AUTOSAR Det User Manual

Document Change Histroy				
Date (YYYY-MM-DD)	Ver.	Editor	Chap	Content
2020-03-30	1.0.0.0	DanhLT2	All	Initial Version
2022-04-08	1.0.0.1	LanhLT	All 4.3	Applying change of company name Change log
2022-06-30	1.0.1.0	Suyon Kim	4.3	Scope of the release Version 1.0.1.0
2022-08-17	1.0.1.1	Suyon Kim	4.3	Scope of the release Version 1.0.1.1
2023-05-23	1.0.1.2	Suyon Kim	4.3	Applying change of company name

Table of Contents

1 Overview

It is written based on AUTOSAR standard SRS / SWS. If more detailed functional explanation is needed when using the module, see the Reference Manual. The interpretation of setting related category is as follows:

- Changeable (C): Items that can be set by the user
- Fixed (F): Items that cannot be changed by the user.
- Not Supported (N): Deprecated item

2 Reference

Sl. No.	Title	Version
1	AUTOSAR_SWS_DefaultErrorTracer.pdf	4.4.0

Acronyms and abbreviations

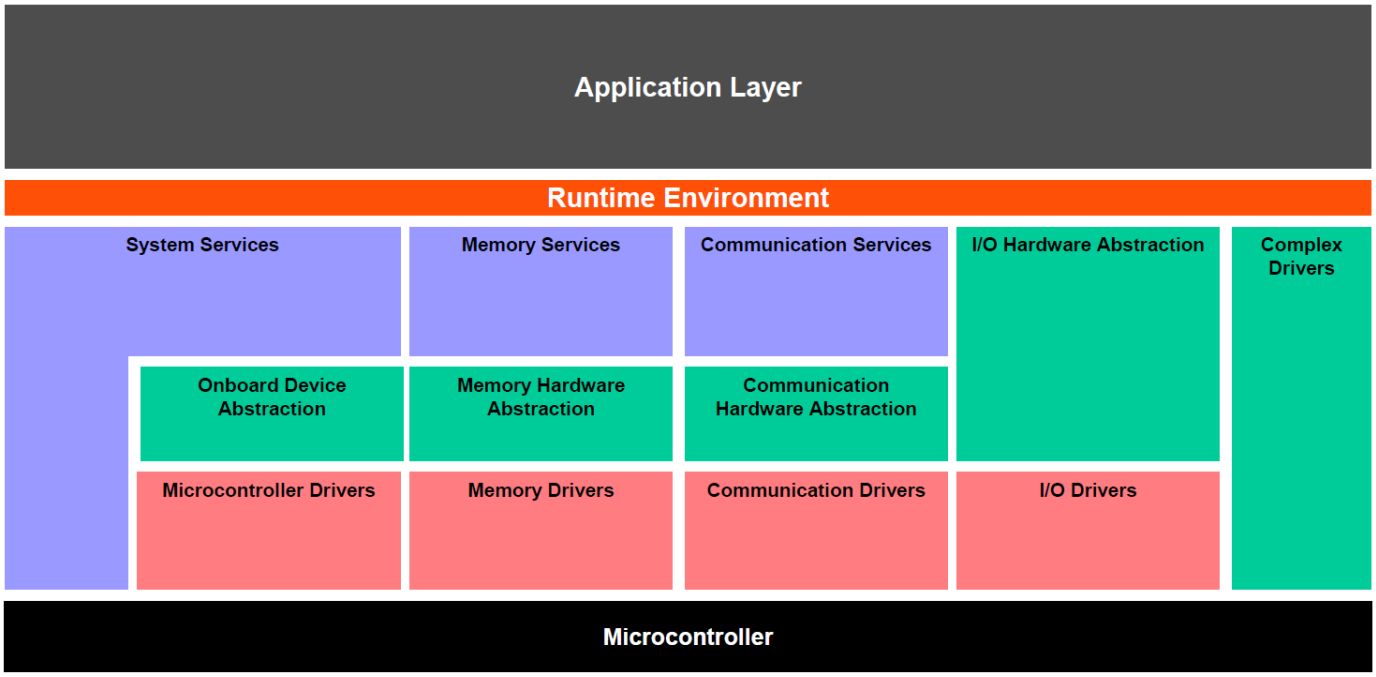
Acronym:	*Description:*
N_OK	Not OK
PossibleErrors	PossibleErrors means the ApplicationErrors as defined in meta model
Application Layer	The Application Layer is placed above the RTE. Within the Application Layer the AUTOSAR Software-Components are placed.

Abbreviation:	*Description:*
API	Application Programming Interface
AUTOSAR	AUTomotive Open System ARchitecture
BSW	Basic SoftWare
DET/Det	Development Error Tracer
DLT/Dlt	Diagnostic Log and Trace
ID/Id	Identifier
RAM	Random Access Memory
SRS	Software Requirements Specification
STS	System Test Specification
SWS	SoftWare Specification
SID	Service Id
SW-C	SoftWare Component
API	Application Programming Interface
AUTOSAR	AUTomotive Open System ARchitecture
BSW	Basic SoftWare
DET/Det	Development Error Tracer
DLT/Dlt	Diagnostic Log and Trace

3 AUTOSAR System

3.1 Overview of Software Layers

The Layered Architecture of the AUTOSAR platform is as follows. The AUTOSAR platform can be divided into Service Layer, ECU Abstraction Layer, Complex Device Drivers, and Microcontroller Abstraction Layer.



3.2 AUTOSAR Diagnostic Stack

3.2.1 Function Inhibition Manager

The permission status of SW-C functionality is changed according to the Event Status (TestFailed, etc.).

SW-C monitors the status of the permission of the functionality to determine whether or not the functionality works.

3.2.2 Diagnostic Event Manager

Processes events that occurred in SW-C and BSW modules.

3.2.3 Diagnostic Communication Manager

It manages the diagnostic data flow and diagnostic state, and performs diagnostic requests from the diagnostic equipment.

3.2.4 Development Error Tracer
Manage errors that occur during development. (Module removal during mass production)

4 Product Release Notes

4.1 Overview

This chapter aims to provide the release information for the HYUNDAI AUTOEVER Det module. Describes the limitations and specifics about the software product release version.

4.2 Scope of the Release

All information in this document is limited to the following HYUNDAI AUTOEVER Det modules.

Module Name	AUTOSAR Version	Module Version
Det	4.4.0	1.0.1.2

Module version means Sw version of each module's BswModule Description (Bswmd) file.

4.3 Change Log

4.3.1 Version 1.0.0.0 (2020-03-30)

- **Improvement**
  - Initial Version

원인	Initial Version
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

4.3.2 Version 1.0.0.1 (2022-04-08)

- **Feature**
  - ASPICE Compliance update

원인	ASPICE Compliance update
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

4.3.3 Version 1.0.1.0 (2022-06-30)

- **Bug**
  - Recover to execute UT/IT of Det Module in the x86

원인	For Jenkins, recover to execute UT/IT of Det Module in the x86
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

- **Improvement**
  - Fix TCG Validation Error

원인	Update parameter value to fix TCG validation error
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

4.3.4 Version 1.0.1.1 (2022-08-17)

- **Improvement**
  - Fix UNECE violations

원인	UNECE violations should be fixed.
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

4.3.5 Version 1.0.1.2 (2022-05-23)

- **Task**
  - R44 UM Template Update

원인	UM Template need to update because of incorrect information.
동작 영향	없음
설정 영향	없음
ASW 조치 사항	없음

4.4 Module Release Notes

4.4.1 Limitations

1) Only Pre-Compile is supported

4.4.2 Deviations

None

5 Configuration Guide

The Det setting of the AUTOSAR platform distributed by Hyundai Auto is a setting reflecting Hyundai Auto Policy's policy. Therefore, you should consult with Hyundai Auto.

5.1 DetGeneral

Parameter Name	Value	Category
DetRamBufferSize(1)	1	Changeable
DetForwardToDlt	FALSE	Changeable
DetVersionInfoApi	FALSE	Changeable

(1) DetRamBufferSize :

This parameter specifies RAM buffer size.

5.2 DetNotification

See settings.

Parameter Name	Value	Category
DetErrorHook	Automated	Changeable
DetReportTransientFaultCallout	Automated	Changeable
DetReportRuntimeErrorCallout	Automated	Changeable

5.3 DetConfigSet:

Parameter Name	Value	Category
DetModuleId	Automated	Changeable
DetInstanceId	Automated	Changeable

5.4 System Configuration

5.4.1 ApplicationSwComponentType

Refer to AUTOSAR BSW Service API Guide.doc document.

5.4.2 CompositionSwComponentType

Refer to AUTOSAR BSW Service API Guide.doc document.

6 Application Programming Interface (API)

6.1 Type Definitions

6.1.1 Det_ConfigType

Configuration data structure of the Det module.

6.2 Macro Constants

None

6.3 Functions

6.3.1 Initialize

Function Name	Det_Init	
Syntax	void Det_Init(const Det_ConfigType* ConfigPtr)	
Service ID [Hex]	0x00	
Sync/Async	Synchronous	
Reentrancy	Non-Reentrant	
Parameters (In)	ConfigPtr	Pointer to the selected configuration set.
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	None	
Description	Service to initialize the Default Error Tracer.	
Available via	Det.h	

Function Name	Det_Start
Syntax	void Det_Start(void)

Service ID [Hex]	0x00
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (In)	None
Parameters (Inout)	None
Parameters (Out)	None
Return Value	None
Description	Service to start the Default Error Tracer.
Available via	Det.h

6.3.2 Error Reporting

Function Name	Det_ReportError	
Syntax	Std_ReturnType Det_ReportError(uint16 ModuleId, uint8 InstanceId, uint8 ApiId, uint8 ErrorId)	
Service ID [Hex]	0x01	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (In)	ModuleId	Module ID of calling module.
	InstanceId	The identifier of the index based instance of a module, starting from 0, If the module is a single instance module it shall pass 0 as the InstanceId.
	ApiId	ID of API service in which error is detected.
	ErrorId	ID of detected development error.

Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Std_ReturnType	never returns a value, but has a return type for compatibility with services and hooks
Description	Service to report development errors.	
Available via	Det.h	

Function Name	Det_ReportRuntimeError	
Syntax	Std_ReturnType Det_ReportRuntimeError(uint16 ModuleId, uint8 InstanceId, uint8 ApiId, uint8 ErrorId)	
Service ID [Hex]	0x04	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (In)	ModuleId	Module ID of calling module.
	InstanceId	The identifier of the index based instance of a module, starting from 0, If the module is a single instance module it shall pass 0 as the InstanceId.
	ApiId	ID of API service in which error is detected.
	ErrorId	ID of detected development error.
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Std_ReturnType	returns always E_OK (is required for services)
Description	Service to report runtime errors. If a callout has been configured then this callout shall be called.	

Available via	Det.h	

Function Name	Det_ReportTransientFault	
Syntax	Std_ReturnType Det_ ReportTransientFault(uint16 ModuleId, uint8 InstanceId, uint8 ApiId, uint8 ErrorId)	
Service ID [Hex]	0x05	
Sync/Async	Synchronous	
Reentrancy	Reentrant	
Parameters (In)	ModuleId	Module ID of calling module.
	InstanceId	The identifier of the index based instance of a module, starting from 0, If the module is a single instance module it shall pass 0 as the InstanceId.
	ApiId	ID of API service in which error is detected.
	ErrorId	ID of detected development error.
Parameters (Inout)	None	
Parameters (Out)	None	
Return Value	Std_ReturnType	If no callout exists it shall return E_OK, otherwise it shall return the value of the configured callout. In case several callouts are configured the logical or (sum) of the callout return values shall be returned. Rationale: since E_OK=0, E_OK will be only returned if all are E_OK, and for multiple error codes there is a good chance to detect several of them.
Description	Service to report transient faults. If a callout has been configured than this callout shall be called and the returned value of the callout shall be returned. Otherwise it returns immediately with E_OK.	
Available via	Det.h	

6.4 Service Interfaces

6.4.1 Interfaces

Name	DETService	
Comment	Service of Default Error Tracer	
IsService	True	
Variation	-	
Possible Errors	0	E_OK

Operations

Name	ReportError	
Comments	calls Det_ReportError with the Module ID of the port	
Variation	-	
Parameters (In)	ApiId	ID of API service in which error is detected (defined in SWS of calling module).
	ErrorId	ID of detected development error (defined in SWS of calling module).
Possible Errors	E_OK	Successfully Reported Error

Name	ReportRuntimeError	
Comments	calls Det_ReportRuntimeError with the Module ID of the port	
Variation	-	
Parameters (In)	ApiId	ID of API service in which error is detected (defined in SWS of calling module).
	ErrorId	ID of detected development error (defined in SWS of calling module).
Possible Errors	E_OK	Successfully Reported Error

Note: ModuleId and InstanceId can be used in "port defined argument value".

6.5 Notes

6.5.1 In Communication with application SW-C

For the prototype of the RTE-based generated function, see the AUTOSAR BSW Service API Guide.doc document.

7 Generator

7.1 Generator Option

Options	Description
-G,--Generation	Symbolic parameters to be used for fore generation (skip validation).
-H,--Help	Display this help message.
-I,--Input <I>	ECU description file path of the module for which generation tool need to run.
-L,--Log	Symbolic parameters to be used for generation error log.
-M,--Module <M>	Specify module name and version to be generated code for.
-O,--Output <O>	Project-relative path to location where the generated code is to be placed.
-T,--Top_path <T>	Symbolic parameters to be used for set path of module.
-V,--Validate	Symbolic parameters to be used for invoking validation checks.

7.2 Generator Error Message

ERR0150004 The parameter <parameter name> in the container <container name> should be configured.

This error occurs, if any of the below mentioned mandatory parameters are not configured.

Parameter name	Container name
AR-RELEASE-VERSION	BSW-IMPLEMENTATION
SW-VERSION	BSW-IMPLEMENTATION
VENDOR-ID	BSW-IMPLEMENTATION

ERR0150011 : Value of the parameter <parameter name> in container <sort name of container> should be specified to the DetErrorHook function

This error occurs when /AUTRON/Det/DetNotification/DetErrorHook parameter is exist but value isn't config or NULL value.

Path : /AUTRON/Det/DetNotification/DetErrorHook

ERR0150012 : Value of the parameter <parameter name> in container <sort name of container> should be specified to the DetReportTransientFaultCallout function

This error occurs when /AUTRON/Det/DetNotification/DetReportTransientFaultCallout: parameter is exist but value isn't config or NULL value.

Path : /AUTRON/Det/DetNotification/DetReportTransientFaultCallout:

ERR0150013 : Value of the parameter <parameter name> in container <sort name of container> should be specified to the DetReportRuntimeErrorCallout function

This error occurs when /AUTRON/Det/DetNotification/DetReportRuntimeErrorCallout parameter is exist but value isn't config or NULL value.

Path : /AUTRON/Det/DetNotification/DetReportRuntimeErrorCallout

ERR0150014: All features of Det_ReportError function have been disabled.

This error occurs when DET_FORWARD_TO_DLT, DET_ERROR_HOOK and DET_RAM_BUFFER macros are STD_OFF at the same time

ERR0150015: All features of Det_ReportRuntimeError function have been disabled.

This error occurs when DET_FORWARD_TO_DLT, DET_ERROR_RUNTIME and DET_RAM_BUFFER macros are STD_OFF at the same time

ERR0150016: All features of Det_ReportTransientFault function have been disabled.

This error occurs when DET_FORWARD_TO_DLT, DET_ERROR_FAULT_TRANSIENT and DET_RAM_BUFFER macros are STD_OFF at the same time.

7.3 Warning Messages

None

7.4 Information Messages

None

8 Appendix

None