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|  | AEE-C | Mihai Ianos, Daniel Andris, | 2 |  |  |  |
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**SW Architecture Design & Interface Description :**

**Atm sw UNIT**

OBJECT: This document is the description of the design & interfaces for *ATM* SW unit.

SUMMARY: This document provides a high-level view of the *ATM* SW unit. The inputs of this document are provided by the software requirement. It is linked to the *DAIMLER\_MMA*\_SWarchitectureDesignInterfaceDescription document.

CONCLUSION: Applicable from **R05.0** SW release

**THIS DOCUMENT CONTAINS HIDDEN TEXT**

EVOLUTION OF THE DOCUMENT

|  |  |  |  |
| --- | --- | --- | --- |
| **Issue** | **Date** | **Author** | **Motive and nature of the modifications** |
| 1.1.1 | 02.09.2019 | Reymond Zhang | First release (extract from the full PP4G architecture document) |
| Start DAI MMA description based on extended document | | | |
| 1.1.1.1 | 18.08.2022 | M. Obada | Initial revision |
| 1.1.1.2 | 18.08.2022 | M. Obada | Update for R3.0 |
| 1.1.1.3 | 18.08.2022 | M. Obada | Update revision history |
| 1.1.1.4 | 23.08.2022 | M. Obada | Fix findings from review |
| 1.1.1.5 | 25.08.2022 | M. Obada | Fix findings from review |
| 1.1.1.6 | 08.11.2022 | M. Obada | Update for R4.0 |
| 1.1.1.7 | 20.12.2022 | M. Serban | Update for R5.0 |
| 1.1.1.8 | 07.02.2023 | M. Serban | Updated figure and functions in run table |
| 1.1.1.9 | 08.02.2023 | M. Serban | Fix findings from review |
| 1.1.1.10 | 04.05.2023 | M. Obada | Update for 6.0 |
| 1.1.1.11 | 08.05.2023 | M. Obada | Update traceability for reset cause autotest |
| 1.1.1.12 | 08.05.2023 | M. Obada | Fix after review |
| 1.1.1.13 | 12.05.2023 | M. Obada | Update name spelling for diagram |
| 1.1.1.14 | 22.06.2023 | M.Obada | Update traceability |
| 1.1.1.15 | 24.08.2023 | M. Obada | Update document for R07.0 |
| 1.1.1.16 | 01.09.2023 | M. Obada | Fix after review |
| 1.1.1.17 | 06.10.2023 | M. Obada | Update inhibition mask for Motor Short autotest |
| 1.1.1.18 | 23.10.2023 | M. Obada | Update with new autotest |
| 1.1.1.19 | 09.11.2023 | M. Obada | Update after review. |
| 1.1.1.20 | 10.01.2024 | M. Obada | Update for 8.1 with new inhibit conditions for autotests. |

This document contains **23** pages.

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# Documentation

## Upper Level Relevant Documents

This section presents all the documents needed to write the software architecture design document.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Document** | **Reference** | **Company** |
|  | TF-A: To Manage the power supply | /RevAS/30\_DES\_Requirements/Technical Functions/  DES\_TF\_A\_To\_Manage\_The\_Power\_Supply | RBE/FCE |
|  | TF-B: To Manage the communication | /RevAS/30\_DES\_Requirements/Technical Functions/  DES\_TF\_B\_To\_Manage\_The\_Communication | RBE/FCE |
|  | TF-C: To Secure PP ECU functioning using Pictus MCU | /RevAS/30\_DES\_Requirements/Technical Functions/  DES\_TF\_C\_To\_Secure\_PP\_ECU\_Functioning\_Pictus | RBE/FCE |
|  | TF-D: To Program MCU | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_D\_To\_Program\_MCU | RBE/FCE |
|  | TF-E: To Manage Diagnostic Requests | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_E\_To\_Manage\_Diagnostic\_Requests | RBE/FCE |
|  | TF-F: To Perform Measurements | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_F\_To\_Perform\_Measurements | RBE/FCE |
|  | TF-G: To Drive the Motor | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_G\_To\_Drive\_the\_Motor | RBE/FCE |
|  | TF-H: To Perform Autotests | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_H\_To\_Perform\_Autotests | RBE/FCE |
|  | TF-I: To Manage the Failure | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_I\_To\_Manage\_The\_Failure | RBE/FCE |
|  | TF-J: To Manage NVM - NVP (Non Volatile Parameters) | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_J\_To\_Manage\_NVM | RBE/FCE |
|  | TF-K: To Ensure ECU Protection and Integration | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_K\_To\_Ensure\_ECU\_Protection\_And\_Integration | RBE/FCE |
|  | TF-L: To Ensure ECU Integration in Environment EMC ESD | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_L\_To\_Ensure\_ECU\_Integration\_In\_Environment\_EMC\_ESD | RBE/FCE |
|  | TF-M: To generate time base | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_M\_To\_Generate\_Time\_Base | RBE/FCE |
|  | TF-N: To evaluate belt data | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_N\_To\_Evaluate\_Belt\_Data | RBE/FCE |
|  | TF-O: To schedule the SW | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_O\_To\_Run\_SW | RBE/FCE |
|  | TF-P: To handle network management | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_P\_To Handle\_Network\_Management | RBE/FCE |
|  | TF-Q: To Provide Data For Expertise | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_Q\_To\_Provide\_Data\_For\_Expertise | RBE/FCE |
|  | TF-R: To Decide Belt Function Execution | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_R\_To\_Decide\_Belt\_Function\_Execution | RBE/FCE |
|  | TF-S: To drive the boost | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_S\_To\_Drive\_Boost | RBE/FCE |
|  | TF-X: To generate time base | /RevAS/30\_DES\_Requirements/Technical Functions/DES\_TF\_M\_To\_Generate\_Time\_Base | RBE/FCE |

## 1.2 Design interface description Documents

This section presents all the documents that are linked to this software architecture design document.

Note: All links are related to S:\drive, to have them functional, please mount the S:\drive on your sandbox.

|  |  |  |  |
| --- | --- | --- | --- |
| **Nb** | **Document** | **Reference** | **Company** |
|  | EEPROM parameters | SBE\_4G\_NVP\_layout.xls | RBE/FCE |
|  | Design Interface description of AdcIf | N/A | RBE/FCE |
|  | Design Interface Description of Auto Tests Manager | [ATM-Design Interface Description.docx](ATM%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Belt Function Decision | N/A | RBE/FCE |
|  | Design Interface Description of Belt Function Execution | [BFE - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\BFE%20-%20Design%20Interface%20Description%20.docx) | RBE/FCE |
|  | Design Interface Description of Belt Function Selection | [BFS - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\BFS%20-%20Design%20Interface%20Description%20.docx) | RBE/FCE |
|  | Design Interface Description of Belt Movement Monitoring | BMM - Design Interface Description.docx | RBE/FCE |
|  | Design Interface Description of Belt Parking Algorithm | N/A | RBE/FCE |
|  | Design Interface Description of Belt Slack Reduction | [BSR - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\BFS%20-%20Design%20Interface%20Description%20.docx) | RBE/FCE |
|  | Design Interface Description of Basic Software Manager | N/A | RBE/FCE |
|  | Design Interface Description of Basic Software Manager Interface | N/A | RBE/FCE |
|  | Design Interface Description of Can Tranceiver Interface | N/A | RBE/FCE |
|  | Design Interface Description of Communication Interaction Layer | [CIL - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\CIL%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Diagnostic Communication Manager Interface | N/A | RBE/FCE |
|  | Design Interface Description of Diagnostic Event Manager Interface | N/A | RBE/FCE |
|  | Design Interface Description of DiagOnCAN services management | [DIA - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\DIA%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Electronic Control Unit Manager | N/A | RBE/FCE |
|  | Design Interface Description of Electronic Control Unit Manager Interface | N/A | RBE/FCE |
|  | Design Interface Description of End of life | [EOL - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\DIA%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Error Handler | [ERH-Design Interface Description.docx](ERH%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Haptic Warning | [HWA - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\DIA%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Memory Integrity Control | N/A | RBE/FCE |
|  | Design Interface Description of Mode Management | [MMG - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\MMG%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Network Management Interface | N/A | RBE/FCE |
|  | Design Interface Description of Non-Volatile Memory Interface | N/A | RBE/FCE |
|  | Design Interface Description of Non-Volatile Parameters | [NVP - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\NVP%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Operating System Interface | N/A | RBE/FCE |
|  | Design Interface Description of Power Abstraction Layer | [PAL - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\PAL%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Pre-Crash Master | N/A | RBE/FCE |
|  | Design Interface Description of Physical Measures Provider | [PMP - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\PMP%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Port Interface | N/A | RBE/FCE |
|  | Design Interface Description of Pre Pre-Tensioning | [PRE - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\PMP%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Production cycle function | N/A | RBE/FCE |
|  | Design Interface Description of Pulse Width Modulation Interface | N/A | RBE/FCE |
|  | Design Interface Description of Reset Cause Management | NA | RBE/FCE |
|  | Design Interface Description of SBC | N/A | RBE/FCE |
|  | Design Interface Description of System Context Management | N/A | RBE/FCE |
|  | Design Interface Description of Standard Function Recovery (releasing function) | [SFR - Design Interface Description.docx](file:///S:\Architectures\Application\Description\Associated_Documents\SFR%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design Interface Description of Serial Peripheral Interface Interface | N/A | RBE/FCE |
|  | Design Interface Description of Startup | N/A | RBE/FCE |
|  | Design Interface Description of System Time Management | N/A | RBE/FCE |
|  | Design Interface Description of Vehicle Dynamics algorithm | N/A | RBE/FCE |

## 1.3 Design Specification Documents

This section presents all the documents that complete this software architecture design document.

Note: All links are related to S:\drive, to have them functional, please mount the S:\drive on your sandbox.

|  |  |  |  |
| --- | --- | --- | --- |
| **Nb** | **Document** | **Reference** | **Company** |
|  | Design document of AdcIf | N/A | RBE/FCE |
|  | Design document of Auto Tests Manager | ATM - Detailed Design Document.docx | RBE/FCE |
|  | Design document of Belt Function Decision | N/A | RBE/FCE |
|  | Design document of Belt Function Execution | [BFE - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\BFE%20-%20Design%20Interface%20Description%20.docx) | RBE/FCE |
|  | Design document of Belt Function Selection | [BFS - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\BFS%20-%20Design%20Interface%20Description%20.docx) | RBE/FCE |
|  | Design document of Belt Movement Monitoring | BMM - Detailed Design Document.docx | RBE/FCE |
|  | Design document of Belt Parking Algorithm | N/A | RBE/FCE |
|  | Design document of Basic Software Manager Interface | [BSR - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\BFS%20-%20Design%20Interface%20Description%20.docx) | RBE/FCE |
|  | Design document of Communication Interaction Layer | [CIL - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\CIL%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design document of Diagnostic Communication Manager Interface | N/A | RBE/FCE |
|  | Design document of Diagnostic Event Manager Interface | N/A | RBE/FCE |
|  | Design document of DiagOnCAN services management | [DIA - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\DIA%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design document of End of life | [EOL - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\BFS%20-%20Design%20Interface%20Description%20.docx) | RBE/FCE |
|  | Design document of Error Handler | ERH - Detailed Design Document.docx | RBE/FCE |
|  | Design document of Haptic Warning | [HWA - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\BFS%20-%20Design%20Interface%20Description%20.docx) | RBE/FCE |
|  | Design document of Memory Integrity Control | N/A | RBE/FCE |
|  | Design document of Mode Management | [MMG - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\MMG%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design document of Network Management Interface | N/A | RBE/FCE |
|  | Design document of Non-Volatile Memory Interface | N/A | RBE/FCE |
|  | Design document of Non-Volatile Parameters | [NVP - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\NVP%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design document of Power Abstraction Layer | [PAL - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\PAL%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design document of Physical Measures Provider | [PMP - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\PMP%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design document of Port Interface | N/A | RBE/FCE |
|  | Design document of Production cycle function | N/A | RBE/FCE |
|  | Design document of Reset Cause Management | N/A | RBE/FCE |
|  | Design document of RTE If | N/A | RBE/FCE |
|  | Design document of System Context Management | N/A | RBE/FCE |
|  | Design document of Standard Function Recovery (releasing function) | [SFR - Detailed Design Document.docx](file:///S:\Architectures\Application\Description\Associated_Documents\SFR%20-%20Design%20Interface%20Description.docx) | RBE/FCE |
|  | Design document of Serial Peripheral Interface Interface | N/A | RBE/FCE |

## 1.4 Tier2 Documents

This section presents all the documents that complete this software architecture design document.

|  |  |  |  |
| --- | --- | --- | --- |
| Nb | **Document** | **Reference** | **Company** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## 1.5 HW Data

This section presents all the documents related to the HW components that complete this software architecture design document.

|  |  |  |  |
| --- | --- | --- | --- |
| Nb | **Document** | **Reference** | **Company** |
|  | Infineon-TLE9471-3ES datasheet | TLE9461-3ES-Infineon.pdf | Infineon |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## 1.6 Other Documents

This section presents all the documents that also have been needed to write this software architecture design document.

|  |  |  |  |
| --- | --- | --- | --- |
| Nb | **Document** | **Reference** | **Company** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## 1.7 Glossary And Definition

This section presents all the definitions and/or abbreviations used in this document.

*List of terms in alphabetical order:*

|  |  |
| --- | --- |
| ***Term*** | ***Meaning*** |
| ADC | Analog Digital Converter |
| AEC | Autoliv Error Code |
| API | Application Programming Interface |
| ASDM | Active Safety Domain Master |
| ASIC | Application Specific Integrated Circuit |
| ASY | Active SafetY |
| BSW | Basic SW modules |
| CAN | Controller Area Network |
| C/S | Chip Select |
| COP | Computer Operating Properly |
| eCPL | Electronic Crash Pole Locking |
| DART | Ditch - Airborne - Rough Terrain |
| DFLASH | Data FLASH |
| ECC | Error Code Correction |
| ECU | Electronic Control Unit |
| EOL | End Of Life |
| EEPROM | Electric Erasable and Programmable Read only Memory |
| HFPP | High Force Pre-Pre-Tensioning belt function |
| HF-PRE | High Force PRE pre-tensioning |
| HR | Hard Releasing |
| I/O | Input/Output |
| IMU | Inartial Measurements Unit |
| ISS | Integrated Safing System |
| LFPP | Low Force Pre-Pre-Tensioning belt function |
| MSA | Motor Start/Stop Automatic |
| MCAL | Micro-Controller Abstraction Layer |
| MCU | Micro-controller Unit |
| NMG | Mode ManaGement |
| NVM | Non Volatile Memory |
| OS | Operating System |
| PCM | Pre-Crash Master |
| PFLASH | Program FLASH |
| PIT | Periodic Interrupt Timer |
| PLL | Phase-locked loop |
| RAM | Random Access Memory |
| RCWM | Rear Collision Warning and Mitigation |
| RML | Left PP ECU |
| RMR | Right PP ECU |
| RMx | Both PP ECU |
| ROM | Read Only Memory |
| RSU | Remote Sensor Unit |
| RTE | Real Time Environment |
| RTOS | Real Time Operating System |
| SFR | Standard Function Recovery |
| SODL | Side Obstacle Detection Left |
| SPI | Serial Peripheral Interface |
| SRS | Supplementary Restraint System |
| TBC | To be confirmed |
| TBD | To be defined |
| TF | Technical Function |
| TFLASH | Test FLASH of the Pictus MCU (“one time programmable” memory) |
| W/D | Watchdog |

# Description

The ATM component aims at scheduling all the auto test functions (platform and the project tests).

The figure below describes the connections between ATM and the rest of the SW application.

These connections can be grouped in different types:

* MMG and all concerned SW units: To execute of the auto-tests
* ERH: To qualify / deskill AEC and DTC
* Others: To provide status of auto-tests (on demand)

A diagram of a company

Description automatically generated

Figure 1 ATM - Static description

# Technical functions

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirements** | **Criteria** | **Linked Runnable** | **Source** |
| ARCH\_SW\_ATM\_0001 | All tests shall be initialized with status NOT\_DECIDED | Atm\_Init () | ALV\_EXT\_TF\_H\_344; ALV\_EXT\_TF\_H\_2244; ALV\_EXT\_TF\_H\_384; ALV\_EXT\_TF\_H\_422; ALV\_EXT\_TF\_H\_466; ALV\_EXT\_TF\_H\_684; ALV\_EXT\_TF\_H\_744;  ALV\_EXT\_TF\_H\_748;  ALV\_EXT\_TF\_H\_843;  ALV\_EXT\_TF\_H\_906;  ALV\_EXT\_TF\_H\_975; ALV\_EXT\_TF\_H\_1029;  ALV\_EXT\_TF\_H\_1126;  ALV\_EXT\_TF\_H\_1197; |
| ARCH\_SW\_ATM\_0002 | Each autotest shall return a result and report it to the rest of the application. | ATM\_runMainFunction ()  ATM\_runGetTestResult () | ALV\_EXT\_TF\_H\_2423;  ALV\_EXT\_TF\_H\_2424;  ALV\_EXT\_TF\_H\_2433;  ALV\_EXT\_TF\_H\_2436;  ALV\_EXT\_TF\_H\_2380;  ALV\_EXT\_TF\_H\_2389;  ALV\_EXT\_TF\_H\_2426;  ALV\_EXT\_TF\_H\_2434;  ALV\_EXT\_TF\_H\_2435;  ALV\_EXT\_TF\_H\_2427;  ALV\_EXT\_TF\_H\_2432;  ALV\_EXT\_TF\_H\_2431;  ALV\_EXT\_TF\_H\_2430;  ALV\_EXT\_TF\_H\_2347;  ALV\_EXT\_TF\_H\_2348;  ALV\_EXT\_TF\_H\_2330;  ALV\_EXT\_TF\_H\_2334;  ALV\_EXT\_TF\_H\_2338;  ALV\_EXT\_TF\_H\_2342;  ALV\_EXT\_TF\_H\_2346;  ALV\_EXT\_TF\_H\_2394;  ALV\_EXT\_TF\_H\_2395;  ALV\_EXT\_TF\_H\_2409;  ALV\_EXT\_TF\_H\_2310;  ALV\_EXT\_TF\_H\_2348;  ALV\_EXT\_TF\_H\_2268;  ALV\_EXT\_TF\_H\_2272;  ALV\_EXT\_TF\_H\_2276;  ALV\_EXT\_TF\_H\_2286;  ALV\_EXT\_TF\_H\_2414; |
| ARCH\_SW\_ATM\_0003 | The Main entry for execution of Autotest is ATM\_runMainFunction. | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0004 | If critical Autotests are not passed or finished cyclic tests cannot run. | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0005 | System shall check if timeout is present for VSS\_TP\_SecTickCount\_Lvl2\_ST3 frame |  | DAI\_EXT\_TF\_H\_2459; |

* **Each Autotest has an inhibition mode(context)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirements** | **Criteria** | **Linked Runnable** | **Source** |
| ARCH\_SW\_ATM\_0030 | ATM\_KU8\_ID\_TEST\_HIGH\_SIDE\_SWITCH autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0031 | ATM\_KU8\_ID\_TEST\_DRIVER\_COMMAND autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0032 | ATM\_KU8\_ID\_TEST\_MOSFET\_HIGH\_SHORT\_CIRCUIT autotest is inhibited by **KU8\_MODES\_BELTFN\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0033 | ATM\_KU8\_ID\_TEST\_MOSFET\_LOW\_SHORT\_CIRCUIT autotest is inhibited by **KU8\_MODES\_BELTFN\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0034 | ATM\_KU8\_ID\_TEST\_MOTOR\_DISCONNECTION autotest is inhibited by **KU8\_MODES\_BELTFN\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0035 | ATM\_KU8\_ID\_TEST\_DRIVER\_SELF\_PROTECTION autotest is inhibited by  **KU8\_MODES**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0036 | ATM\_KU8\_ID\_TEST\_MOSFET\_OPEN\_CIRCUIT autotest is inhibited by **KU8\_MODES\_BELTFN\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0037 | ATM\_KU8\_ID\_TEST\_HALL\_EFFECT\_SENSORS autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0038 | ATM\_KU8\_ID\_TEST\_MOTOR\_CURRENT autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0039 | ATM\_KU8\_ID\_TEST\_MOTOR\_BLOCKED autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0040 | ATM\_KU8\_ID\_TEST\_MOTOR\_TEMPERATURE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0041 | ATM\_KU8\_ID\_TEST\_MOTOR\_SHORT\_CIRCUIT autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0042 | ATM\_KU8\_ID\_TEST\_SENSOR\_TEMPERATURE autotest is inhibited by  **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0043 | ATM\_KU8\_ID\_TEST\_PWM\_ORDER autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_VOLTAG\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0044 | ATM\_KU8\_ID\_TEST\_UNDER\_VOLTAGE\_POWER autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0045 | ATM\_KU8\_ID\_TEST\_OVER\_VOLTAGE\_POWER autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0046 | ATM\_KU8\_ID\_TEST\_UNDER\_VOLTAGE\_TENSIONING\_POWER autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0047 | ATM\_KU8\_ID\_TEST\_OVER\_VOLTAGE\_TENSIONING\_POWER autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0048 | ATM\_KU8\_ID\_EXT\_WDG\_OUT\_OF\_ORDER autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0049 | ATM\_KU8\_ID\_RESET\_CAUSE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0050 | ATM\_KU8\_ID\_END\_OF\_LIFE\_LOW\_FORCE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0051 | ATM\_KU8\_ID\_END\_OF\_LIFE\_HIGH\_FORCE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0052 | ATM\_KU8\_ID\_END\_OF\_LIFE\_COMFORT autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0053 | ATM\_KU8\_ID\_TIMEOUT\_PRESAFE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0054 | ATM\_KU8\_ID\_TIMEOUT\_BUCKLE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and KU8\_MODES\_ENABLE\_\_\_\_\_IGNITION** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0055 | ATM\_KU8\_ID\_IMPLAUSIBLE\_DATA\_PRESAFE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and KU8\_MODES\_ENABLE\_\_\_\_\_IGNITION** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0056 | ATM\_KU8\_ID\_IMPLAUSIBLE\_DATA\_IGNITION autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and KU8\_MODES\_ENABLE\_\_\_\_\_IGNITION** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0057 | ATM\_KU8\_ID\_IMPLAUSIBLE\_DATA\_BUCKLE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and KU8\_MODES\_ENABLE\_\_\_\_\_IGNITION** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0058 | ATM\_KU8\_ID\_END\_OF\_LIFE\_MAX\_FORCE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0059 | ATM\_KU8\_ID\_ TIMEOUT\_IGNITION autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0060 | ATM\_KU8\_ID\_ TIMEOUT\_POWERTRAIN autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0061 | ATM\_KU8\_ID\_ IMPLAUSIBLE\_DATA \_POWERTRAIN autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0062 | ATM\_KU8\_ID\_ IMPLAUSIBLE\_DATA \_ORC autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and KU8\_MODES\_ENABLE\_\_\_\_\_IGNITION** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0063 | ATM\_KU8\_ID\_ TIMEOUT \_BELT\_HAND\_OVER\_LEFT autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and KU8\_MODES\_ENABLE\_CodingRBTMFL** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0064 | ATM\_KU8\_ID\_ TIMEOUT \_BELT\_HAND\_OVER\_RIGHT autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and** **KU8\_MODES\_ENABLE\_CodingRBTMFR** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0065 | ATM\_KU8\_ID\_TIMEOUT \_API\_INTERFACE autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0066 | ATM\_KU8\_ID\_OVERVOLTAGE\_SYSTEM autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0067 | ATM\_KU8\_ID\_ UNDERVOLTAGE\_SYSTEM autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0068 | ATM\_KU8\_ID\_TIMEOUT\_API autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and KU8\_MODES\_ENABLE\_\_\_\_\_IGNITION** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0069 | ATM\_KU8\_ID\_IMPLAUSIBLE\_DATA\_POWERTRAIN\_DRV autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and KU8\_MODES\_ENABLE\_\_\_\_\_IGNITION and**  **KU8\_MODES\_ENABLE\_\_\_\_\_\_\_\_\_\_API** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0070 | ATM\_KU8\_ID\_TIMEOUT\_ODOSPEEDOMETER autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0071 | ATM\_KU8\_ID\_IMPLAUSIBLE\_DATA\_API autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB and KU8\_MODES\_ENABLE\_\_\_\_\_IGNITION and KU8\_MODES\_ENABLE\_\_\_\_\_\_\_\_\_\_API** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0072 | ATM\_KU8\_ID\_VARIANT\_CODING autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0073 | ATM\_KU8\_ID\_TIMEOUT\_BELT\_ADJ autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |
| ARCH\_SW\_ATM\_0074 | ATM\_KU8\_ID\_SPI\_ERROR autotest is inhibited by **KU8\_MODES\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_INHIB** | ATM\_runMainFunction () |  |

# Runnables

## ATM\_Init

### Definition

|  |  |  |  |
| --- | --- | --- | --- |
| **Prototype** | | | |
| void **Atm\_Init** (void) | | | |
| **Object** | | | |
| This function shall initialize the ATM SW unit. | | | |
| **Parameters** | | | |
| Name | Type | Direction | Description |
| NA | NA | NA | NA |
| **Returned value** | | | |
| Name | Description | | |
| NA | NA | | |
| **Dynamic aspect** | | | |
| Synchronous server operation  Non Reentrant | | | |
| **Requirements** | | | |
| ARCH\_SW\_ATM\_0001; | | | |

## ATM\_runMainFunction

### Definition

|  |  |  |  |
| --- | --- | --- | --- |
| **Prototype** | | | |
| void **ATM\_runMainFunction** (void) | | | |
| **Object** | | | |
| This function shall execute the periodic auto-tests functions. | | | |
| **Parameters** | | | |
| Name | Type | Direction | Description |
| NA | NA | NA | NA |
| **Returned value** | | | |
| Name | Description | | |
| NA | NA | | |
| **Dynamic aspect** | | | |
| Periodic – 2ms  Non Reentrant | | | |
| **Requirements** | | | |
| ARCH\_SW\_ATM\_0021; ARCH\_SW\_ATM\_0106; ARCH\_SW\_ATM\_0107; ARCH\_SW\_ATM\_0108; ARCH\_SW\_ATM\_0109; ARCH\_SW\_ATM\_0111; ARCH\_SW\_ATM\_0113; ARCH\_SW\_ATM\_0114; ARCH\_SW\_ATM\_0115; ARCH\_SW\_ATM\_0116; ARCH\_SW\_ATM\_0117; ARCH\_SW\_ATM\_0118; ARCH\_SW\_ATM\_0119; ARCH\_SW\_ATM\_0120; ARCH\_SW\_ATM\_0202; ARCH\_SW\_ATM\_0203; ARCH\_SW\_ATM\_0205; ARCH\_SW\_ATM\_0206; ARCH\_SW\_ATM\_0207; ARCH\_SW\_ATM\_0208; ARCH\_SW\_ATM\_0209; ARCH\_SW\_ATM\_0210; ARCH\_SW\_ATM\_0211; ARCH\_SW\_ATM\_0212; ARCH\_SW\_ATM\_0213; ARCH\_SW\_ATM\_0214; ARCH\_SW\_ATM\_0215; ARCH\_SW\_ATM\_0216; ARCH\_SW\_ATM\_0217; ARCH\_SW\_ATM\_0218; ARCH\_SW\_ATM\_0219; ARCH\_SW\_ATM\_0220; ARCH\_SW\_ATM\_0221; ARCH\_SW\_ATM\_0150; ARCH\_SW\_ATM\_0151; ARCH\_SW\_ATM\_0260; ARCH\_SW\_ATM\_0004; ARCH\_SW\_ATM\_0003; ARCH\_SW\_ATM\_0030; ARCH\_SW\_ATM\_0031; ARCH\_SW\_ATM\_0032; ARCH\_SW\_ATM\_0033; ARCH\_SW\_ATM\_0034; ARCH\_SW\_ATM\_0035; ARCH\_SW\_ATM\_0036; ARCH\_SW\_ATM\_0037; ARCH\_SW\_ATM\_0038; ARCH\_SW\_ATM\_0039; ARCH\_SW\_ATM\_0040; ARCH\_SW\_ATM\_0041; ARCH\_SW\_ATM\_0042; ARCH\_SW\_ATM\_0043; ARCH\_SW\_ATM\_0044; ARCH\_SW\_ATM\_0045; ARCH\_SW\_ATM\_0046; ARCH\_SW\_ATM\_0047; ARCH\_SW\_ATM\_0048; ARCH\_SW\_ATM\_0049; ARCH\_SW\_ATM\_0050; ARCH\_SW\_ATM\_0051; ARCH\_SW\_ATM\_0052; ARCH\_SW\_ATM\_0053; ARCH\_SW\_ATM\_0054; ARCH\_SW\_ATM\_0055; ARCH\_SW\_ATM\_0056; ARCH\_SW\_ATM\_0057; ARCH\_SW\_ATM\_0058; ARCH\_SW\_ATM\_0059; ARCH\_SW\_ATM\_0060; ARCH\_SW\_ATM\_0061; ARCH\_SW\_ATM\_0062; ARCH\_SW\_ATM\_0063; ARCH\_SW\_ATM\_0064; ARCH\_SW\_ATM\_0065; ARCH\_SW\_ATM\_0066;  ARCH\_SW\_ATM\_0067; ARCH\_SW\_ATM\_0222; ARCH\_SW\_ATM\_0223; ARCH\_SW\_ATM\_0224; ARCH\_SW\_ATM\_0225; ARCH\_SW\_ATM\_0226; ARCH\_SW\_ATM\_0227; ARCH\_SW\_ATM\_0228; ARCH\_SW\_ATM\_0229; ARCH\_SW\_ATM\_0230; ARCH\_SW\_ATM\_0231; ARCH\_SW\_ATM\_0232; ARCH\_SW\_ATM\_0233; ARCH\_SW\_ATM\_0234; ARCH\_SW\_ATM\_0235; ARCH\_SW\_ATM\_0236; ARCH\_SW\_ATM\_0237; ARCH\_SW\_ATM\_0110; ARCH\_SW\_ATM\_0068; ARCH\_SW\_ATM\_0069; ARCH\_SW\_ATM\_0070; ARCH\_SW\_ATM\_0071; ARCH\_SW\_ATM\_0072; ARCH\_SW\_ATM\_0073; ARCH\_SW\_ATM\_0239; ARCH\_SW\_ATM\_0074; ARCH\_SW\_ATM\_0152; ARCH\_SW\_ATM\_0153; ARCH\_SW\_ATM\_0038; | | | |

### Called functions – Main

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirements** | **Criteria** | **Linked Runnable** | **Source** |
| ARCH\_SW\_ATM\_0021 | [MMG\_runCheckModeStatus](#_Hlk411935764)shall be called to check if all conditions are fulfilled to execute the test. | ATM\_runMainFunction () | ALV\_EXT\_TF\_H\_1188; ALV\_EXT\_TF\_H\_1186;  ALV\_EXT\_TF\_H\_895; ALV\_EXT\_TF\_H\_896; ALV\_EXT\_TF\_H\_965; ALV\_EXT\_TF\_H\_792; ALV\_EXT\_TF\_H\_793; ALV\_EXT\_TF\_H\_732; ALV\_EXT\_TF\_H\_733; |

### Called functions – in STARTUP

The scheduling of the “start-up” auto-tests consists in sequentially executing the “critical” tests in the following order (see the table below). In addition another scheduling table will be implemented in order to execute some periodic auto-tests in parallel of the “start-up” atuo-tests execution.

#### “Start-up” auto-tests execution sequence

This first table specifies the sequence of the “start-up” auto-tests:

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirements** | **Criteria** | **Linked Runnable** | **Source** |
| ARCH\_SW\_ATM\_0106 | ATM\_runMainFunction shall call the RCM\_Autotest\_RunResetCause function.  This will execute the “temperature sensor” test. | Call position #3  Repeat period: 10ms | ALV\_EXT\_TF\_H\_1328; ALV\_EXT\_TF\_H\_1330; |
| ARCH\_SW\_ATM\_0107 | ATM\_runMainFunction shall call the EOL\_Autotest\_CheckProductEndOfLifeLowForce function.  This will periocially execute the “end of life of the low force pre pre-tensioning belt function” test. | Call position #4  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0108 | ATM\_runMainFunction shall call the EOL\_Autotest\_CheckProductEndOfLifeHighForce function.  This will periocially execute the “end of life of the high force pre pre-tensioning belt function” test. | Call position #5  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0109 | ATM\_runMainFunction shall call the EOL\_Autotest\_CheckProductEndOfLifeComfort function.  This will periocially execute the “end of life of the comfort belt function” test. | Call position #6  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0110 | ATM\_runMainFunction shall call the EOL\_Autotest\_CheckProductEndOfLifeMaxForce function.  This will periocially execute the “end of life of the comfort max function” test. | Call position #7  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0114 | ATM\_runMainFunction shall call the PAL\_Autotest\_CheckHighSideSwRegulation function. | Call position #9  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0115 | ATM\_runMainFunction shall call the PAL\_Autotest\_CheckCommandConsistency function. | Call position #10  Repeat period: 100ms |  |
| ARCH\_SW\_ATM\_0116 | ATM\_runMainFunction shall call the  [PAL\_Autotest\_CheckMosfetHighSC](#_Hlk412188902) function. | Call position #11  Repeat period: 100ms |  |
| ARCH\_SW\_ATM\_0117 | ATM\_runMainFunction shall call the  [PAL\_Autotest\_CheckMosfetLowSC](#_Hlk412190035)function. | Call position #12  Repeat period: 100ms |  |
| ARCH\_SW\_ATM\_0118 | ATM\_runMainFunction shall call the PAL\_Autotest\_CheckMotorConnectionfunction. | Call position #13  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0119 | ATM\_runMainFunction shall call the PAL\_Autotest\_CheckHWSelfProtection function. | Call position #14  Repeat period: 10ms |  |
| ARCH\_SW\_ATM\_0120 | ATM\_runMainFunction shall call the PAL\_Autotest\_CheckMosfetOCAT function. | Call position #15  Call period: 20ms |  |

The next table is a dummary table only for requirements coverage purpose:

#### Periodic auto-tests executed in parallel to “start-up” auto-tests

The next table specifies auto-tests which are executed in parallel of the “start-up” auto-tests.

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirements** | **Criteria** | **Linked Runnable** | **Source** |
| ARCH\_SW\_ATM\_0150 | ATM\_runMainFunction shall call the PMP\_Autotest\_CheckPowerSupplyUV function.  This will execute the “logical supply in over voltage” test. | Time slot: #1.1  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0151 | ATM\_runMainFunction shall call the PMP\_Autotest\_CheckPowerSupplyOV function.  This will execute the “logical supply in under voltage” test. | Time slot: #1.2  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0152 | ATM\_runMainFunction shall call the PMP\_Autotest\_CheckSystemUVfunction.  This will execute the “logical supply in over voltage” test. | Time slot: #1.3  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0153 | ATM\_runMainFunction shall call the PMP\_Autotest\_CheckSystemOVfunction.  This will execute the “logical supply in under voltage” test. | Time slot: #1.4  Call period: *100ms* |  |

### Called functions – in RUN

The next table will provide the list of auto-tests periodically executed by the ATM; for each auto-test, the call position (in the ATM scheduling table) and the period will be specified.

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirements** | **Criteria** | **Linked Runnable** | **Source** |
| ARCH\_SW\_ATM\_0202 | ATM\_runMainFunction shall call the PMP\_Autotest\_CheckPowerSupplyUVDuringActivationfunction.  This will execute the “power supply in under voltage during activation” test. | Time slot: #1.2  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0203 | ATM\_runMainFunction shall call the PMP\_Autotest\_CheckPowerSupplyOVDuringActivationfunction.  This will execute the “logical supply in over voltage” test. | Time slot: #1.3  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0235 | ATM\_runMainFunction shall call the PMP\_Autotest\_CheckSystemUVfunction.  This will execute the “system supply in over voltage” test. | Time slot: #1.4  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0236 | ATM\_runMainFunction shall call the PMP\_Autotest\_CheckSysteOVfunction.  This will execute the “system supply in over voltage” test. | Time slot: #1.5  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0205 | ATM\_runMainFunction shall call the PAL\_Autotest\_CheckCommandConsistencyfunction.  This will periocially execute the “power bridge command consistency” test. | Time slot: #2.2  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0206 | ATM\_runMainFunction shall call the [PAL\_cbk\_CheckMosfetHighSC](#_Hlk424313190) function.  This will periocially execute the “HW thermal protection” test. | Time slot: #2.3  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0207 | ATM\_runMainFunction shall call the [PAL\_cbk\_CheckMosfetLowSC](#_Hlk424313175)function.  This will periocially execute the “low MOSFET inshort circuit” test. | Time slot: #2.4  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0208 | ATM\_runMainFunction shall call the [PAL\_cbk\_CheckMotorConnection](#_Hlk424313229)function.  This will periocially execute the “motor connection” test. | Time slot: #2.5  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0209 | ATM\_runMainFunction shall call the [PAL\_cbk\_CheckHWSelfProtection](#_Hlk424313759) function.  This will periocially execute the “HW thermal protection” test. | Time slot: #2.6  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0210 | ATM\_runMainFunction shall call the [PAL\_cbk\_CheckMotorDisengagement](#_Hlk424711158)function.  This will periocially execute the “motor disengagement” test. | Time slot: #2.7  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0211 | ATM\_runMainFunction shall call the [BMM\_cbk\_CheckHallEffectSensor](#_Hlk424710884)function.  This will execute the “hall effect sensor” test. | Time slot: #3.2  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0212 | ATM\_runMainFunction shall call the [PAL\_cbk\_CheckMotorCurrent](#_Hlk424711170)function.  This will periocially execute the “motor current” test. | Time slot: #3.3  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0213 | ATM\_runMainFunction shall call the [EOL\_cbk\_CheckProductEndOfLifeLowForce](#_Hlk424712187) function.  This will periocially execute the “end of life of the low force pre pre-tensioning belt function” test. | Time slot: #3.4  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0237 | ATM\_runMainFunction shall call the CIL\_cbk\_SteeringConfiguration function.  This will periocially execute the “steering configuration” test. | Time slot: #3.5  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0238 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckVariantCoding function. | Time slot: #4.2  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0214 | ATM\_runMainFunction shall call the [PMP\_cbk\_CheckPowerSupplyUV](#_Hlk424313268) function.  This will execute the “power supply in under voltage” test. | Time slot: #4.3  Call period: 100ms  (IN\_DECADE\_0) |  |
| ARCH\_SW\_ATM\_0215 | ATM\_runMainFunction shall call the [PMP\_cbk\_CheckPowerSupplyOV](#_Hlk424710843)function.  This will execute the “power supply in over voltage” test. | Time slot: #4.4  Call period: 100ms  (IN\_DECADE\_0) |  |
| ARCH\_SW\_ATM\_0224 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckImplausibleData\_Presafe function.  This will execute the “Check for Implausible data on Presafe frame” test. | Time slot: #4.5  Call period: 100ms  (IN\_DECADE\_1) |  |
| ARCH\_SW\_ATM\_0225 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckImplausibleData\_Ignition function.  This will execute “Check for Implausible data on Ignition frame” test. | Time slot: #4.6  Call period: 100ms  (IN\_DECADE\_1) |  |
| ARCH\_SW\_ATM\_0226 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckImplausibleData\_Buckle function.  This will execute the “Check for Implausible data on Buckle frame” test. | Time slot: #4.7  Call period: 100ms  (IN\_DECADE\_2) |  |
| ARCH\_SW\_ATM\_0227 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckTimeoutError\_Powertrain function.  This will execute the “Check for Timeout Error on Ignition frame” test. | Time slot: #4.8  Call period: 100ms  (IN\_DECADE\_2) |  |
| ARCH\_SW\_ATM\_0228 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckTimeoutError\_Ignition  function.  This will execute the “Check for Timeout Error on Powertrain frame” test. | Time slot: #4.9  Call period: 100ms  (IN\_DECADE\_3) |  |
| ARCH\_SW\_ATM\_0229 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckImplausibleData\_Powertrain\_Rdy function.  This will execute the “Check for  Implausible Data on Powertrain frame” test. | Time slot: #4.10  Call period: 100ms  (IN\_DECADE\_3) |  |
| ARCH\_SW\_ATM\_0235 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckImplausibleData\_Powertrain\_Drv function. | Time slot: #4.11  Call period: 100ms  (IN\_DECADE\_4) |  |
| ARCH\_SW\_ATM\_0230 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckImplausibleData\_ORC function.  This will execute the “Check for  Implausible Data on Impact3\_ST3 frame” test. | Time slot: #4.12  Call period: 100ms  (IN\_DECADE\_4) |  |
| ARCH\_SW\_ATM\_0237 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckImplausibledataAPI function. | Time slot: #4.13  Call period: 100ms  (IN\_DECADE\_4) |  |
| ARCH\_SW\_ATM\_0222 | ATM\_runMainFunction shall call the CIL\_Autotest\_Presafe\_CheckTimeoutError function.  This will execute the “Timeout for Presafe frame” test. | Time slot: #4.14  Call period: 200ms  (IN\_DECADE\_0) |  |
| ARCH\_SW\_ATM\_0223 | ATM\_runMainFunction shall call the CIL\_Autotest\_Buckle\_CheckTimeoutError function.  This will execute the “Timeout for Buckle frame” test. | Time slot: #4.15  Call period: 200ms  (IN\_DECADE\_1) |  |
| ARCH\_SW\_ATM\_0233 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckTimeoutError\_API function.  This will execute the “Check for  Timeout on API frame” test. | Time slot: #4.16  Call period: 200ms  (IN\_DECADE\_2) |  |
| ARCH\_SW\_ATM\_0231 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckTimeoutError\_ Belthandover\_L function.  This will execute the “Check for Timeout on BeltHdOvr\_FL frame” test. | Time slot: #4.17  Call period: 500ms  (IN\_DECADE\_0) |  |
| ARCH\_SW\_ATM\_0232 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckTimeoutError\_ Belthandover\_R function.  This will execute the “Check for  Timeout on BeltHdOvr\_FR frame” test. | Time slot: #4.18  Call period: 500ms  (IN\_DECADE\_1) |  |
| ARCH\_SW\_ATM\_0236 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckTimeout\_Odospeedometer function. | Time slot: #4.19  Call period: 1s  (IN\_DECADE\_0) |  |
| ARCH\_SW\_ATM\_0239 | ATM\_runMainFunction shall call the CIL\_Autotest\_CheckTimeout\_BeltAdj function. | Time slot: #4.20  Call period: 1s  (IN\_DECADE\_1) |  |
| ARCH\_SW\_ATM\_0216 | ATM\_runMainFunction shall call the [PAL\_cbk\_CheckMotorPowerOrder](#_Hlk424711189)function.  This will periocially execute the “motor power order” test. | Time slot: #5.2  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0217 | ATM\_runMainFunction shall call the [PMP\_cbk\_CheckTemperatureSensor](#_Hlk424715645) function.  This will periocially execute the “temperature sensor” test. | Time slot: #5.3  Call period: 1s |  |
| ARCH\_SW\_ATM\_0218 | ATM\_runMainFunction shall call the [EOL\_cbk\_CheckProductEndOfLifeHighForce](#_Hlk424712219) function.  This will periocially execute the “end of life of the high force pre pre-tensioning belt function” test. | Time slot: #5.4  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0219 | ATM\_runMainFunction shall call the [EOL\_cbk\_CheckProductEndOfLifeComfort](#_Hlk424713321) function.  This will periocially execute the “end of life of the comfort belt function” test. | Time slot: #5.5  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0220 | ATM\_runMainFunction shall call the [PAL\_cbk\_CheckMotorSC](#_Hlk438019750)function.  This will periocially execute the “motor in short circuit” test. | Time slot: #5.6  Call period: 10ms |  |
| ARCH\_SW\_ATM\_0221 | ATM\_runMainFunction shall call the [PAL\_cbk\_CheckMotorThermalProctection](#_Hlk424711181)function.  This will periocially execute the “SW thermal protection” test. | Time slot: #5.7  Call period: 100ms |  |
| ARCH\_SW\_ATM\_0234 | ATM\_runMainFunction shall call the EOL\_cbk\_CheckProductEndOfLifeMaxForce function.  This will periocially execute the “End Of Life max force” test. | Time slot: #5.8  Call period: 10ms |  |

### Miscellaneous

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirements** | **Criteria** | **Linked Runnable** | **Source** |
| ARCH\_SW\_ATM\_0260 | If an auto-test cannot be executed ATM\_runMainFunction shall set the status of the tests to “NOT DECIDED” |  | ALV\_EXT\_TF\_H\_344; DAI\_EXT\_TF\_H\_2244; ALV\_EXT\_TF\_H\_384; ALV\_EXT\_TF\_H\_422; ALV\_EXT\_TF\_H\_466; ALV\_EXT\_TF\_H\_684; ALV\_EXT\_TF\_H\_744; ALV\_EXT\_TF\_H\_748; ALV\_EXT\_TF\_H\_843; ALV\_EXT\_TF\_H\_906; ALV\_EXT\_TF\_H\_975; ALV\_EXT\_TF\_H\_1029; ALV\_EXT\_TF\_H\_1126; ALV\_EXT\_TF\_H\_1197; |

## ATM\_runGetTestResult

### Definition

|  |  |  |  |
| --- | --- | --- | --- |
| **Prototype** | | | |
| void **ATM\_runGetTestResult** (u8AutoTestIdType u8AutoTestId, u8TestResultType \*u8TestResult) | | | |
| **Object** | | | |
| This function shall provide (on demand) the current status of the selected auto-test. | | | |
| **Parameters** | | | |
| Name | Type | Direction | Description |
| u8AutoTestId | u8AutoTestIdType | In | Identifier of the auto tests |
| u8TestResult | u8TestResultType | Out | Current status of the selected auto-test |
| **Returned value** | | | |
| Name | Description | | |
| NA | NA | | |
| **Dynamic aspect** | | | |
| Synchronous server operation  Reentrant | | | |
| **Requirements** | | | |
| ARCH\_SW\_ATM\_0002; | | | |

## ATM\_runGetLastCriticalAutotestId

### Definition

|  |  |  |  |
| --- | --- | --- | --- |
| **Prototype** | | | |
| void **ATM\_runGetLastCriticalAutotestId** (UInt8 \*u8AutoTestId) | | | |
| **Object** | | | |
| The function aims at returning the last critical Autotest Id | | | |
| **Parameters** | | | |
| Name | Type | Direction | Description |
| u8AutoTestId | UInt8 | In | Identifier of the auto tests |
| **Returned value** | | | |
| Name | Description | | |
| NA | NA | | |
| **Dynamic aspect** | | | |
| Synchronous server operation  Reentrant | | | |
| **Requirements** | | | |
| ARCH\_SW\_ATM\_0004 | | | |

# MCU resources

The following requirements on resource consumption objectives apply to the module/package:

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirements** | **Criteria** | **Linked Runnable** | **Source** |
| ARCH\_SW\_ATM\_9997 | The ROM size consumed by this component shall not exceed 11K bytes. |  |  |
| ARCH\_SW\_ATM\_9998 | The RAM size consumed by this component shall be 70 bytes. |  |  |