HYUNDAI AUTOEVER

AUTOSAR ComM User Manual

DOC. NO

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1. Overview

This document is created based on the AUTOSAR standard SRS/SWS. For more detailed information, please refer to the following reference documents.

The following terms on configuration categories mean:

- Changeable (C) : Items that can be configured by user
- Fixed (F) : Items that cannot be changed by user
- NotSupported (N) : Items that are not used

2. Reference

Sl. No.	Title	Version
1	Specification of Communication Manager	4.0.0
2		
3		

3. AUTOSAR System

3.1 ComM Module

The ComM module performs the followings in order to control communication channels.

- Transition communication mode upon FULL COMM or NO COMM request (the request is processed in the BswM Module)
- Notify of the completed mode transition (to BswM)
- Provide network configurations
- Change the communication mode in line with the status of the Nm module (FULL COMM -> SILENT COMM -> NO COMM)

4. Product Release Notes

4.1 Overview

This chapter is intended to provide the release information on the Hyundai AUTOEVER ComM module, describing the features and restrictions of different release versions of the ComM software product.

4.2 Scope of the Release

All content in this document is limited to the following Hyundai AUTOEVER ComM module.

Module name	AUTOSAR version	SWS version	Module version
ComM	4.0.3	4.0.0	1.11.3

※ The module version refers to the SW version of the BswModule Description (Bswmd) file of each module.

4.3 Change Log

4.3.1 Version 1.11.3.0

- Bug
  - If CanChannel receives Nm at BusSleep entry, then Wakeup is not available

Cause	There is no consideration for COM_NMSTART_IND within ComM_SilentComMode, so only ComM_SilentComMode is invoked in all main functions and no action is taken.
Operation effect	None
Setting effect	None

4.3.2 Version 1.11.2.0

➢ Bug

■ Fix the problem that ComM Can't Enter NoCom State if NoCom request between FullCom transition and Nm_NetworkRequest()

Cause	NoCom request ignored before Nm_NetworkRequest() call after switching to FullCom.
Operation effect	Can't Enter NoCom State
Setting effect	None
ASW Action	None

4.3.3 Version 1.11.1.0

➢ Bug

■ Fix the problem that ComM State is unable to enter NoCom when ComMPncNmRequest set false

Cause	If a ComM Channels is mapped to PNC and it's ComMPncNmRequest sets false, that ComM Channel is unable to enter NoCom State.
Operation effect	None
Setting effect	ComMPncNmRequest set false ComMPncNmRequest is NOT SUPPORTED
ASW Action	None

➢ Improvement

■ 'NvM_Types.h' is included only when ComMGlobalNvMBlockDescriptor refers NvM Block.

Cause	If ComMGlobalNvMBlockDescriptor refers nothing, compile error occurs
Operation effect	None
Setting effect	None
ASW Action	None

4.3.4 Version 1.11.0.0

➢ Feature

■ Support PNC Gateway

Cause	Support PNC Gateway feature
Operation effect	None
Setting effect	None
ASW Action	None

➢ Bug

- Fix the problem of PncPrepareSleepTime when multiple ComM channel is assigned to one PNC

Cause	If multiple ComM Channels is mapped to one PNC, Prepare Sleep Timer is decremented in every ComM_Mainfunction of those Channels. So PncPrepareSleepTime is getting shorter than the time configured.
Operation effect	None
Setting effect	None
ASW Action	None

➢ Improvement

- Make Active Wakeup to be handled prior to Passive Wakeup

Cause	When Active Wakeup event occurred right after Passive Wakeup event, only Passive Wakeup is accepted.
Operation effect	None
Setting effect	None
ASW Action	None

4.3.5 Version 1.10.4.0

➢ Improvements

- Further Fix UNECE Cyber Security violations

Cause	UNECE Cyber Security Registration needs Additional Improvements
Operation effect	None
Setting effect	None
ASW Action	None

4.3.6 Version 1.10.3.0

➢ Bug

- When User requests NO_COMMUNICATION, ComM should wait Prepare Sleep Indicaion from Nm before entering to SILENT_COMMUNICATION. But ComM didn't wait Prepare Sleep Indication.

Cause	If every NmVariant of ComM Channel is FULL, the logic of waiting Prepare Sleep Indication doesn't operate This Bug occurs in ComM 1.10.2.0
Operation effect	NONE
Setting effect	NONE
ASW Action	NONE

➢ Improvements

■ Input File List in ComM generating Codes is sorted by file name.

Cause	Add sorting logic to ComM generator.
Operation effect	NONE
Setting effect	NONE
ASW Action	NONE

4.3.7 Version 1.10.2.0

➢ Improvements

■ Fixed the problem of not calling indication related to mode transition when COMM_BUS_TYPE_INTERNAL is set

Cause	When COMM_BUS_TYPE_INTERNAL setting is used, indication for mode transition confirmation is not called, so diagnosis communication of channel set to INTERNAL is impossible.
Operation effect	NONE
Setting effect	NONE
ASW Action	NONE

➢ Improvements

■ Improved security coding to respond to UNECE Cyber Security laws

Cause	Improved security coding to respond to UNECE Cyber Security laws
Operation effect	NONE
Setting effect	NONE
ASW Action	NONE

➢ Improvements

■ Modification Name of Company (AUTRON -> AUTOEVER)

Cause	Modification Name of Company (AUTRON -> AUTOEVER)
Operation effect	NONE
Setting effect	NONE
ASW Action	NONE

4.3.8 Version 1.10.1.0

➢ Improvements

■ Issue of overlapping PNC bit clearing

Cause	Unnecessary operation modification to clear the variable whose PNC value is '0' once more to '0' due to no request

Operation effect	NONE
Setting effect	NONE
ASW Action	NONE

➢ Improvements

■ Fixed case where ActiveDiagnostic does not operate when calling InactiveDiagnostic API multiple times for diagnostic communication

Cause	An issue in which the ActiveDiagnostic function does not work due to the InactiveDiagnostic request requested first when the ActiveDiagnostic function is called after the InactiveDiagnostic is called in the diagnostic module
Operation effect	NONE
Setting effect	NONE
ASW Action	NONE

➢ Improvements

■ Support Extended PNC(Partial Network)

Cause	Modified to support from 8Byte (PN Info Length 4Byte) to 64Byte (PN Info Length 60Byte)
Operation effect	NONE
Setting effect	NONE
ASW Action	NONE

➢ Improvements

■ Modify related to Race Condition

Cause	Modify related to Race Condition
Operation effect	NONE
Setting effect	NONE
ASW Action	NONE

4.3.9 Version 1.10.0.0

➢ Features

■ Support of COMM_BUS_TYPE_INTERNAL feature

Cause	Develop the COMM_BUS_TYPE_INTERNAL feature for IPC diagnosis
Operation effect	None
Setting effect	ComM > ComMConfigSet > ComMBusType
ASW Action	None

4.3.10 Version 1.9.6.1

➢ Improvements

- Request for change in Synchronized Runnable and Schedulable Entity Reentrant properties

Cause	Regarding Synchronized Runnable and Schedulable Entity, change in Reentrant properties of Bswmd_ComM.arxml
Operation effect	None
Setting effect	Need to use Bswmd_ComM.arxml of the released modules
ASW Action	None

4.3.11 Version 1.9.6.0

➢ Improvements

- Review of the MISRA-C

Cause	Review of the MISRA-C
Operation effect	None
Setting effect	None
ASW Action	None

4.3.12 Version 1.9.5.0

➢ Improvements

- Corrected the MISRA-C violation

Cause	Corrected the MISRA-C violation
Operation effect	None
Setting effect	None
ASW Action	None

- Modified the channel name validation feature

Cause	Modified the validation feature that prevents wrong generation of a name if there are similar channel names
Operation effect	None
Setting effect	None
ASW Action	None

4.3.13 Version 1.9.4.0

➢ Improvements

- Build error was found when ComM_GetChannelBusLoad API was used

Cause	Build error was found as ComM_GetChannelBusLoad API was declared twice
Operation effect	None
Setting effect	None
ASW Action	None

- Error was found with PNC bit channel-specific impact of partial networking NM message

Cause	The PNC bit is not independently set up for each channel, causing unintended setting on/off of the PNC bit
Operation effect	None
Setting effect	None
ASW Action	None

4.3.14 Version 1.9.3.0

➢ Improvements

■ Support additional EthSM version (EthSM 4.2)

Cause	Only EthSM 4.1 version has been supported
Operation effect	None
Setting effect	None
ASW Action	None

■ Need to change internal variables status after checking the return value of the API used for network release

Cause	Changed the value of internal variables after network release request, without checking the status of change
Operation effect	None
Setting effect	None
ASW Action	None

■ Creation of COMM_PNC_VECTOR

Cause	Check the PNC Vector value in the CanNm module to create COMM_PNC_VECTOR. The variable is not created if only UdpNm is found
Operation effect	None
Setting effect	None
ASW Action	None

■ Added a condition to generate ComM_GaaPncs to support Ethernet PNC

Cause	A specific variable used in the module is created only in CAN/Frexray, and not generated if only ETH is found
Operation effect	None
Setting effect	None
ASW Action	None

■ Review of the MISRA-C violation

Cause	Review of the MISRA-C violation
Operation effect	None
Setting effect	None
ASW Action	None

■ Added exception logic for SignalHandleId with same Tx/Rx

Cause	SignalHandledId with same Tx/Rx needs to be made as

	exception
Operation effect	None
Setting effect	None
ASW Action	None

- Need to check the return value of the API used for Network Request before making change to the status of internal variables

Cause	After network request, the value of internal variables is often changed without checking the status of change
Operation effect	None
Setting effect	None
ASW Action	None

- Added a condition to support Ethernet PNC feature

Cause	The PNC feature that has supported only CAN/Frexray will support Ethernet, too
Operation effect	None
Setting effect	None
ASW Action	None

4.3.15 Version 1.9.2.0

➢ Improvements

- Modified the modules to support ComMPncId from 8 to 63 in the receiver

Cause	Modified the modules to support ComMPncId from 8 to 63 in the receiver
Operation effect	None
Setting effect	If partial networking is in use: go to Scons > ComM > Input Files List and add Ecud_CanNm
ASW Action	None

4.3.16 Version 1.9.1.0

➢ Improvements

- Modified the modules to support ComMPncId from 8 to 63

Cause	To incorporate the latest specifications of ComMPncdId AUTOSAR
Operation effect	None
Setting effect	None
ASW Action	None

- Addressed failure in reading set values when there is a similar PNC user name

Cause	If there is a similar PNC user name, it is recognized as the same PNC user and set as such
Operation effect	None

Setting effect	None
ASW Action	None

4.3.17 Version 1.9.0.0

➢ Improvements

■ Structural and documentation changes to publish the source code

Cause	Structural and documentation changes to publish the source code
Operation effect	None
Setting effect	None
ASW Action	None

4.3.18 Version 1.9.0

➢ Features

■ API to count the number of messages received and sent by channel

Cause	API to count the number of messages received and sent by channel
Operation effect	None
Setting effect	ComM > ComMGeneral > ComMBusloadDetectingApi If Bus Load API is in use: go to Scons > ComM > Input Files List and add Ecud_CanIf and Ecud_CanSm
ASW Action	None

➢ Improvements

■ Modification of the operation not transitioning to Ready sleep immediately after requesting COMM_MODE_NO_COM in Normal Operation state

Cause	Modifying the behavior of not immediately transitioning to Ready sleep after requesting COMM_MODE_NO_COM in Normal Operation state
Operation effect	None
Setting effect	None
ASW Action	None

4.3.19 Version 1.8.0

➢ Improvements

■ Modified SYNCHRONOUS WAKE UP

Cause	In the specifications it is stated that all channels will be woken up if SYNCHRONOUS WAKE UP is called but the current coding works only to wake up a requested channel.
Operation effect	None
Setting effect	None

ASW Action	None

■ Modified the feature related to coordination of multi-channel PNC

Cause	When the PNC includes more than one channel, each processes the PNC status and counter values without being coordinated. This lack of coordination can cause a trouble
Operation effect	None
Setting effect	None
ASW Action	None

■ Modified the logic to set up ComMPncNmRequest values in channels

Cause	Wrong value was used during creation of NM properties
Operation effect	None
Setting effect	None
ASW Action	None

■ The PrepareSleepTimer that processes a PNC status is made to work for each PNC

Cause	The current release processes PrepareSleepTimer by channel. Timeout should be processed by PNC following EIRA reception. To this end, modification was made to support processing of PrepareSleepTimer by PNC
Operation effect	None
Setting effect	None
ASW Action	None

■ Fixed error related to Tx creation in ComM_COMCbk

Cause	The ComM_COMCbk related to Tx is not in the specification and must be deleted
Operation effect	None
Setting effect	None
ASW Action	None

■ Modified ComM_COMCbk_<SN> creation

Cause	Made change as it does not conform to the naming rule for callback function
Operation effect	None
Setting effect	None
ASW Action	None

■ Error in PNC_COM_MAX_LENGTH creation

Cause	The PNC_COM_MAX_LENGTH value is a pre-compile option to determine maximum length of a signal but it is used without initializing variables used in the generator, allowing the information used for other pre-compile option to have effect. Change is needed to support generation in line with the signal length
Operation effect	None

Setting effect	None
ASW Action	None

■ Fixed error in ComM_GaaPncUserInxArr data

Cause	The PNC ID is not continuous and might have a large value. At the present, the reference is PNC ID. It is possible to access a wrong index if there is a null or large value
Operation effect	None
Setting effect	None
ASW Action	None

■ Error in generator creation during Com Signal Reference in relation to PNC settings

Cause	There is a setting that references signal for processing of PNC ERA/ERIA. Made change to address generation error in the generator
Operation effect	None
Setting effect	None
ASW Action	None

■ Fixed error in ComM_EcuM_WakeUpIndiation

Cause	If ComMSynchronousWakeUp is false but ComMSynchronousWakeUpIndication is called, the status should remain unchanged in COMM_PNC_NO_COMMUNICATION. As this was not the case, the error was corrected
Operation effect	None
Setting effect	None
ASW Action	None

➢ Features

■ Transition the mode of channel to NO_COMM considering PNC status

Cause	If there is no request (criteria: user request count), the channel is supposed to be changed to NO_COMM If PNC is set up, the status of the PNC included in the channel should be examined before mode transition.
Operation effect	None
Setting effect	None
ASW Action	None

4.3.20 Version 1.7.16

➢ Improvements

■ Improved timeout value processing of the NMVARIANT LIGHT type

Cause	When the LIGHT timeout value is set (0 by default), it works

	as users define it. Improvement was made to accept all values as long as they are within the possible range of a ComM Mainfunction cycle
Operation effect	None
Setting effect	None
ASW Action	None

- Modified to allow ComMNmLightTimeout setting

Cause	Sometimes it is needed to set up LIGHT Timeout values according to project requirements. Now users are allowed to set it up by themselves.
Operation effect	None
Setting effect	None
ASW Action	None

4.3.21 Version 1.7.15

➢ Improvements

- Modified the PDF in breach of the 'multiplicity' in AUTOSAR specifications and changed UM contents related to ComM Channel Reset API

Cause	Modified an item with multiplicity setting which is not compliant with AUTOSAR specifications and added description related to ComM Channel Reset API
Operation effect	None
Setting effect	None
ASW Action	None

4.3.22 Version 1.7.14

➢ Improvements

- Eliminated Compile Warning and added Limitation

Cause	Increased reliability by validating Compile Warning and added limitation related to ComM_GetMaxComMode API
Operation effect	None
Setting effect	None
ASW Action	None

4.3.23 version 1.7.13

➢ Improvements

- Modified a behavior to transition to SILENT COMM if FULL COMM is requested following a NO COMM request

Cause	When a user requested NO COMM in the FULL COMM status,

	transition to SILENT COMM was not made if FULL COMM was requested immediately before SleepAck in OsekNm (PREPARE SLEEP MODE notification). The error is corrected
Operation effect	Made change to always transition to SILENT COMM after PREPARE SLEEP MODE notification
Setting effect	None
ASW Action	None

4.3.24 version 1.7.12

- Improvements
  - Modified restrictions on timing of NO COMM request

Cause	For stable mode transition of CAN communication channels, changed the time frame in which transition to NO COMM can be requested
Operation effect	Change in the time frame during which the mode of CAN communication channel transitions to NO COMM
Setting effect	Need to change the setting related to checking of possible timeframe of transition to NO COMM
ASW Action	Need to change the logic related to NO COMM transition

4.4 Module Release Notes

4.4.1 Limitations

- Mode Inhibition is not supported
- ComM_GetMaxComMode API is not supported
- List of configurations not supported

Container	Parameter
ComMVariant	NONE PASSIVE
ComMBusType	INTERNAL

4.4.2 Deviations

- If the CanCM module is in use, an interface will be provided to notify the CanCM module of change in communication mode, only for CAN communication channels
- Channel Id and User Id support 1:1 mapping only
- In AUTOSAR specifications, ComM900 was deleted while ComM826 was added
- Active/Passive Wakeup handling
  : Between Passive and Active Wakeup, Active Wakeup is handled first when two wakeup event occurs in one mainfunction cycle.
- PNC Gateway
  : Apply R44 specification for resolving ambiguous requirements of PNC Gateway in R40 specification

5. Configuration Guide

Most of the ComM configurations in the AUTOSAR platform released by Hyundai AUTOEVER are auto-set based on CAN/LIN/ETH DB during harmonization. Therefore, discussion with an owner of platform release must be sought if change to settings is needed after harmonization.

5.1 ComMGeneral

Parameter Name	Value	Categor
ComMDevErrorDetect	True	F
ComMDirectUserMapping	False	N
ComMEcuGroupClassification	0	N
ComMModeLimitationEnabled	False	N
ComMPncGatewayEnabled	False	C
ComMPncPrepareSleepTimer	False	C
ComMPncSupport	False	C
ComMSynchronousWakeUp	False	N
[1)]ComMTMinFullComModeDuration	0.01	C
ComMVersionInfoApi	False	F
ComMWakeupInihibitionEnabled	False	N
[2)]ComMCanCMSupport	True	C
ComMGlobalNvMBlockDescriptor	-	N

1) If the NM Light option is in use, minimum time is set up to maintain the FULL COMM status after transition from NOCOMM to FULL COMM (during this time, NO COMM request of a user is not accepted).
2) If the CanCM module is in use, set it to True. Then the CanCM module will get notified every time the ComM communication mode changes.

5.2 ComMChannel

Parameter Name	Value	Categor
ComMBusType	Automated	F
ComMChannelId	Automated	F
ComMFullCommRequestNotificationEnabled	False	N
ComMGlobalNvmBlockDescriptor	False	N
[1)]ComMMainFunctionPeriod	0.005	C
ComMNoCom	False	N
ComMNoWakeup	False	N
[2)]ComMPncGatewayType	-	C

1) Set up the run cycle of Main Function (for the accuracy of time estimation, any set value related to time in the ComM module must be set as multiple of the cycle in Main Function).
2) PNC Gateway Type of ComMChannel. (Active / Passive). If it is not set, the default value is “Active” type.

It is valid only when ComMPncGatewayEnabled is true

5.3 ComMNetworkManagement

Parameter Name	Value	Categor
1)ComMNmLightTimeout	Automated	C
2) ComMNmVariant	Automated	C
ComMPncNmRequest	False	N

1) The waiting time until entering NO COMM after request when ComMNmVariant is LIGHT
2) FULL : The Nm module is in use
   LIGHT : The Nm module is not in use

5.4 ComMUser

Parameter Name	Value	Categor
ComMUserIdentifier	Automated	C
ComMUserEcucPartitionRef	-	N

5.5 ComMConfigSet

Parameter Name	Value	Categor
ComMPncEnabled	False	C

5.6 ComMPnc

Parameter Name	Value	Categor
ComMPncId	-	C
ComMChannelPerPnc	-	C
ComMUserPerPnc	-	C

5.7 ComMPnc > Com Signal

Parameter Name	Value	Categor
ComMPncComSignalDirection	-	C
ComMPncComSignalKind	-	C
ComMPncComSignalChannelRef	-	C
ComMPncComSignalRef	-	C

6. Application Programming Interface (API)

6.1 Type Definitions

None

6.2 Macro Constants

None

6.3 Functions

6.3.1.1 ComM_GetRequestedComMode

Function Name	ComM_GetRequestedComMode
Syntax:	FUNC(Std_ReturnType, COMM_CODE) ComM_GetRequestedComMode(ComM_UserHandleType User, P2VAR(ComM_ModeType, AUTOMATIC, COMM_APPL_DATA) ComMode)
Service ID	0x07
Sync/Async	Synchronous
Reentrancy	Reentrant
Parameters (In)	User
Parameters (Inout)	None
Parameters (Out)	ComMode
Return Value	Std_ReturnType
Description	Function to query the currently requested communication mode of the corresponding user
Preconditions	ComM shall be initialized.
Configuration Dependency	None
In Communication with application SW-C	Rte_Call_ <RPort>_ GetRequestedComMode

6.3.1.2 ComM_GetCurrentComMode

Function Name	ComM_GetCurrentComMode
Syntax:	FUNC(Std_ReturnType, COMM_CODE) ComM_GetCurrentComMode(ComM_UserHandleType User ,P2VAR(ComM_ModeType, AUTOMATIC, COMM_APPL_DATA) ComMode)
Service ID	0x08
Sync/Async	Synchronous
Reentrancy	Reentrant
Parameters (In)	User
Parameters (Inout)	None
Parameters (Out)	ComMode
Return Value	Std_ReturnType
Description	Function to query the current communication mode.
Preconditions	ComM shall be initialized.
Configuration Dependency	None
In Communication with application SW-C	Rte_Call_ <RPort>_ GetCurrentComMode

6.3.1.3 ComM_GetChannelBusLoad

Function Name	ComM_GetChannelBusLoad

Syntax:	FUNC(Std_ReturnType, COMM_CODE) ComM_GetChannelBusLoad (VAR(NetworkHandleType, COMM_VAR_POWER_ON_INIT) Channel, P2VAR(ComM_BusMsgType, AUTOMATIC, COMM_APPL_DATA) BusLoad)
Service ID	0x37
Sync/Async	Synchronous
Reentrancy	Non Reentrant
Parameters (In)	Channel
Parameters (Inout)	None
Parameters (Out)	BusLoad
Return Value	Std_ReturnType
Description	This service provide Tx/Rx Message Counts of Channel
Preconditions	ComM shall be initialized.
Configuration Dependency	ComMBusloadDetectingApi
In Communication with application SW-C	

1) To use API, the following two items must be set to True.
   - ComM/ComMGeneral/ComMBusloadDetectingApi
   - CanIf/CanIfPublicCfg/CanIfBusloadDetectingSupport
2) If the Tx, Rx values of the read BusLoad are smaller than the existing values, the overflow of the values should be considered.
   - The Tx/Rx message count is all defined as uint32
3) The API provides message counts only for the CAN channel.

7. Generator

7.1 Generator Option

Options	Description
-H/-Help	To display help regarding usage of the tool.
-O/-Output	To generate the output files in the specified directory location.
-V/-Version	To display the copyright information and the tool version.
-L/-Log	To generate "$BswConfig::Lis_File_Name" file.

7.2 Generator Message

7.2.1 Error Messages

ERR012001: Unexpected Error Found. Please contact KPIT AUTOSAR Support System.

This error message is displayed, if (output source files generated do not have uneven number of fields in the structures)

ERR012002: Unexpected Error Found. This error may be due to the incorrect configuration of the element(s) 'Element Name'. If the error is not resolved, then please contact KPIT AUTOSAR Support System.

This error message is displayed, if (Incorrect Configuration of paramater(s) and conatiner(s) in input file(s))

ERR012003: ComM Component is not present in the input file(s).
This error message is displayed, if (Module ComM is not present in input file(s))

ERR012003: If none of the ECU Configuration Description File(s) contain the required component

This error message is displayed, if (none of the ECU Configuration Description File(s) contain the required component)

ERR012004: The Reference path is empty for the parameter '$parameter' in the container '$container', having short name 'ShortName'.
This error message is displayed, if (the references provided in the input file are empty)

ERR012005: Parameter 'Parameter Name' in the container 'Container Name' should be configured.
This error message is displayed, if (The parameter 'Parameter Name' in the container 'Container Name' is not configured)

ERR012006: The value configured for the parameter 'AR-RELEASE-VERSION' and 'SW-VERSION' in the container 'BSW-IMPLEMENTATION' should follow the C Syntax.

This error message is displayed, if (AR-RELEASE-VERSION and SW-VERSION present in the Com Module Description template do not follow C syntax)

ERR012008: Value of the parameter 'ComMNoCom' in the container 'ComMChannel' should not be configured as false, since value of the parameter 'ComMModeLimitationEnabled' in the container 'ComMChannel' is configured as true.

This error message is displayed, if (value of the parameter ComMModeLimitationEnabled is true and ComMNoCom is false.)

ERR012013: The reference path <Reference Path> provided for the parameter 'Parameter Name' in the container 'Container Name' having short name <Short Name> is incorrect.

This error message is displayed, if (Incorrect reference path is configured for the parameter 'Parameter Name' in the container 'Container Name')

ERR012020: The value <Value> of the structure element 'Structure Element Name' in structure 'Structure Name' is not within the range. The value <Value> should be within the range of <Min Value> - <Max Value>, as its data type is <Type>.

This error message is displayed, if ((Value of the structure element < Min value) || (Value of the structure element > Max value))

ERR012023: Parameter 'ComMNmLightTimeout' in the container 'ComMNetworkManagement' should be configured, since value of the parameter 'ComMNmVariant' in the container ' ComMNetworkManagement ' is configured as LIGHT.

This error message is displayed, if (Value of the parameter ComMNmLightTimeout is not configured and ComMNmVariant is configured as LIGHT)

ERR012051: Value configured for the parameter 'Parameter Name' should be unique in 'Container Name' container.

This error message is displayed, if (Value of the Parameter 'Parameter Name' in the container 'Container Name' is not unique)

ERR012053: Value of the parameter 'ComMNmVariant' present in the container 'ComMNetworkManagement' should be configured as <NONE>, when the value of the parameter 'ComMBusType' present in the container 'ComMChannel' is configured as <COMM_BUS_TYPE_INTERNAL>.

This error message is displayed, if (Value of the Parameter 'ComMNmVariant' is configured as <NONE> and 'ComMBusType' is configured as <COMM_BUS_TYPE_INTERNAL>)

ERR012054: Value of the parameter 'ComMBusType' present in the container 'ComMChannels' should be configured as <COMM_BUS_TYPE_INTERNAL>, when the value of the parameter 'ComMNmVariant'' present in the container 'ComMNM' is configured as <NONE>.

This error message is displayed, if (Value of the Parameter ComMNmVariant configured as <NONE>, and parameter ComMBusType is not configured as <COMM_BUS_TYPE_INTERNAL>)

ERR012055: If the parameter 'ComMGlobalNvmBlockDescriptor' in the container 'ComMChannels' is true then the parameter 'ComMGlobalNvMBlockDescriptor' in the container 'ComMGeneral' should have a valid reference.

This error message is displayed, if (Value of the parameter ComMGlobalNvmBlockDescriptor in the container ComMChannel is true and the parameter ComMGlobalNvmBlockDescriptor in the container ComMGeneral is not configured)

ERR012056: The reference of parameter 'ComMUserChannel' in the container 'ComMUserPerChannel' and reference of parameter 'ComMChannelPerPnc' in the container 'ComMPnc' should be unique.

This error message is displayed, if (value of the parameter ComMUserChannel and parameter ComMChannelPerPnc references are same)

ERR012057: If the parameter 'ComMPncGatewayEnabled ' configured as 'true' in the container 'ComMGeneral' and the Parameter 'ComMPncComSignalChannelRef' in the 'ComMPncComSignal' container should be configured.

This error message is displayed, if (Value of the parameter ComMPncComSignalChannelRef is not configured and parameter ComMPncGatewayEnabled is true)

ERR012008: Value of the parameter 'ComMNmVariant' in the container 'ComMNetworkManagement' should not be configured as PASSIVE, since value of the parameter 'ComMModeLimitationEnabled' in the container 'ComMGeneral' is configured as false.

This error message is displayed, if (value of the parameter 'ComMNmVariant' is configured as PASSIVE and the parameter 'ComMModeLimitationEnabled' is configured as false)

ERR012009: The parameter 'ComMPncGatewayType' in the container 'ComMChannels' should not be configured when the parameter 'ComMPncGatewayEnabled' in the container 'ComMGeneral' is False.

This error message is displayed, if ((ComMPncGatewayType = False) && (ComMPncGatewayType is configured))

ERR012008: Value of the parameter 'ComMPncGatewayEnabled' in the container 'ComMGeneral' should not be configured as true, since value of the parameter 'ComMPncEnabled' in the container 'ComMConfigSet' is configured as false.

This error message is displayed, if (value of the parameter 'ComMPncGatewayEnabled' is configured as true and the parameter 'ComMPncEnabled' is configured as false)

7.2.2 Warning Messages

7.2.3 Information Messages

8. Det Error

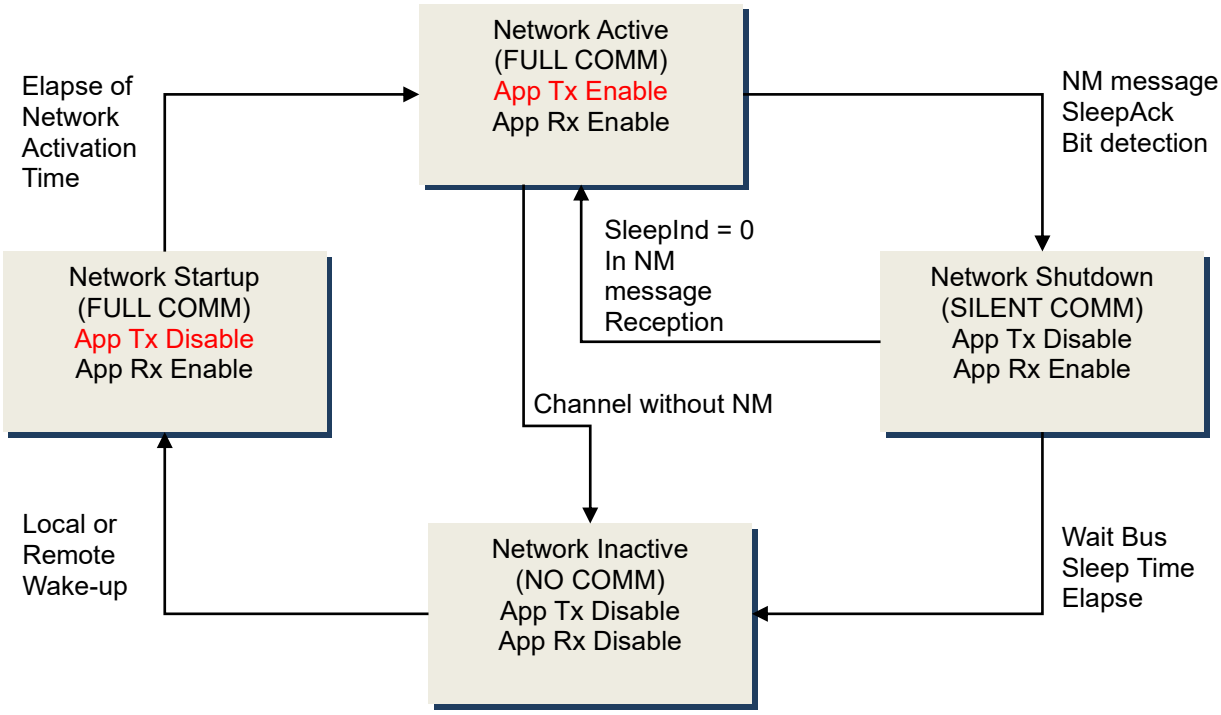
Type of error	Relevance	Related error code	Value
API service used without module initialization	Development	COMM_E_NOT_INITED	0x1
API service used with wrong parameters (e.g. a NULL pointer)	Development	COMM_E_WRONG_PARAMETERS	0x2
ComM not initialized	Development	COMM_E_UNINIT	0x3

9. Appendix

9.1 Configuration Guide for each function

9.1.1 Caution for transition communication mode

For CAN communication channel, a request for transition to NO COMMUNICATION must be made when the channel status is **Network Active.** The Tx Enable time point of the Com module is when the relevant CAN channel turns Network Active. See the Com manual to learn how to get notified of this.



[Transition of Communication Status in CAN Channel]

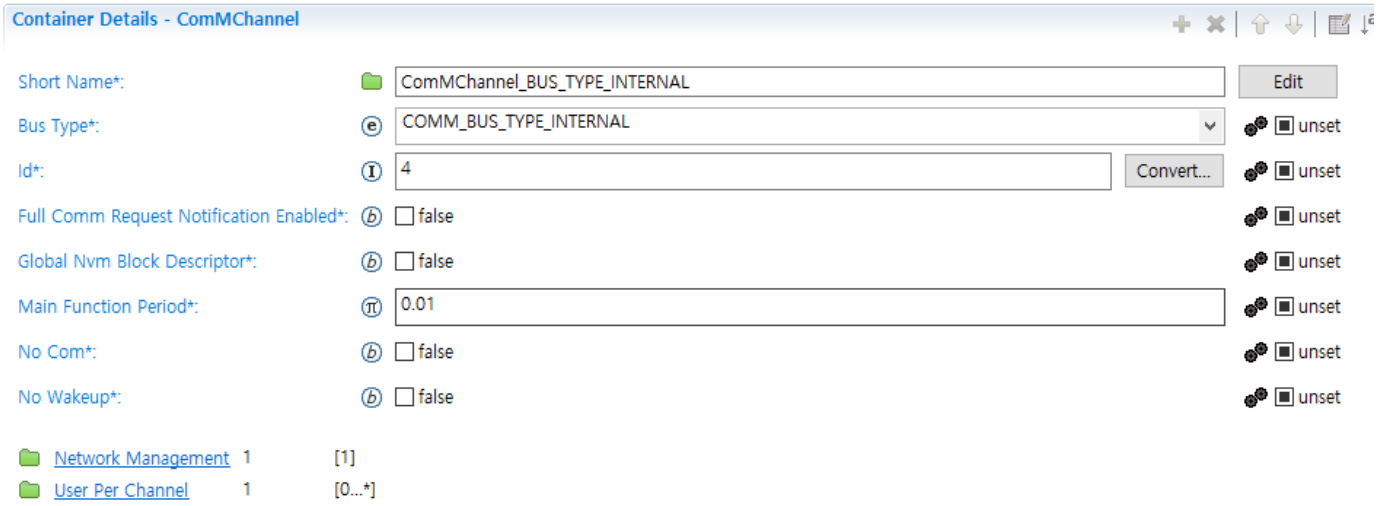
9.1.2 Setting of a communication mode request service

Regarding communication mode requests, the mode will be managed through the BswM module.

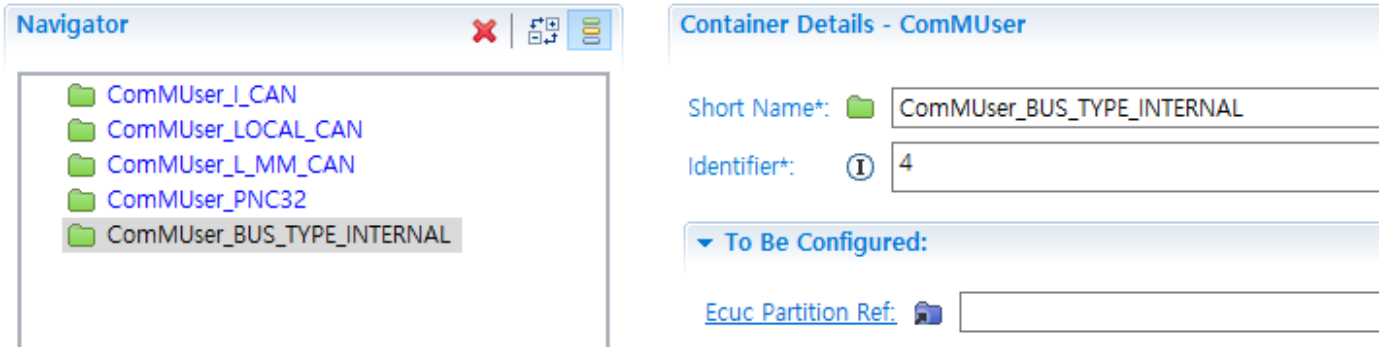
9.1.3 Setting of BUS_TYPE_INTERNAL

The setting must be done in the same way as it has been done for other channels in use (Mainfunction, Port setting, etc.).
Only a channel has been added.
See the following screenshot for necessary steps.

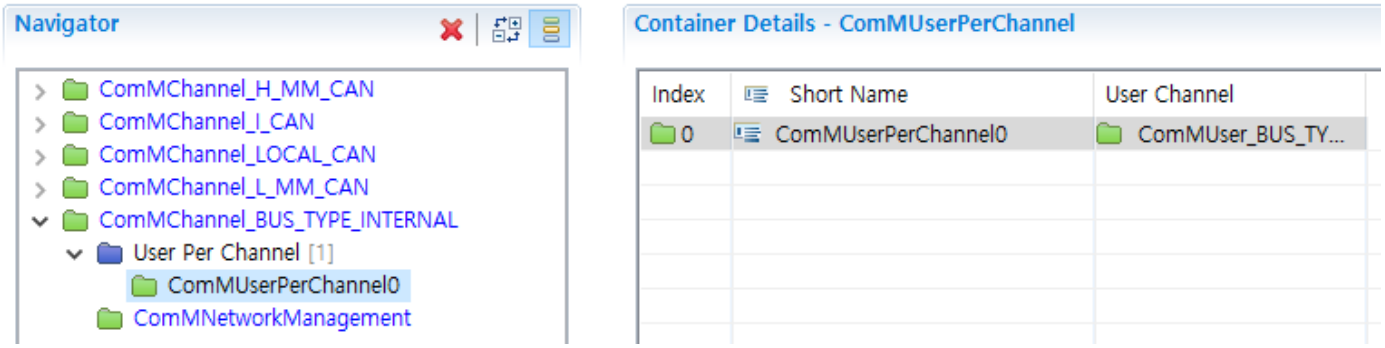
1. Add ComMChannel (Bus Type = COMM_BUS_TYPE_INTERNAL)



2. Add ComMUser



3. Add User Per Channel to the ComM channel



4. ComMNetworkManagement was added (available only if Nm Varian = NONE)