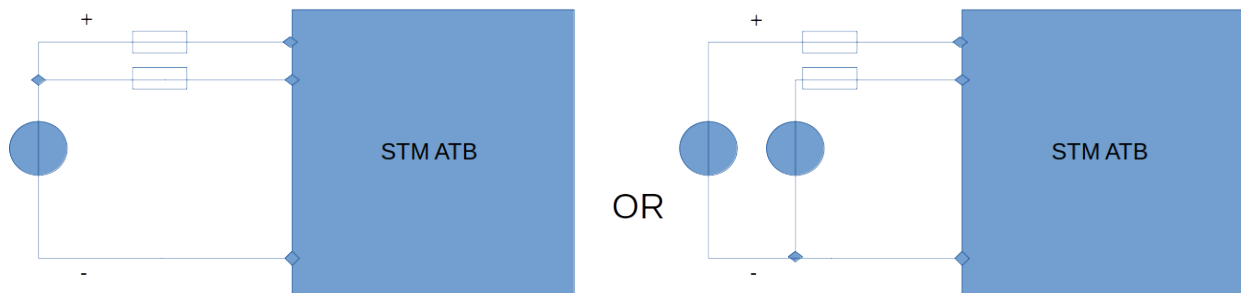
Definition, STMA-82856 -



4.27 Clarification of STMA-68344

STMA-82858 - In  [STMA-68344](#) - The STM ATB shall be electrically connected to: * ETCS onboard sytem (Profibus i... i t is stated "...commonly supplied via one multi signal circuit breaker". During installation projects it appeared this formulation is unclear. The intention is that both power connections shall be supplied from a voltage source with a common minus, and separately protected plus lines. See figure below, where the indicated fuses may any kind of protection, fit for the STM ATB supply voltage and current.

Definition, STMA-82859 - Power supply options



4.28 Missing condition in startup state machine T36

STMA-83227 - (DEV-3811)

STMA-82865 - In the description of T36 (STMA-40064) a condition is missing. This condition concerns the number of retries. If the number of retries exceeds a maximum T36 is performed independent from the third and fourth condition, thus:

" (3rd condition and 4th condition) or number of retries exceeds a maximum (50)"

This condition is already taken into account in the code.

4.29 Examples in the manufacturing manual

STMA-82929 - In document M9.2, "Manufacturing manual" o.a. the coating, software loading and assembling are described in detail. The document describes a way for coating, software loading and assembling in text items and figures (definitions). Apart from a number of requirements, tests and design items the description is not prescriptive; a more efficient manner to achieve compliance with requirements, tests and design items is allowed. The latter is however not clearly described in the manual.

This shall be adapted, for example to make automated spraying possible and to allow in line software loading.

STMA-83169 - IPC standard in manufacturing manual is not clearly defined: IPC-A-610

4.30 Availability/reliability definition in STMA-80804

STMA-83038 - The issue is marked as relevant for Availability, this is not correct as the issue doesn't influence the availability of the STMATB (see LOP from TUV).

4.31 Constant in formula for temperature calculation

STMA-83224 - (DEV-3804)

STMA-83167 - In the documentation the variable Beta = 3445, in the code the value is 3455. This causes a little difference (< 0.5 degree) in the guarded temperatures.

Further the temperature vs. voltage table in the SAP HDD (paragraph 3.4 "Temperature sensing") deviates from the used formula for low temperatures (app < 0 degrees Celcius).

5 Code/requirement improvements (non functional)

STMA-81422 - Change to improve consistency, maintainability etc.

5.1 In STMA-80099 the condition "is HS or DA" is used

STMA-83225 - (DEV-3637)

STMA-81423 - DMI aspects are only sent if the STM ATB state <> Inactive

However in STMA-80099" condition "is HS or DA" is used.

This is changed to <> Inactive

The code shall is already updated accordingly in V1.1 with a fix using both conditions. However the code should be improved by adapting the concerning state machine (see DEV-3637)

5.2 Passing Vv signals if the cabin is unknown

STMA-83250 - (DEV-3806)

STMA-82844 - D7.2.2 reports a failed unit test. The Vv signals are passed by the input handler if the cab selection is unknown, thus before the EVC has sent a packet containing the cab selection. This is not according to STMA-10501.

However in the situation that the cab selection has not yet been received the STM state can not become CS, HS or DA available, so this situation cannot occur if the STM ATB function is active (state Preparing or Responsible), thus it is not a functional deviation.

Nevertheless it would be cleaner to solve the issue and not pass the Vv signals if the cabin is "unknown".

5.3 Variable Rxbuf_A and Rxbuf_B definition



STMA-83251 - (DEV-3805)

STMA-82853 - Variables Rxbuf_A and Rxbuf_B are used in two different functions in the module FPIO, however in one function the content is used with an offset of 4 bytes. This is confusing.

And check names of FPGA output against names in D5.2.1.

6 Remarks

6.1 Test with SL0 authentication telegrams not possible

STMA-81698 - Requirements  **STMA-30686** - State transition 21a. If * an "Authentication Req" telegram (plus sender physica... and  **STMA-30687** - State transition 21b. If * an "Authentication Ack" telegram (plus sender physica... concern the reception of a authentication request or authentication acknowledge telegram at a SL0 connection. However as no commands are defined for SL0 authentication telegrams, such telegrams do not exist. Therefore the requirements cannot be tested.

Receiving a telegram for another SL at a connection is only possible in case of a software fault in the EVC, and ignoring such a telegram is not a safety issue.