R-Car V4H MCAL

Release Note

1 Introduction

This document describes regarding to product of the R-Car V4H AUTOSAR MCAL.

Contents

2 Overview

This document explains the release information of R-Car V4H AUTOSAR MCAL.

2.1 General Information

2.1.1 Package Information

Table 2-1 General Information

Item	Name	Note
Project	R-Car V4H AUTOSAR MCAL	-
Part Number	RTM8RC779GCMCL5DA0JCDRE	-
Product Release Version	Ver19.3.0	-
Modules supported	CAN, CRC, DIO, EMM, ETH, FLS, GPT, ICCOM, IIC, IPMMU, MCU, PORT, RFSO, SPI, THS, WDG	-
Release Date	27-Mar, 2025	-

2.1.2 Environment

Table 2-2 Environment Information

Item	Name
Devices supported	R-Car V4H
Supported cores	Cortex-R52 CPU
Compiler	ARM Compiler 6.16.2
Operating environment	Renesas R-Car V4H White Hawk board
Initial Program Loader	ICUMX IPL Rev.1.56.0

2.2 Release Software

Table 2-3 Release Software information

Component Name	Version	Current Quality Grade	Target Quality Grade	Note
CAN	1.1.13	ASIL	ASIL	-
CRC	1.0.8	ASIL	ASIL	-
DIO	1.3.8	ASIL	ASIL	-
EMM	1.0.9	ASIL	ASIL	-
ETH	1.4.9	ASIL	ASIL	-
FLS	1.1.10	QM	QM	-
GPT	1.7.11	ASIL	ASIL	-
ICCOM	1.1.9	ASIL	ASIL	-
IIC	1.0.12	ASIL	ASIL	-
IPMMU	1.0.8	ASIL	ASIL	-
MCU	1.1.13	ASIL	ASIL	-
PORT	1.1.12	ASIL	ASIL	-
RFSO	1.0.7	ASIL	ASIL	-
SPI	1.5.10	ASIL	ASIL	-
THS	1.0.8	ASIL	ASIL	-
WDG	1.4.5	ASIL	ASIL	-

Note:

Please see a distinguish contract for ASIL of this product.

2.2.1 COMMON

2.2.1.1 Target Info

Table 2-4 COMMON module target information

Module	Common
Module Overview	R-CarS4_V4H_V4M_MCAL_ModuleOverview.pdf
Getting Started	r11uz0132ej0201-rcarv4h-mcal-gs.pdf
Embedded User's Manual	r11uz0133ej0300-rcarv4h-mcal-eum.pdf
Tool User's Manual	r11uz0131ej0300-rcarv4h-mcal-tum.pdf
Appendix	r11uz0159ej0200-rcarv4h-mcal-apx.pdf

2.2.1.2 Release Item

Table 2-5 COMMON module release item

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Sample Common File Header for V4H (rel\V4H\common_family\include\arm)			
device_cfg.h	1.0.3	1.0.3	No change.
Interrupt_Cfg.h	1.0.10	1.0.10	No change.
Interrupt_VectorTable.h	1.0.0	1.0.0	No change.
RCar_V4H_0.h	1.0.13	1.0.13	No change.
RCar_FuSa.h	1.0.0	1.0.0	No change.
Sample Common File Source for V4H (rel\V4H\common_family\src\arm)			
device_cfg.c	1.0.6	1.0.6	No change.
Interrupt_VectorTable.c	1.0.1	1.0.1	No change.
RCar_FuSa.c	1.0.0	1.0.0	No change.
Translation Header File for V4H (rel\V4H\common_family\generator\arm)			
V4H_translation.h	1.0.9	1.0.9	No change.
Sample_Application_V4H.trxml	1.0.0	1.0.0	No change.
Sample Common File Header for RCar (rel\common\generic\include\19_11)			
Platform_Types.h	1.0.0	1.0.0	No change.
Sample Common File Header for RCar (rel\common\generic\include\common)			
log.h	1.0.0	1.0.0	No change.
scif.h	1.0.0	1.0.0	No change.
Sample Common File Header for RCar (rel\common\generic\include\common\arm)			
arm_cr.h	1.0.3	1.0.3	No change.
arm_cr_cp15.h	1.0.0	1.0.0	No change.
arm_cr_mpu.h	1.0.0	1.0.0	No change.
arm_cr_reg.h	1.0.0	1.0.0	No change.
arm_gic.h	1.0.0	1.0.0	No change.
Interrupt.h	1.0.1	1.0.1	No change.
utils.h	1.0.0	1.0.0	No change.
Sample Common File Source for RCar (rel\common\generic\src)			
log.c	1.0.0	1.0.0	No change.
scif.c	1.0.2	1.0.2	No change.

Sample Common File Source for RCar (rel\common\generic\src\arm)			
Interrupt.c	1.0.1	1.0.1	No change.
rcar_cfg.c	1.0.2	1.0.2	No change.
start.s	1.0.3	1.0.3	No change.
startup.c	1.0.1	1.0.1	No change.
Sample Common Type File Header for AUTOSAR (common\include\19_11)			
ComStack_Cfg.h	1.0.0	1.0.0	No change.
ComStack_Types.h	1.0.0	1.0.0	No change.
Std_Types.h	1.0.0	1.0.0	No change.
Sample Compiler Header File for V4H (rel\common\generic\compiler\common\arm\include)			
Compiler.h	1.0.4	1.0.4	No change.
Sample Compiler Config Header File for V4H (rel\common\generic\compiler\common\arm\include)			
Compiler_Cfg.h	1.0.6	1.0.6	No change.
Sample Compiler Config Header File Dep for V4H (rel\common\generic\compiler\common\arm\include\cfg)			
Compiler_Cfg_dep.h	1.0.0	1.0.0	No change.
Sample MemMap File – ARM Compiler (rel\common\generic\compiler\19_11\arm\include)			
MemMap_dep.h	1.0.0	1.0.0	No change.
Common Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Common_MemMap.h	1.0.1	1.0.1	No change.
FuSa_MemMap.h	1.0.0	1.0.0	No change.
Generation File (rel\common\generic\generator)			
MCALConfGen.exe	1.2.3	1.2.3	No change.
Stub File (rel\common\generic\stubs\19_11)			
Stubs files for DET, DEM, OS, RTE, <Msn>If, etc.	-	-	-
Module User Manual File (rel/V4H/common_family/docs/user_manual/V4H)			
r11uz0133ej0300-rcarv4h-mcal-eum.pdf	2.02	3.00	Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: - Update Release Version in Table 1.1 2.Reference Documents - Update references version at Table 2.1 Reference Documents(1/2).

r11uz0131ej0300-rcarv4h-mcal-tum.pdf	2.02	3.00	Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: Update Supported Generation Tool Version in Table 1.2 2.Reference Documents - Update references version at Table 2.1 Reference Documents (1/2).
Common User Manual File (rel\common\generic\docs)			
R-CarS4_V4H_V4M_MCAL_ModuleOverview.pdf	3.02	4.00	Cover, footer and colophon: - Update Rev and issue date. Chapter 2. Reference documents: - Update version of reference documents. Chapter 5: Section 5.1 Products: - Update MCAL Product Release Version for R-CAR/V4H.
r11uz0132ej0201-rcarv4h-mcal-gs.pdf	2.01	2.01	No change.
Appendix File (rel/V4H/common_family/docs/appendix/V4H)			
r11uz0159ej0200-rcarv4h-mcal-apx.pdf	2.00	2.00	No change.

2.2.2 CAN

2.2.2.1 Target Info

Table 2-6 CAN module target information

Module	**CAN**
Software Version	1.1.13

2.2.2.2 Release Item

Table 2-7 CAN module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Can_MemMap.h	1.1.10	1.1.10	No change.
Configuration File (rel\modules\can\sample_application\V4H\19_11\config)			
App_CAN_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\can\sample_application\V4H\19_11\config)			
RCar_CAN_001.arxml	-	-	No change.
RCar_CAN_008.arxml	-	-	No change.
RCar_CAN_009.arxml	-	-	No change.
RCar_CAN_014.arxml	-	-	No change.
RCar_CAN_RC_002.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
Can.cfgxml	1.3.1	1.3.1	No change.
CanRCAR.dll	1.0.12	1.0.12	No change.
Module Description File (rel\modules\can\generator\V4H)			
R1911_CAN_V4H_BSWMDT.arxml	1.1.13	1.1.13	No change.
Definition File (rel\modules\can\definition\19_11\V4H)			
R1911_CAN_V4H.arxml	1.1.9	1.1.9	No change.
Sample Application Source File (rel\modules\can\sample_application\src)			
App_CAN_Common_Sample.c	1.1.9	1.1.9	No change.
Sample Application Header File (rel\modules\can\sample_application\include)			
App_Can_Common_Sample.h	1.1.4	1.1.4	No change.
V4H Specific Sample Application Source File (rel\modules\can\sample_application\V4H\src\arm)			
App_CAN_V4H_Sample.c	1.1.10	1.1.10	No change.
V4H Specific Sample Application Header File (rel\modules\can\sample_application\V4H\include\arm)			
App_CAN_Device_Sample.h	1.0.1	1.0.1	No change.
Source File (rel\modules\can\src)			
Can.c	1.1.9	1.1.9	No change.
Can_Icom.c	1.1.10	1.1.10	No change.
Can_Irq.c	1.1.10	1.1.10	No change.
Can_MainServ.c	1.1.12	1.1.12	No change.
Can_ModeCntrl.c	1.1.9	1.1.9	No change.
Can_Ram.c	1.1.8	1.1.8	No change.
Can_RamTest.c	1.1.9	1.1.9	No change.
Can_Version.c	1.1.2	1.1.2	No change.

Can_Write.c	1.1.8	1.1.8	No change.
Header File (rel\modules\can\include)			
Can.h	1.1.13	1.1.13	No change.
Can_CommonRegStruct.h	1.0.3	1.0.3	No change.
Can_Icom.h	1.1.9	1.1.9	No change.
Can_Irq.h	1.1.9	1.1.9	No change.
Can_LTTypes.h	1.1.9	1.1.9	No change.
Can_MainServ.h	1.1.3	1.1.3	No change.
Can_ModeCntrl.h	1.1.6	1.1.6	No change.
Can_PBTypes.h	1.1.8	1.1.8	No change.
Can_Ram.h	1.1.8	1.1.8	No change.
Can_Version.h	1.0.1	1.0.1	No change.
Specific Header File (rel\modules\can\include\V4H)			
Can_RegStruct.h	1.0.3	1.0.3	No change.

2.2.3 CRC

2.2.3.1 Target Info

Table 2-8 CRC module target information

Module	CRC
Software Version	1.0.8

2.2.3.2 Release Item

Table 2-9 CRC module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
CddCrc_MemMap.h	1.0.2	1.0.2	No change.
Configuration File (rel\modules\cddcrc\sample_application\V4H\19_11\config)			
App_CDD_CRC_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\cddcrc\sample_application\V4H\19_11\config)			
RCar_CddCrc_001.arxml	-	-	No change.
RCar_CddCrc_003.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
CddCrc.cfgxml	1.0.0	1.0.0	No change.
CddCrcRCAR.dll	1.0.5	1.0.5	No change.
Module Description File (rel\modules\cddcrc\generator\V4H)			
R1911_CDD_CRC_V4H_BSWMDT.arxml	1.0.8	1.0.8	No change.
Module Description File (rel\modules\cddcrc\description\V4H)			
R1911_CDD_CRC_V4H_DataTypes.arxml	-	1.0.0	Initial version.
R1911_CDD_CRC_V4H_Interfaces.arxml	-	1.0.0	Initial version.
R1911_CDD_CRC_V4H_SWCD.arxml	-	1.0.0	Initial version.
R1911_CDD_CRC_V4H_SwcBswMap.arxml	-	1.0.0	Initial version.
R1911_CDD_CRC_V4H_BSWMD.arxml	-	1.0.0	Initial version.
Definition File (rel\modules\cddcrc\definition\19_11\V4H)			
R1911_CDD_CRC_V4H.arxml	1.0.6	1.0.6	No change.
Sample Application Source File (rel\modules\cddcrc\sample_application\src)			
App_CDD_CRC_Common_Sample.c	1.0.7	1.0.7	No change.
Sample Application Header File (rel\modules\cddcrc\sample_application\include)			
App_CDD_CRC_Common_Sample.h	1.0.0	1.0.0	No change.
V4H Specific Sample Application Source File (rel\modules\cddcrc\sample_application\V4H\src\arm)			
App_CDD_CRC_V4H_Sample.c	1.0.1	1.0.1	No change.
V4H Specific Sample Application Header File (rel\modules\cddcrc\sample_application\V4H\include\arm)			
App_CDD_CRC_V4H_Sample.h	1.0.0	1.0.0	No change.

Source File (rel\modules\cddcrc\src)			
CDD_Crc.c	1.0.6	1.0.6	No change.
CDD_Crc_Irq.c	1.0.6	1.0.6	No change.
CDD_Crc_Ram.c	1.0.8	1.0.8	No change.
CDD_Crc_Version.c	1.0.8	1.0.8	No change.
Source File (rel\modules\cddcrc\src\CRC)			
CDD_Crc_LLDriver.c	1.0.8	1.0.8	No change.
Source File (rel\modules\cddcrc\src\KCRC)			
CDD_Crc_KCRC_LLDriver.c	1.0.8	1.0.8	No change.
Source File (rel\modules\cddcrc\src\WCRC)			
CDD_Crc_WCRC_LLDriver.c	1.0.8	1.0.8	No change.
Header File (rel\modules\cddcrc\include)			
CDD_Crc.h	1.0.8	1.0.8	No change.
CDD_Crc_Irq.h	1.0.1	1.0.1	No change.
CDD_Crc_PBTypes.h	1.0.7	1.0.7	No change.
CDD_Crc_Ram.h	1.0.6	1.0.6	No change.
CDD_Crc_RegAccess.h	1.0.1	1.0.1	No change.
CDD_Crc_Types.h	1.0.2	1.0.2	No change.
CDD_Crc_Version.h	1.0.0	1.0.0	No change.
Header File (rel\modules\cddcrc\include\CRC)			
CDD_Crc_LLDriver.h	1.0.0	1.0.0	No change.
Header File (rel\modules\cddcrc\include\KCRC)			
CDD_Crc_KCRC_LLDriver.h	1.0.1	1.0.1	No change.
Header File (rel\modules\cddcrc\include\WCRC)			
CDD_Crc_WCRC_LLDriver.h	1.0.6	1.0.6	No change.

2.2.4 DIO

2.2.4.1 Target Info

Table 2-10 DIO module target information

Module	DIO
Software Version	1.3.8

2.2.4.2 Release Item

Table 2-11 DIO module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Dio_MemMap.h	1.3.7	1.3.7	No change.
Configuration File (rel\modules\dio\sample_application\V4H\19_11\config)			
App_DIO_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\dio\sample_application\V4H\19_11\config)			
RCar_Dio_007.arxml	-	-	No change.
RCar_Dio_008.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
Dio.cfgxml	1.0.1	1.0.1	No change.
DioRCAR.dll	1.0.8	1.0.8	No change.
Module Description File (rel\modules\dio\generator\V4H)			
R1911_DIO_V4H_BSWMDT.arxml	1.3.8	1.3.8	No change.
Definition File (rel\modules\dio\definition\19_11\V4H)			
R1911_DIO_V4H.arxml	1.0.4	1.0.4	No change.
V4H Specific Sample Application Source File (rel\modules\dio\sample_application\V4H\src\arm)			
App_DIO_V4H_Sample.c	1.0.4	1.0.4	No change.
V4H Specific Sample Application Header File (rel\modules\dio\sample_application\V4H\include\arm)			
App_DIO_V4H_Sample.h	1.0.0	1.0.0	No change.
Source File (rel\modules\dio\src)			
Dio.c	1.3.7	1.3.7	No change.
Dio_Version.c	1.3.7	1.3.7	No change.
Source File (rel\modules\dio\src\PFC)			
Dio_PFC_LLDriver.c	1.3.7	1.3.7	No change.
Header File (rel\modules\dio\include)			
Dio.h	1.3.8	1.3.8	No change.
Dio_LTTypes.h	1.3.7	1.3.7	No change.
Dio_Version.h	1.3.1	1.3.1	No change.
Header File (rel\modules\dio\include\PFC)			
Dio_PFC_LLDriver.h	1.3.8	1.3.8	No change.

2.2.5 EMM

2.2.5.1 Target Info

Table 2-12 EMM module target information

Module	EMM
Software Version	1.0.9

2.2.5.2 Release Item

Table 2-13 EMM module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
CddEmm_MemMap.h	1.0.1	1.0.1	No change.
Configuration File (rel\modules\cddemm\sample_application\V4H\19_11\config)			
App_CDD_EMM_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\cddemm\sample_application\V4H\19_11\config)			
RCar_CddEmm_018.arxml	-	-	No change.
RCar_CddEmm_019.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
CddEmm.cfgxml	-	-	No change.
CddEmmRCAR.dll	1.0.9	1.0.9	No change.
Module Description File (rel\modules\cddemm\generator\V4H)			
R1911_CDD_EMM_V4H_BSWMDT.arxml	1.0.9	1.0.9	No change.
Module Description File (rel\modules\cddemm\description\V4H)			
R1911_CDD_EMM_V4H_BSWMD.arxml	1.0.9	1.0.9	No change.
R1911_CDD_EMM_V4H_DataTypes.arxml	1.0.1	1.0.1	No change.
R1911_CDD_EMM_V4H_Interfaces.arxml	1.0.1	1.0.1	No change.
R1911_CDD_EMM_V4H_SWCD.arxml	1.0.6	1.0.6	No change.
R1911_CDD_EMM_V4H_SwcBswMap.arxml	-	1.0.0	Initial version.
Definition File (rel\modules\cddemm\definition\19_11\V4H)			
R1911_CDD_EMM_V4H.arxml	1.0.9	1.0.9	No change.
Sample Application Source File (rel\modules\cddemm\sample_application\src)			
App_CDD_EMM_Common_Sample.c	1.0.9	1.0.9	No change.
Sample Application Header File (rel\modules\cddemm\sample_application\include)			
App_CDD_EMM_Common_Sample.h	1.0.1	1.0.1	No change.
V4H Specific Sample Application Source File (rel\modules\cddemm\sample_application\V4H\src\arm)			
App_CDD_EMM_V4H_Sample.c	1.0.9	1.0.9	No change.
V4H Specific Sample Application Header File (rel\modules\cddemm\sample_application\V4H\include\arm)			
App_CDD_EMM_V4H_Sample.h	1.0.1	1.0.1	No change.

Source File (rel\modules\cddemm\src)			
CDD_Emm.c	1.0.9	1.0.9	No change.
CDD_Emm_Internal.c	1.0.9	1.0.9	No change.
CDD_Emm_Irq.c	1.0.9	1.0.9	No change.
CDD_Emm_Ram.c	1.0.9	1.0.9	No change.
CDD_Emm_Version.c	1.0.5	1.0.5	No change.
Header File (rel\modules\cddemm\include)			
CDD_Emm.h	1.0.9	1.0.9	No change.
CDD_Emm_Internal.h	1.0.9	1.0.9	No change.
CDD_Emm_Irq.h	1.0.9	1.0.9	No change.
CDD_Emm_PBTypes.h	1.0.5	1.0.5	No change.
CDD_Emm_Ram.h	1.0.9	1.0.9	No change.
CDD_Emm_RegReadWrite.h	1.0.9	1.0.9	No change.
CDD_Emm_Types.h	1.0.9	1.0.9	No change.
CDD_Emm_Version.h	1.0.5	1.0.5	No change.

2.2.6 ETH

2.2.6.1 Target Info

Table 2-14 ETH module target information

Module	ETH
Software Version	1.4.9

2.2.6.2 Release Item

Table 2-15 ETH module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Eth_MemMap.h	1.0.2	1.0.2	No change.
Configuration File (rel\modules\eth\sample_application\V4H\19_11\config)			
App_ETH_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\eth\sample_application\V4H\19_11\config)			
RCar_Eth_011.arxml	-	-	No change.
RCar_Eth_012.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
Eth.cfgxml	1.2.1	1.2.1	No change.
EthRCar.dll	1.1.1	1.1.1	No change.
Module Description File (rel\modules\eth\generator\V4H)			
R1911_ETH_V4H_BSWMDT.arxml	1.0.9	1.0.9	No change.
Definition File (rel\modules\eth\definition\19_11\V4H)			
R1911_ETH_V4H.arxml	1.0.4	1.0.4	No change.
Sample Application Source File (rel\modules\eth\sample_application\src)			
App_ETH_Common_Sample.c	1.4.6	1.4.6	No change.
Sample Application Header File (rel\modules\eth\sample_application\include)			
App_ETH_Common_Sample.h	1.4.2	1.4.2	No change.
V4H Specific Sample Application Source File (rel\modules\eth\sample_application\V4H\src\arm)			
App_ETH_V4H_Sample.c	1.4.7	1.4.7	No change.
V4H Specific Sample Application Header File (rel\modules\eth\sample_application\V4H\include)			
App_ETH_Device_Sample.h	1.4.7	1.4.7	No change.
Source File (rel\modules\eth\src)			
Eth.c	1.4.7	1.4.7	No change.
Eth_Filter.c	1.4.5	1.4.5	No change.
Eth_Util.c	1.4.7	1.4.7	No change.
Eth_Version.c	1.4.2	1.4.2	No change.
Source File (rel\modules\eth\src\AVB)			
Eth_AVB_Dma.c	1.4.9	1.4.9	No change.
Eth_AVB_Irq.c	1.4.7	1.4.7	No change.
Eth_AVB_LLDriver.c	1.4.8	1.4.8	No change.
Eth_AVB_Ram.c	1.4.8	1.4.8	No change.
Header File (rel\modules\eth\include)			

Eth.h	1.4.9	1.4.9	No change.
Eth_Common_LLDriver.h	1.4.7	1.4.7	No change.
Eth_Filter.h	1.4.3	1.4.3	No change.
Eth_Types.h	1.4.7	1.4.7	No change.
Eth_Util.h	1.4.7	1.4.7	No change.
Eth_Version.h	1.4.2	1.4.2	No change.
Header File (rel\modules\eth\include\AVB)			
Eth_AVB_Dma.h	1.0.4	1.0.4	No change.
Eth_AVB_Irq.h	1.0.4	1.0.4	No change.
Eth_AVB_LLDriver.h	1.0.7	1.0.7	No change.
Eth_AVB_Ram.h	1.0.5	1.0.5	No change.

2.2.7 FLS

2.2.7.1 Target Info

Table 2-16 FLS module target information

Module	FLS
Software Version	1.1.10

2.2.7.2 Release Item

Table 2-17 FLS module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Fls_MemMap.h	1.1.8	1.1.8	No change.
Configuration File (rel\modules\fls\sample_application\V4H\19_11\config)			
App_FLS_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\fls\sample_application\V4H\19_11\config)			
RCar_Fls_123.arxml	-	-	No change.
RCar_Fls_124.arxml	-	-	No change.
RCar_Fls_138.arxml	-	-	No change.
RCar_Fls_140.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
Fls.cfgxml	1.0.1	1.0.1	No change.
FlsRCAR.dll	1.0.12	1.0.12	No change.
Module Description File (rel\modules\fls\generator\V4H)			
R1911_FLS_V4H_BSWMDT.arxml	1.1.10	1.1.10	No change.
Definition File (rel\modules\fls\definition\19_11\V4H)			
R1911_FLS_V4H.arxml	1.1.9	1.1.9	No change.
Sample Application Source File (rel\modules\fls\sample_application\src)			
App_FLS_Common_Sample.c	1.1.7	1.1.7	No change.
Sample Application Header File (rel\modules\fls\sample_application\include)			
App_FLS_Common_Sample.h	1.1.7	1.1.7	No change.
V4H Specific Sample Application Source File (rel\modules\fls\sample_application\V4H\src)			
App_FLS_V4H_Sample.c	1.0.1	1.0.1	No change.
V4H Specific Sample Application Header File (rel\modules\fls\sample_application\V4H\include)			
App_FLS_Device_Sample.h	1.0.1	1.0.1	No change.
Source File (rel\modules\fls\src)			
Fls.c	1.1.9	1.1.9	No change.
Fls_Control.c	1.1.9	1.1.9	No change.
Fls_LLDriver.c	1.1.10	1.1.10	No change.
Fls_Ram.c	1.1.8	1.1.8	No change.
Fls_Version.c	1.1.7	1.1.7	No change.
Header File (rel\modules\fls\include)			
Fls.h	1.1.10	1.1.10	No change.
Fls_Control.h	1.1.8	1.1.8	No change.
Fls_LLDriver.h	1.1.10	1.1.10	No change.

Fls_PBTypes.h	1.1.8	1.1.8	No change.
Fls_Ram.h	1.1.8	1.1.8	No change.
Fls_RegReadWrite.h	1.1.8	1.1.8	No change.
Fls_RpcRegValue.h	1.1.3	1.1.3	No change.
Fls_Types.h	1.1.7	1.1.7	No change.
Fls_Version.h	1.1.7	1.1.7	No change.

2.2.8 GPT

2.2.8.1 Target Info

Table 2-18 GPT module target information

Module	GPT
Software Version	1.7.11

2.2.8.2 Release Item

Table 2-19 GPT module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Gpt_MemMap.h	1.3.2	1.3.2	No change.
Configuration File (rel\modules\gpt\sample_application\V4H\19_11\config)			
App_GPT_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\gpt\sample_application\V4H\19_11\config)			
RCar_Gpt_013.arxml	-	-	No change.
RCar_Gpt_014.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
Gpt.cfgxml	1.0.1	1.0.1	No change.
GptRCAR.dll	1.0.9	1.0.9	No change.
Module Description File (rel\modules\gpt\generator\V4H)			
R1911_GPT_V4H_BSWMDT.arxml	1.7.11	1.7.11	No change.
Definition File (rel\modules\gpt\definition\19_11\V4H)			
R1911_GPT_V4H.arxml	1.7.9	1.7.9	No change.
Sample Application Source File (rel\modules\gpt\sample_application\src)			
App_GPT_Common_Sample.c	1.7.9	1.7.9	No change.
Sample Application Header File (rel\modules\gpt\sample_application\include)			
App_GPT_Common_Sample.h	1.0.0	1.0.0	No change.
V4H Specific Sample Application Source File (rel\modules\gpt\sample_application\V4H\src\arm)			
App_GPT_V4H_Sample.c	1.0.0	1.0.0	No change.
V4H Specific Sample Application Header File (rel\modules\gpt\sample_application\V4H\include\arm)			
App_GPT_Device_Sample.h	1.0.0	1.0.0	No change.
App_GPT_V4H_Sample.h	1.0.0	1.0.0	No change.
Source File (rel\modules\gpt\src)			
Gpt.c	1.7.9	1.7.9	No change.
Gpt_Ram.c	1.7.9	1.7.9	No change.
Gpt_Version.c	1.5.0	1.5.0	No change.
Source File (rel\modules\gpt\src\HWIP\TMU)			
Gpt_TMU_Irq.c	1.7.9	1.7.9	No change.
Gpt_TMU_LLDriver.c	1.7.9	1.7.9	No change.
Gpt_TMU_Ram.c	1.7.9	1.7.9	No change.
Header File (rel\modules\gpt\include)			
Gpt.h	1.7.11	1.7.11	No change.
Gpt_MultiInstance.h	1.3.0	1.3.0	No change.

Gpt_PBTypes.h	1.7.11	1.7.11	No change.
Gpt_Ram.h	1.7.11	1.7.11	No change.
Gpt_Types.h	1.7.11	1.7.11	No change.
Gpt_Version.h	1.7.11	1.7.11	No change.
Header File (rel\modules\gpt\include\HWIP\TMU)			
Gpt_TMU_Irq.h	1.7.11	1.7.11	No change.
Gpt_TMU_LLDriver.h	1.7.11	1.7.11	No change.
Gpt_TMU_PBTypes.h	1.7.11	1.7.11	No change.
Gpt_TMU_Ram.h	1.7.11	1.7.11	No change.

2.2.9 ICCOM

2.2.9.1 Target Info

Table 2-20 ICCOM module target information

Module	ICCOM
Software Version	1.1.9

2.2.9.2 Release Item

Table 2-21 ICCOM module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
CddIccom_MemMap.h	1.1.9	1.1.9	No change.
Configuration File (rel\modules\cddiccom\sample_application\V4H\19_11\config)			
App_CDD_ICCOM_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\cddiccom\sample_application\V4H\19_11\config)			
RCar_CddIccom_091.arxml	-	-	No change.
RCar_CddIccom_092.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
CddIccom.cfgxml	-	-	No change.
CddIccomRCAR.dll	1.0.10	1.0.10	No change.
Module Description File (rel\modules\cddiccom\generator\V4H)			
R1911_CDD_ICCOM_V4H_BSWMDT.arxml	1.1.9	1.1.9	No change.
Module Description File (rel\modules\cddiccom\description\V4H)			
R1911_CDD_ICCOM_V4H_BSWMD.arxml	1.1.9	1.1.9	No change.
R1911_CDD_ICCOM_V4H_DataTypes.arxml	1.0.0	1.0.0	No change.
R1911_CDD_ICCOM_V4H_Interfaces.arxml	1.0.0	1.0.0	No change.
R1911_CDD_ICCOM_V4H_SwcBswMap.arxml	1.0.0	1.0.1	Add all SWC-BSW-RUNNABLE using on RTE.
R1911_CDD_ICCOM_V4H_SWCD.arxml	1.0.0	1.0.0	No change.
Definition File (rel\modules\cddiccom\definition\19_11\V4H)			
R1911_CDD_ICCOM_V4H.arxml	1.0.2	1.0.2	No change.
Sample Application Source File (rel\modules\cddiccom\sample_application\src)			
App_CDD_ICCOM_Common_Sample.c	1.1.6	1.1.6	No change.
Sample Application Header File (rel\modules\cddiccom\sample_application\include)			
App_CDD_ICCOM_Common_Sample.h	1.1.5	1.1.5	No change.
V4H Specific Sample Application Source File (rel\modules\cddiccom\sample_application\V4H\src\arm)			

App_CDD_ICCOM_V4H_Sample.c	1.0.2	1.0.2	No change.
V4H Specific Sample Application Header File (rel\modules\cddiccom\sample_application\V4H\include\arm)			
App_CDD_ICCOM_V4H_Sample.h	1.0.3	1.0.3	No change.
Source File (rel\modules\cddiccom\src)			
CDD_Iccom.c	1.1.8	1.1.8	No change.
CDD_Iccom_MainServ.c	1.1.8	1.1.8	No change.
CDD_Iccom_Ram.c	1.1.8	1.1.8	No change.
CDD_Iccom_Version.c	1.1.6	1.1.6	No change.
Source File (rel\modules\cddiccom\src\MFIS)			
CDD_Iccom_MFIS_Irq.c	1.1.6	1.1.6	No change.
CDD_Iccom_MFIS_LLDriver.c	1.1.8	1.1.8	No change.
Header File (rel\modules\cddiccom\include)			
CDD_Iccom.h	1.1.9	1.1.9	No change.
CDD_Iccom_MainServ.h	1.1.5	1.1.5	No change.
CDD_Iccom_PBTypes.h	1.1.7	1.1.7	No change.
CDD_Iccom_Ram.h	1.1.8	1.1.8	No change.
CDD_Iccom_Types.h	1.1.7	1.1.7	No change.
CDD_Iccom_Version.h	1.1.5	1.1.5	No change.
Header File (rel\modules\cddiccom\include\MFIS)			
CDD_Iccom_MFIS_Irq.h	1.1.5	1.1.5	No change.
CDD_Iccom_MFIS_LLDriver.h	1.1.5	1.1.5	No change.

2.2.10 IIC

2.2.10.1 Target Info

Table 2-22 IIC module target information

Module	IIC
Software Version	1.0.12

2.2.10.2 Release Item

Table 2-23 IIC module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
CddIic_MemMap.h	1.0.1	1.0.1	No change.
Configuration File (rel\modules\cddiic\sample_application\V4H\19_11\config)			
App_CDD_IIC_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\cddiic\sample_application\V4H\19_11\config)			
RCar_CddIic_143.arxml	-	-	No change.
RCar_CddIic_144.arxml	-	-	No change.
RCar_CddIic_148.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
CddIic.cfgxml	1.0.0	1.0.0	No change.
CddIicRCAR.dll	1.0.9	1.0.9	No change.
Module Description File (rel\modules\cddiic\generator\V4H)			
R1911_CDD_IIC_V4H_BSWMDT.arxml	1.0.12	1.0.12	No change.
Module Description File (rel\modules\cddiic\description\V4H)			
R1911_CDD_IIC_V4H_BSWMD.arxml	1.0.12	1.0.12	No change.
R1911_CDD_IIC_V4H_Interfaces.arxml	1.0.13	1.0.13	No change.
R1911_CDD_IIC_V4H_DataTypes.arxml	-	1.0.0	Initial version.
R1911_CDD_IIC_V4H_SWCD.arxml	-	1.0.0	Initial version.
R1911_CDD_IIC_V4H_SwcBswMap.arxml	-	1.0.0	Initial version.
Definition File (rel\modules\cddiic\definition\19_11\V4H)			
R1911_CDD_IIC_V4H.arxml	1.0.12	1.0.12	No change.
Sample Application Source File (rel\modules\cddiic\sample_application\src)			
App_CDD_IIC_Common_Sample.c	1.0.12	1.0.12	No change.
Sample Application Header File (rel\modules\cddiic\sample_application\include)			
App_CDD_IIC_Common_Sample.h	1.0.12	1.0.12	No change.
V4H Specific Sample Application Source File (rel\modules\cddiic\sample_application\V4H\src\arm)			
App_CDD_IIC_V4H_Sample.c	1.0.12	1.0.12	No change.
V4H Specific Sample Application Header File (rel\modules\cddiic\sample_application\V4H\include\arm)			
App_CDD_IIC_V4H_Sample.h	1.0.12	1.0.12	No change.

Source File (rel\modules\cddiic\src)			
CDD_Iic.c	1.0.12	1.0.12	No change.
CDD_Iic_Ram.c	1.0.12	1.0.12	No change.
CDD_Iic_Version.c	1.0.12	1.0.12	No change.
Source File (rel\modules\cddiic\src\IIC)			
CDD_Iic_HalDriver.c	1.0.12	1.0.12	No change.
CDD_Iic_Internal.c	1.0.12	1.0.12	No change.
CDD_Iic_Irq.c	1.0.12	1.0.12	No change.
Header File (rel\modules\cddiic\include)			
CDD_Iic.h	1.0.12	1.0.12	No change.
CDD_Iic_PBTypes.h	1.0.12	1.0.12	No change.
CDD_Iic_Ram.h	1.0.12	1.0.12	No change.
CDD_Iic_Types.h	1.0.12	1.0.12	No change.
CDD_Iic_Version.h	1.0.12	1.0.12	No change.
Header File (rel\modules\cddiic\include\IIC)			
CDD_Iic_HalDriver.h	1.0.12	1.0.12	No change.
CDD_Iic_Internal.h	1.0.12	1.0.12	No change.
CDD_Iic_Irq.h	1.0.12	1.0.12	No change.

2.2.11 IPMMU

2.2.11.1 Target Info

Table 2-24 IPMMU module target information

Module	IPMMU
Software Version	1.0.8

2.2.11.2 Release Item

Table 2-25 IPMMU module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
CddIpmmu_MemMap.h	1.0.1	1.0.1	No change.
Configuration File (rel\modules\cddipmmu\sample_application\V4H\19_11\config)			
App_CDD_IPMMU_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\cddipmmu\sample_application\V4H\19_11\config)			
RCar_CddIpmmu_040.arxml	-	-	No change.
RCar_CddIpmmu_041.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
CddIpmmu.cfgxml	-	-	No change.
CddIpmmuRCAR.dll	1.0.7	1.0.7	No change.
Module Description File (rel\modules\cddipmmu\generator\V4H)			
R1911_CDD_IPMMU_V4H_BSWMDT.arxml	1.0.8	1.0.8	No change.
Module Description File (rel\modules\cddipmmu\description\V4H)			
R1911_CDD_IPMMU_V4H_BSWMD.arxml	1.0.8	1.0.8	No change.
R1911_CDD_IPMMU_V4H_DataTypes.arxml	1.0.3	1.0.3	No change.
R1911_CDD_IPMMU_V4H_Interfaces.arxml	1.0.3	1.0.3	No change.
R1911_CDD_IPMMU_V4H_SWCD.arxml	1.0.3	1.0.3	No change.
R1911_CDD_IPMMU_V4H_SwcBswMap.arxml	-	1.0.0	Initial version.
Definition File (rel\modules\cddipmmu\definition\19_11\V4H)			
R1911_CDD_IPMMU_V4H.arxml	1.0.8	1.0.8	No change.
Sample Application Source File (rel\modules\cddipmmu\sample_application\src)			
App_CDD_IPMMU_Common_Sample.c	1.0.3	1.0.3	No change.
Sample Application Header File (rel\modules\cddipmmu\sample_application\include)			
App_CDD_IPMMU_Common_Sample.h	1.0.0	1.0.0	No change.
V4H Specific Sample Application Source File (rel\modules\cddipmmu\sample_application\V4H\src\arm)			

App_CDD_IPMMU_V4H_Sample.c	1.0.0	1.0.0	No change.
V4H Specific Sample Application Header File (rel\modules\cddipmmu\sample_application\V4H\include\arm)			
App_CDD_IPMMU_V4H_Sample.h	1.0.0	1.0.0	No change.
Source File (rel\modules\cddipmmu\src)			
CDD_Ipmmu.c	1.0.4	1.0.4	No change.
CDD_Ipmmu_Ctr.c	1.0.8	1.0.8	No change.
CDD_Ipmmu_Irq.c	1.0.8	1.0.8	No change.
CDD_Ipmmu_Ram.c	1.0.6	1.0.6	No change.
CDD_Ipmmu_Version.c	1.0.3	1.0.3	No change.
Header File (rel\modules\cddipmmu\include)			
CDD_Ipmmu.h	1.0.8	1.0.8	No change.
CDD_Ipmmu_Ctr.h	1.0.8	1.0.8	No change.
CDD_Ipmmu_Irq.h	1.0.3	1.0.3	No change.
CDD_Ipmmu_PBTypes.h	1.0.4	1.0.4	No change.
CDD_Ipmmu_Ram.h	1.0.4	1.0.4	No change.
CDD_Ipmmu_Reg.h	1.0.4	1.0.4	No change.
CDD_Ipmmu_Types.h	1.0.8	1.0.8	No change.
CDD_Ipmmu_Version.h	1.0.3	1.0.3	No change.

2.2.12 MCU

2.2.12.1 Target Info

Table 2-26 MCU module target information

Module	MCU
Software Version	1.1.13

2.2.12.2 Release Item

Table 2-27 MCU module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Mcu_MemMap.h	1.1.8	1.1.8	No change.
Configuration File (rel\modules\mcu\sample_application\V4H\19_11\config)			
App_MCU_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\mcu\sample_application\V4H\19_11\config)			
RCar_Mcu_009.arxml	-	-	No change.
RCar_Mcu_010.arxml	-	-	No change.
RCar_Mcu_017.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
Mcu.cfgxml	1.3.1	1.3.1	No change.
McuRCAR.dll	1.1.14	1.1.14	No change.
Module Description File (rel\modules\mcu\generator\V4H)			
R1911_MCU_V4H_BSWMDT.arxml	1.1.13	1.1.13	No change.
Definition File (rel\modules\mcu\definition\19_11\V4H)			
R1911_MCU_V4H.arxml	1.1.14	1.1.14	No change.
V4H Specific Sample Application Source File (rel\modules\mcu\sample_application\V4H\src\arm)			
App_MCU_V4H_Sample.c	1.1.10	1.1.10	No change.
V4H Specific Sample Application Header File (rel\modules\mcu\sample_application\V4H\include\arm)			
App_MCU_V4H_Sample.h	1.1.11	1.1.11	No change.
Source File (rel\modules\mcu\src)			
Mcu.c	1.1.8	1.1.8	No change.
Mcu_Ram.c	1.1.9	1.1.9	No change.
Mcu_Version.c	1.1.6	1.1.6	No change.
Source File (rel\modules\mcu\src\CPG)			
Mcu_CPG_LLDriver.c	1.1.12	1.1.12	No change.
Source File (rel\modules\mcu\src\RAM)			
Mcu_RAM_LLDriver.c	1.1.8	1.1.8	No change.
Source File (rel\modules\mcu\src\RST)			
Mcu_RST_LLDriver.c	1.1.7	1.1.7	No change.
Source File (rel\modules\mcu\src\STB)			
Mcu_STB_LLDriver.c	1.1.11	1.1.11	No change.
Header File (rel\modules\mcu\include)			
Mcu.h	1.1.13	1.1.13	No change.

Mcu_PBTypes.h	1.1.8	1.1.8	No change.
Mcu_Ram.h	1.1.9	1.1.9	No change.
Mcu_Types.h	1.1.8	1.1.8	No change.
Mcu_Version.h	1.1.6	1.1.6	No change.
Header File (rel\modules\mcu\include\CPG)			
Mcu_CPG_LLDriver.h	1.1.12	1.1.12	No change.
Header File (rel\modules\mcu\include\RAM)			
Mcu_RAM_LLDriver.h	1.1.8	1.1.8	No change.
Header File (rel\modules\mcu\include\RST)			
Mcu_RST_LLDriver.h	1.1.8	1.1.8	No change.
Header File (rel\modules\mcu\include\STB)			
Mcu_STB_LLDriver.h	1.1.11	1.1.11	No change.

2.2.13 PORT

2.2.13.1 Target Info

Table 2-28 PORT module target information

Module	PORT
Software Version	1.1.12

2.2.13.2 Release Item

Table 2-29 PORT module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Port_MemMap.h	1.3.4	1.3.4	No change.
Configuration File (rel\modules\port\sample_application\V4H\19_11\config)			
App_PORT_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\port\sample_application\V4H\19_11\config)			
RCar_Port_014.arxml	-	-	No change.
RCar_Port_019.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
Port.cfgxml	1.1.0	1.1.0	No change.
PortRCAR.dll	1.0.15	1.0.16	- Update tool version to 1.0.16. - Update to fix a PORT issue causing unexpected output at port pin due to incorrect peripheral function configuration. - Update copyright to 2025.
Module Description File (rel\modules\port\generator\V4H)			
R1911_PORT_V4H_BSWMDT.arxml	1.1.11	1.1.12	- Update SW-VERSION to 1.1.12.
Definition File (rel\modules\port\definition\19_11\V4H)			
R1911_PORT_V4H.arxml	1.1.13	1.1.13	No change.
V4H Specific Sample Application Source File (rel\modules\port\sample_application\V4H\src\arm)			
App_PORT_V4H_Sample.c	1.1.12	1.1.13	- Update SW-VERSION to 1.1.12.
V4H Specific Sample Application Header File (rel\modules\port\sample_application\V4H\include\arm)			
App_PORT_V4H_Sample.h	1.1.12	1.1.13	- Update SW-VERSION to 1.1.12.
Source File (rel\modules\port\src)			
Port.c	1.1.11	1.1.12	- Update SW-VERSION to 1.1.12.
Port_Ram.c	1.1.9	1.1.12	- Update SW-VERSION to 1.1.12.
Port_Version.c	1.1.9	1.1.12	- Update SW-VERSION to 1.1.12.
Source File (rel\modules\port\src\PFC)			
Port_PFC_LLDriver.c	1.1.11	1.1.12	- Update SW-VERSION to 1.1.12. - Update to fix a PORT issue causing unexpected output at port pin due to incorrect peripheral function configuration. - Update copyright to 2025.
Header File (rel\modules\port\include)			

Port.h	1.1.10	1.1.12	- Update SW-VERSION to 1.1.12.
Port_PBTypes.h	1.1.9	1.1.12	- Update SW-VERSION to 1.1.12.
Port_Ram.h	1.1.8	1.1.12	- Update SW-VERSION to 1.1.12.
Port_Types.h	1.1.9	1.1.12	- Update SW-VERSION to 1.1.12.
Port_Version.h	1.1.6	1.1.12	- Update SW-VERSION to 1.1.12.
Header File (rel\modules\port\include\PFC)			
Port_PFC_LLDriver.h	1.1.9	1.1.12	- Update SW-VERSION to 1.1.12.

2.2.14 RFSO

2.2.14.1 Target Info

Table 2-30 RFSO module target information

Module	RFSO
Software Version	1.0.7

2.2.14.2 Release Item

Table 2-31 RFSO module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
CddRfso_MemMap.h	1.0.1	1.0.1	No change.
Configuration File (rel\modules\cddrfso\sample_application\V4H\19_11\config)			
App_CDD_RFSO_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\cddrfso\sample_application\V4H\19_11\config)			
RCar_Cddrfso_011.arxml	-	-	No change.
RCar_Cddrfso_012.arxml	-	-	No change.
RCar_Cddrfso_025.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
CddRfso.cfgxml	1.0.0	1.0.0	No change.
CddRfsoRCAR.dll	1.0.6	1.0.6	No change.
Module Description File (rel\modules\cddrfso\generator\V4H)			
R1911_CDD_RFSO_V4H_BSWMDT.arxml	1.0.7	1.0.7	No change.
Module Description File (rel\modules\cddrfso\description\V4H)			
R1911_CDD_RFSO_V4H_BSWMD.arxml	1.0.7	1.0.7	No change.
R1911_CDD_RFSO_V4H_DataTypes.arxml	1.0.2	1.0.2	No change.
R1911_CDD_RFSO_V4H_Interfaces.arxml	1.0.3	1.0.3	No change.
R1911_CDD_RFSO_V4H_SWCD.arxml	1.0.7	1.0.7	No change.
R1911_CDD_RFSO_V4H_SwcBswMap.arxml	-	1.0.0	Initial version.
Definition File (rel\modules\cddrfso\definition\19_11\V4H)			
R1911_CDD_RFSO_V4H.arxml	1.0.7	1.0.7	No change.
Sample Application Source File (rel\modules\cddrfso\sample_application\src)			
App_CDD_RFSO_Common_Sample.c	1.0.3	1.0.3	No change.
Sample Application Header File (rel\modules\cddrfso\sample_application\include)			
App_CDD_RFSO_Common_Sample.h	1.0.0	1.0.0	No change.
V4H Specific Sample Application Source File (rel\modules\cddrfso\sample_application\V4H\src\arm)			
App_CDD_RFSO_V4H_Sample.c	1.0.0	1.0.0	No change.
V4H Specific Sample Application Header File (rel\modules\cddrfso\sample_application\V4H\include\arm)			

App_CDD_RFSO_V4H_Sample.h	1.0.1	1.0.1	No change.
Source File (rel\modules\cddrfso\src)			
CDD_Rfso.c	1.0.8	1.0.8	No change.
CDD_Rfso_Ram.c	1.0.3	1.0.3	No change.
CDD_Rfso_Version.c	1.0.3	1.0.3	No change.
Source File (rel\modules\cddrfso\src\RFSO)			
CDD_Rfso_Ctr.c	1.0.8	1.0.8	No change.
CDD_Rfso_Irq.c	1.0.6	1.0.6	No change.
Header File (rel\modules\cddrfso\include)			
CDD_Rfso.h	1.0.6	1.0.6	No change.
CDD_Rfso_PBTypes.h	1.0.1	1.0.1	No change.
CDD_Rfso_Ram.h	1.0.1	1.0.1	No change.
CDD_Rfso_Reg.h	1.0.1	1.0.1	No change.
CDD_Rfso_Types.h	1.0.1	1.0.1	No change.
CDD_Rfso_Version.h	1.0.2	1.0.2	No change.
Header File (rel\modules\cddrfso\include\RFSO)			
CDD_Rfso_Ctr.h	1.0.3	1.0.3	No change.
CDD_Rfso_Irq.h	1.0.1	1.0.1	No change.

2.2.15 SPI

2.2.15.1 Target Info

Table 2-32 SPI module target information

Module	SPI
Software Version	1.5.10

2.2.15.2 Release Item

Table 2-33 SPI module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Spi_MemMap.h	1.5.7	1.5.7	No change.
Configuration File (rel\modules\spi\sample_application\V4H\19_11\config)			
App_SPI_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\spi\sample_application\V4H\19_11\config)			
RCar_Spi_003.arxml	-	-	No change.
RCar_Spi_060.arxml	-	-	No change.
RCar_Spi_061.arxml	-	-	No change.
RCar_Spi_067.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
Spi.cfgxml	1.2.1	1.2.1	No change.
SpiRCAR.dll	1.0.9	1.0.9	No change.
Module Description File (rel\modules\spi\generator\V4H)			
R1911_SPI_V4H_BSWMDT.arxml	1.5.10	1.5.10	No change.
Definition File (rel\modules\spi\definition\19_11\V4H)			
R1911_SPI_V4H.arxml	1.5.10	1.5.10	No change.
Sample Application Source File (rel\modules\spi\sample_application\src)			
App_SPI_Common_Sample.c	1.5.7	1.5.7	No change.
Sample Application Header File (rel\modules\spi\sample_application\include)			
App_SPI_Common_Sample.h	1.5.1	1.5.1	No change.
App_SPI_Cbk.h	1.2.0	1.2.0	No change.
V4H Specific Sample Application Source File (rel\modules\spi\sample_application\V4H\src)			
App_SPI_V4H_Sample.c	1.5.7	1.5.7	No change.
V4H Specific Sample Application Header File (rel\modules\spi\sample_application\V4H\include)			
App_SPI_Device_Sample.h	1.0.6	1.0.6	No change.
Source File (rel\modules\spi\src)			
Spi.c	1.5.6	1.5.6	No change.
Spi_Ram.c	1.5.6	1.5.6	No change.
Spi_Scheduler.c	1.5.6	1.5.6	No change.
Spi_Version.c	1.5.7	1.5.7	No change.
Source File (rel\modules\spi\src\MSIOF)			
Spi_MSIOF_Irq.c	1.5.7	1.5.7	No change.
Spi_MSIOF_LLDriver.c	1.5.9	1.5.9	No change.

Source File (rel\modules\spi\src\SYSDMAC)			
Spi_SYSDMAC_Irq.c	1.5.7	1.5.7	No change.
Spi_SYSDMAC_LLDriver.c	1.5.6	1.5.6	No change.
Header File (rel\modules\spi\include)			
Spi.h	1.5.10	1.5.10	No change.
Spi_Irq.h	1.2.1	1.2.1	No change.
Spi_LTTypes.h	1.5.6	1.5.6	No change.
Spi_MultiInstance.h	1.5.3	1.5.3	No change.
Spi_PBTypes.h	1.5.7	1.5.7	No change.
Spi_Ram.h	1.5.6	1.5.6	No change.
Spi_RegWrite.h	1.5.5	1.5.5	No change.
Spi_Scheduler.h	1.2.2	1.2.2	No change.
Spi_Types.h	1.5.6	1.5.6	No change.
Spi_Version.h	1.2.1	1.2.1	No change.
Header File (rel\modules\spi\include\MSIOF)			
Spi_MSIOF_Irq.h	1.0.1	1.0.1	No change.
Spi_MSIOF_LLDriver.h	1.5.10	1.5.10	No change.
Header File (rel\modules\spi\include\SYSDMAC)			
Spi_SYSDMAC_Irq.h	1.0.0	1.0.0	No change.
Spi_SYSDMAC_LLDriver.h	1.0.2	1.0.2	No change.

2.2.16 THS

2.2.16.1 Target Info

Table 2-34 THS module target information

Module	THS
Software Version	1.0.8

2.2.16.2 Release Item

Table 2-35 THS module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
CddThs_MemMap.h	1.0.1	1.0.1	No change.
Configuration File (rel\modules\cddths\sample_application\V4H\19_11\config)			
App_CDD_THS_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\cddths\sample_application\V4H\19_11\config)			
RCar_Cddths_030.arxml	-	-	No change.
RCar_Cddths_031.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
CddThs.cfgxml	1.0.0	1.0.0	No change.
CddThsRCAR.dll	1.0.2	1.0.2	No change.
Module Description File (rel\modules\cddths\generator\V4H)			
R1911_CDD_THS_V4H_BSWMDT.arxml	1.0.9	1.0.9	No change.
Module Description File (rel\modules\cddths\description\V4H)			
R1911_CDD_THS_V4H_BSWMD.arxml	1.0.9	1.0.9	No change.
R1911_CDD_THS_V4H_DataTypes.arxml	1.0.0	1.0.0	No change.
R1911_CDD_THS_V4H_Interfaces.arxml	1.0.0	1.0.0	No change.
R1911_CDD_THS_V4H_SWCD.arxml	1.0.0	1.0.0	No change.
R1911_CDD_THS_V4H_SwcBswMap.arxml	-	1.0.0	Initial version.
Definition File (rel\modules\cddths\definition\19_11\V4H)			
R1911_CDD_THS_V4H.arxml	1.0.3	1.0.3	No change.
Sample Application Source File (rel\modules\cddths\sample_application\src)			
App_CDD_THS_Common_Sample.c	1.0.3	1.0.3	No change.
Sample Application Header File (rel\modules\cddths\sample_application\include)			
App_CDD_THS_Common_Sample.h	1.0.2	1.0.2	No change.
V4H Specific Sample Application Source File (rel\modules\cddths\sample_application\V4H\src\arm)			
App_CDD_THS_V4H_Sample.c	1.0.1	1.0.1	No change.
V4H Specific Sample Application Header File (rel\modules\cddths\sample_application\V4H\include\arm)			
App_CDD_THS_V4H_Sample.h	1.0.1	1.0.1	No change.
Source File (rel\modules\cddths\src)			
CDD_Ths.c	1.0.9	1.0.9	No change.
CDD_Ths_Ram.c	1.0.5	1.0.5	No change.
CDD_Ths_Version.c	1.0.5	1.0.5	No change.
Source File (rel\modules\cddths\src\THS)			
CDD_Ths_THS_LLDriver.c	1.0.8	1.0.8	No change.

Header File (rel\modules\cddths\include)			
CDD_Ths.h	1.0.8	1.0.8	No change.
CDD_Ths_PBTypes.h	1.0.6	1.0.6	No change.
CDD_Ths_Ram.h	1.0.6	1.0.6	No change.
CDD_Ths_Types.h	1.0.4	1.0.4	No change.
CDD_Ths_Version.h	1.0.3	1.0.3	No change.
Header File (rel\modules\cddths\include\THS)			
CDD_Ths_THS_LLDriver.h	1.0.5	1.0.5	No change.

2.2.17 WDG

2.2.17.1 Target Info

Table 2-36 WDG module target information

Module	WDG
Software Version	1.4.5

2.2.17.2 Release Item

Table 2-37 WDG module release items

Filename	Previous version (CY25 CW09)	Current version (CY25 CW13)	Change Description
Module Sample MemMap File (rel\common\generic\compiler\19_11\arm\include)			
Wdg_MemMap.h	1.4.5	1.4.5	No change.
Configuration File (rel\modules\wdg\sample_application\V4H\19_11\config)			
App_WDG_V4H_Sample.arxml	-	-	No change.
Performance Configuration File (rel\modules\wdg\sample_application\V4H\19_11\config)			
RCAR_Wdg_029.arxml	-	-	No change.
RCAR_Wdg_030.arxml	-	-	No change.
Generation File (rel\common\generic\generator)			
Wdg.cfgxml	1.2.1	1.2.1	No change.
WdgRCAR.dll	1.0.5	1.0.5	No change.
Module Description File (rel\modules\wdg\generator\V4H)			
R1911_WDG_V4H_BSWMDT.arxml	1.4.5	1.4.5	No change.
Definition File (rel\modules\wdg\definition\19_11\V4H)			
R1911_WDG_V4H.arxml	1.0.1	1.0.1	No change.
Sample Application Source File (rel\modules\wdg\sample_application\src)			
App_WDG_Common_Sample.c	1.2.5	1.2.5	No change.
Sample Application Header File (rel\modules\wdg\sample_application\include)			
App_WDG_Common_Sample.h	1.2.2	1.2.2	No change.
V4H Specific Sample Application Source File (rel\modules\wdg\sample_application\V4H\src)			
App_WDG_V4H_Sample.c	1.0.1	1.0.1	No change.
V4H Specific Sample Application Header File (rel\modules\wdg\sample_application\V4H\include)			
App_WDG_Device_Sample.h	1.0.1	1.0.1	No change.
Source File (rel\modules\wdg\src)			
Wdg.c	1.4.4	1.4.4	No change.
Wdg_Ram.c	1.4.4	1.4.4	No change.
Wdg_Version.c	1.2.2	1.2.2	No change.
Source File (rel\modules\wdg\src\RWDT)			
Wdg_RWDT_LLDriver.c	1.4.5	1.4.5	No change.
Header File (rel\modules\wdg\include)			
Wdg.h	1.4.5	1.4.5	No change.
Wdg_MultiInstance.h	1.2.2	1.2.2	No change.
Wdg_PBTypes.h	1.4.2	1.4.2	No change.
Wdg_Ram.h	1.4.4	1.4.4	No change.
Wdg_Types.h	1.4.4	1.4.4	No change.

Wdg_Version.h	1.2.2	1.2.2	No change.
Header File (rel\modules\wdg\include\RWDT)			
Wdg_RWDT_LLDriver.h	1.4.3	1.4.3	No change.
Wdg_RWDT_PBTypes.h	1.4.3	1.4.3	No change.

2.3 Driver Component Makefile

The Makefile provided with the Driver Component consists of the GNU Make compatible script to build the Driver Component in case of any change in the configuration. It can be used in the upper-level Makefile (of the application) to link and build the final application executable.

2.4 Folder Structure

In this section, the folder structure of the Driver Component is explained.

- Top of Folder Structure

```
\---Install_destination
|  +---common
|  \---rel
|  |   +---common
|  |   +---modules
|  |   +---V4H
```

Figure 2-1 Top of Folder Structure

- common

```
\---Install_destination
|  +---common
|  |  +---include
|  |  |  \---<AR>
|  |  |         ComStack_Cfg.h
|  |  |         ComStack_Types.h
|  |  |         Std_Types.h
|  |  |
|  |  \---make
|  |     \---<AR>
|  |           autosartypes_r<AR>_defs.mak
|  |
```

Note <AR>: 19_11

Figure 2-2 common Folder Structure

- rel/common

```
\---Install_destination
|  \---rel
|  |  +---common
|  |  |  \---generic
|  |  |      +---compiler
|  |  |      |  +---<AR>
|  |  |      |  |  \---arm
|  |  |      |  |      +---include
|  |  |      |  |      |      <Msn>_MemMap.h
|  |  |      |  |      |      MemMap_dep.h
|  |  |      |  |      |
|  |  |      |  |      \---make
|  |  |      |  \---common
|  |  |      |      \---arm
|  |  |      |          +---include
|  |  |      |          |  |  Compiler.h
|  |  |      |          |  |  Compiler_Cfg.h
|  |  |      |          |  |
|  |  |      |          |  \---cfg
|  |  |      |          \---make
|  |  |      |                  arm_rcar_rules.mak
|  |  |      |
|  |  |      +---docs
|  |  |      |  +---Getting_Started
|  |  |      |  \---Module_Overview
|  |  |      +---generator
|  |  |      |  |  Generator Files
|  |  |      |
|  |  |      +---include
|  |  |      |  +---<AR>
|  |  |      |  |      Platform_Types.h
|  |  |      |  |
|  |  |      |  \---common
|  |  |      |      |  log.h
|  |  |      |      |  scif.h
|  |  |      |      |
|  |  |      |      \---arm
|  |  |      |              ARM core Header Files
|  |  |      |
|  |  |      +---make
|  |  |      |  +---<AR>
|  |  |      |  |      platformtypes_r<AR>_defs.mak
|  |  |      |  |
|  |  |      |  \---common
|  |  |      |          platformtypes_common_defs.mak
```

```
| | |     |
| | |     +---src
| | |     | |  log.c
| | |     | |  scif.c
| | |     | |
| | |     | \---arm
| | |     |         Interrupt.c
| | |     |         rcar_cfg.c
| | |     |         start.s
| | |     |        startup.c
| | |     |
| | |     \---stubs
| | |         \---<AR>
| | |             Stub Files
```

Note

<AR>: 19_11

<Msn>: Can, CddCrc, CddEmm, CddIccom, CddIic, CddIpmmu, CddRfso, CddThs, Common, Dio, Eth, Fls, Gpt, Mcu, Port, Spi, Wdg.

Figure 2-3 rel/common Folder Structure

- rel/modules

```
\---Install_destination
  |  \---rel
  |  |  +---modules
  |  |  |  +---<msn>
  |  |  |  |  +---definition
  |  |  |  |  |  \---<AR>
  |  |  |  |  |      \---<Device>
  |  |  |  |  |             Parameter Definition Files
  |  |  |  |  |
  |  |  |  |  +---generator
  |  |  |  |  |  \---<Device>
  |  |  |  |  |         BSWMDT Files
  |  |  |  |  |
  |  |  |  |  +---description
  |  |  |  |  |  \---<Device>
  |  |  |  |  |         CDD modules Description Files
  |  |  |  |  |
  |  |  |  |  +---include
  |  |  |  |  |     Header Files of <msn> driver
  |  |  |  |  |
  |  |  |  |  +---make
  |  |  |  |  |      renesas_<msn>_check.mak
  |  |  |  |  |      renesas_<msn>_defs.mak
  |  |  |  |  |      renesas_<msn>_rules.mak
  |  |  |  |  |
  |  |  |  |  +---sample_application
  |  |  |  |  |  +---include
  |  |  |  |  |  |      Sample Application Header Files
  |  |  |  |  |  |
  |  |  |  |  |  +---make
  |  |  |  |  |  |  \---arm
  |  |  |  |  |  +---<Device>
  |  |  |  |  |  |  +---<AR>
  |  |  |  |  |  |  |  \---config
  |  |  |  |  |  |  +---include
  |  |  |  |  |  |  |  \---arm
  |  |  |  |  |  |  |          Sample Application Header Files of <Device>
  |  |  |  |  |  |  \---src
  |  |  |  |  |  |      \---arm
  |  |  |  |  |  |             Sample Application Source Files of <Device>
  |  |  |  |  |  |
  |  |  |  |  |  \---src
  |  |  |  |  |       Sample Application Source Files
  |  |  |  |  |
```

```
| | | | \---src
| | | | |    Source Files of <msn> driver
| | | | |
```

Note

<msn>: can, cddcrc, cddemm, cddiccom, cddiic, cddipmmu, cddrfso, cddths, dio, eth, fls, gpt, mcu, port, spi, wdg.

<AR>: 19_11

<Device>: V4H

Figure 2-4 rel/modules Folder Structure

- rel/V4H

```
\---Install_destination
|  \---rel
|  |  \---<Device>
|  |  |  \---common_family
|  |  |  |  +---config
|  |  |  |  |  \---<Device>
|  |  |  |  |      \---<AR>
|  |  |  |  |            Configuration ARMXL files
|  |  |  |  |
|  |  |  |  +---docs
|  |  |  |  |  \---appendix
|  |  |  |  |  \---user_manual
|  |  |  |  +---generator
|  |  |  |  |  \---arm
|  |  |  |  |        <Device>_translation.h
|  |  |  |  |        Sample_Application_<Device>.trxml
|  |  |  |  |
|  |  |  |  +---include
|  |  |  |  |  |  pfcmap.h
|  |  |  |  |  |
|  |  |  |  |  \---arm
|  |  |  |  |        device_cfg.h
|  |  |  |  |        Interrupt_Cfg.h
|  |  |  |  |        Interrupt_VectorTable.h
|  |  |  |  |        RCar_FuSa.h
|  |  |  |  |        RCar_<Device>_0.h
|  |  |  |  |
|  |  |  |  +---make
|  |  |  |  |  \---arm
|  |  |  |  |        App_Sample.scat
|  |  |  |  |        App_Sample_db.scat
|  |  |  |  |        Common.mak
|  |  |  |  |        SampleApp.bat
|  |  |  |  |        startup_arm_<Device>_defs.mak
|  |  |  |  |        startup_arm_<Device>_rules.mak
```

```
| | | | |
| | | | \---src
| | | |     \---arm
| | | |           device_cfg.c
| | | |           Interrupt_VectorTable.c
| | | |           RCar_FuSa.c
| | | |
```

Note

<AR>: 19_11

<Device>: V4H

Figure 2-5 rel/V4H Folder Structure

2.4.1 Source Code File

2.4.1.1 Common Source Code File

Table 2-38 shows the list of Source Code file.

Table 2-38 Common Header Files

Location: rel\common\generic\src		Description
arm		-
	Interrupt.c	R-Car interrupt controller.
	rcar_cfg.c	Configuration for R-Car.
	start.s	Startup code for R-Car devices (ARMv8).
	startup.c	Startup code for R-Car devices.
log.c		This tile provides debug prints function to Console.
scif.c		This tile provides function for debug prints function.

2.4.2 Header File

2.4.2.1 Common Header File

Table 2-39 Common Header Files shows the list of Translation Header file.

Table 2-39 Common Header Files

Location: rel\common\generic			Description
compiler			-
<AR>\			-
arm\			-
Include\			-
	<Msn>_MemMap.h		This file allows mapping variables, constants, and code of modules to individual memory sections. Memory mapping can be modified as per ECU's specific needs.
common\			-
arm\			-
Include\			-
	Compiler.h		Provides compiler-specific (non-ANSI) keywords. All mappings of keywords, which are not standardized, and/or compiler-specific are placed and organized in this compiler-specific header.
	Compiler_Cfg.h		This file contains the memory and pointer classes.
	cfg\		-
		Compiler_Cfg_dep.h	This file contains compiler attribute definition for ARM compiler
include			-
<AR>\			-
	Platform_Types.h		This file provides provision for defining platform and compiler dependent types.
common\			-
	log.h		This tile provides debug prints function to Console.
	scif.h		This tile provides function prototypes for debug prints function.
	arm\		-
		arm_cr.h	Macros for ARM Cortex-R.
		arm_cr_cp15.h	
		arm_cr_mpu.h	
		arm_cr_reg.h	

	arm_gic.h	
	Interrupt.h	R-Car interrupt controller.
	utils.h	Utilities support.

Note

<AR>: 19_11

<Msn>: Can, CddCrc, CddEmm, CddIccom, CddIic, CddIpmmu, CddRfso, CddThs, Common, Dio, Eth, Fls, Gpt, Mcu, Port, Spi, Wdg.

2.4.2.2 Translation Header File

Table 2-40 shows the list of Translation Header file.

Table 2-40 Translation Header Files

Location	Files
rel\V4H\common_family\generator\arm	V4H_translation.h

2.4.3 BSWMDT File

The BSWMDT file target is Sample Application.

When user use BSWMDT file for user application, refer to Msn Driver Component Embedded User's Manual and please modify it as per user application.

Table 2-41 shows the list of BSWMDT file.

Table 2-41 BSWMDT Files

Location: rel\modules\<msn>\generator\<Device_Name>	
<Device_Name>	**Files**
V4H	R1911_<MSN>_<Device_Name >_BSWMDT.arxml
	R1911_CDD_<MSN_CDD>_<Device_Name>_BSWMDT.arxml

Note

<msn>: dio, port, can, eth, gpt, spi, wdg, mcu, fls

<MSN>: DIO, PORT, ETH, GPT, SPI, WDG, MCU, FLS

<MSN_CDD>: ICCOM, IIC, RFSO, THS, IPMMU, EMM, CRC

<Device_Name>: V4H

2.4.4 Make File

Table 2-42 shows the list of Make file.

Table 2-42 Make Files

Location	Files
rel\modules\<msn>\make\	renesas_<msn>_check.mak renesas_<msn>_defs.mak renesas_<msn>_rules.mak

Note

<msn>: can, cddcrc, cddemm, cddiccom, cddiic, cddipmmu, cddrfso, cddths, dio, eth, fls, gpt, mcu, port, spi, wdg.

2.4.5 Generator File

Table 2-43 shows the list of Generator File by C# of DIO, PORT, CAN, ETH, GPT, SPI, WDG, MCU, CDDCRC, CDDICCOM, CDDEMM, CDDTHS, CDDIIC, CDDRFSO and FLS module.

Table 2-43 Generator File by C# of Dio, Port, Can, Eth, Gpt, Spi, Wdg, Mcu, CddCrc, CddIccom, CddEmm, CddThs, CddIic, CddRfso, CddIpmmu and Fls module

Location: rel\common\generic\generator	**Files**
	<Msn>.cfgxml
	MCALConfGen.exe
dlls\	-
<msn>	<Msn>RCAR.dll

Note

<msn>: dio, port, can, eth, gpt, spi, wdg, mcu, cddcrc, cddiccom, cddemm, cddths, cddiic, cddrfso, cddipmmu and fls.

<Msn>: Dio, Port, Can, Eth, Gpt, Spi, Wdg, Mcu, CddCrc, CddIccom, CddEmm, CddThs, CddIic, CddRfso, CddIpmmu and Fls.

2.5 License

Proprietary license

2.6 Restrictions

None.

3 Upgrade information

3.1 Ver19.0.1

This version is to release FLS module for V4H.

3.2 Ver19.0.2

This version is to release DIO, PORT, ICCOM, IIC, SPI modules for V4H.

3.3 Ver19.0.3

This version is to release DIO, PORT, ICCOM, IIC, SPI modules for V4H.
- IIC module supports Fast mode+. (Removed IIC module restrictions from Section 2.6.)

3.4 Ver19.0.4

This version is to release DIO, PORT, ICCOM, IIC, SPI, FLS, GPT, MCU, WDG, CAN, ETH, THS, IPMMU, EMM, RFSO, and CRC module for V4H.
- IIC module is updated for MISRA-C 2012, CERT-C comments and justifications, and traceability IDs.
- SPI module is updated for MISRA-C 2012, CERT-C comments and justifications, traceability IDs, and bug-fix for sequence force cancelation function.
- DIO module is updated for MISRA-C 2012, CERT-C comments and justifications, traceability IDs and the implementation of Channel-based flip access, Channel-based read and Channel-group-based read.
- FLS module is updated to support FLS functions on the V4H device.

3.5 Ver19.0.4.001

This version is to release DIO, PORT, ICCOM, IIC, SPI, FLS, GPT, MCU, WDG, CAN, ETH, THS, IPMMU, EMM, RFSO, and CRC module for V4H.
- Support IPL package Rev.0.4.0.
- Support IPL flashing’s guide in the Module Overview, section 3.7.3 How to run the V4H Sample Application.
- Support SCIF/115200bps setup guide in the Module Overview, section 3.7.3 How to run the V4H Sample Application.

3.6 Ver19.0.8

This version is to release DIO, PORT, ICCOM, IIC, SPI, FLS, GPT, MCU, WDG, CAN, ETH, THS, IPMMU, EMM, RFSO, and CRC module for V4H.
COMMON
- Support IPL package Rev.0.5.0.
- Support HSCIF/921600bps for the console print.

CAN
- CAN is updated for MISRA-C 2012, CERT-C comments, and justifications for the generated files.

CRC
- CRC sample application is updated to add console print messages.

DIO
- DIO supports the following functions,
  - Channel-group-based read access to GPIO Pins grouped within one Port Group

- Channel-group-based write access to GPIO Pins grouped within one Port Group
- Channel-group-based masked write access to GPIO Pins grouped within one Port Group
- Channel-based read to GPIO Port Pins
- Channel-group-based read to GPIO Port Pins

EMM
- EMM supports the abnormal operation testing for supported functions.
- EMM supports the new functions as the following,
  - Clear all Error Status
  - Select Error Target
- EMM sample application is updated to add console print messages.

ETH
- ETH is updated for MISRA-C 2012, CERT-C comments, and justifications for the generated files.

FLS
- FLS supports fully the abnormal operation for the Initialization and Get Version Information function.
- FLS supports the abnormal operation for the serial flash with the below functions,
  - Erasing the flash memory
  - Canceling the ongoing job
  - Blank checking of flash memory

GPT
- GPT supports the following functions,
  - Get Elapsed time function
  - Get Remaining time function
- GPT is updated for MISRA-C 2012, CERT-C comments and justifications.

ICCOM
- ICCOM sample application is updated to add console print messages and improve the checkpoint.

IIC
- IIC supports Slave Initialization function.
- IIC sample application is updated to add console print messages.

IPMMU
- IPMMU supports the abnormal operation for supported functions.
  - TLB configuration
  - Get the current status of PMB
  - Get the current status of uTLB
- IPMMU sample application is updated to add console print messages.

MCU
- MCU sample application is updated to add change the configured RAM initialization address due to change in IPL start address.

PORT

- PORT supports the following functions,
    - Port Pin Direction Refreshing

RFSO
- RFSO sample application is updated to add console print messages.

SPI
- SPI supports the following functions,
    - Sequence cancelation function

THS
- THS supports the following functions,
    - Enable/Disable generating interruption
    - Configure interruption value
    - Voltage monitoring
    - Temperature monitoring
    - Clear Error status
- THS is updated for MISRA-C 2012, CERT-C comments, and justifications for the generated files.
- THS sample application is updated to add console print messages.

WDG
- WDG supports the following functions,
    - Trigger function

3.7 Ver19.0.9

This version is to release DIO, PORT, ICCOM, IIC, SPI, FLS, GPT, MCU, WDG, CAN, ETH, THS, IPMMU, EMM, RFSO, and CRC module for V4H.

COMMON
- Support IPL package Rev.0.6.0.

CAN
- Support CAN CLK_XINCAN clock source setting.
- Update the memory section name mapping that is using by CAN driver
- Support polling and interrupt function for bus off and transmission

CRC
- Support C# Generation tool
- Update the memory section name mapping that is using by CRC driver
- Improve the API to support implement hardware IP CRC and KCRC

DIO
- Update the memory section name mapping that is using by DIO driver
- Perform the bug fix of generation tool

EMM

- Support Pseudo Error Insertion Function

ETH
- Support Frame reception interrupt handling function
- Support Frame transmission interrupt handling function
- Support AVB2 hardware unit driver implementation
- Perform fixing wrong base address of AVB1 when AVB1 is configured

FLS
- Update the memory section name mapping that is using by FLS driver

GPT
- Support disable wakeup notification function
- Support enable wakeup notification function
- Support check wakeup notification function

ICCOM
- Support C# generation tool

IIC
- Support C# generation tool (partially support)

IPMMU
- Support MMU configuration function
- Support PMB address translation functionality
- Support Get the current status of MMU function

MCU
- Update the memory section name mapping that is using by MCU driver
- Support activates the MCU power modes

PORT
- Update the memory section name mapping that is using by PORT driver
- Support Port Pin DIO Mode Setting
- Support Port Pin Alternate Mode Setting

RFSO
- Perform bug fix to correct the behavior of call back function of interval timer interrupt that is called double.
- Improve sample application (interval interrupt in CddRfso_PeriodicalCheck and CddRfso_RunTimeTest).

SPI
- Update the memory section name mapping that is using by SPI driver
- Support switching asynchronous mode function
- Support Interrupt function

THS
- Support enable/disable generating interruption function

- Support interruption value function
- Support voltage monitoring function
- Support temperature monitoring function

WDG

- Support GPT Callback function
- Update the memory section name mapping that is using by WDG driver

3.8 Ver19.0.10

This version is to release DIO, PORT, ICCOM, IIC, SPI, FLS, GPT, MCU, WDG, CAN, ETH, THS, IPMMU, EMM, RFSO, and CRC module for V4H.

COMMON
- Support IPL package Rev.0.10.0.

CAN
- Update the memory section name mapping that is using by CAN driver.
- Support interrupt function for reception.
- Support interrupt function for bus-off.

CRC
- Support CRC wrapper mode function.
- Support command function.
- Stop data transfer function.
- Setting compare CRC result data function.
- Read compare CRC result with expected data function.

DIO
- Bug fix to improve the Generation tool when the DioChannelGroup is configured.
- Support safety function unintended module stop check.

EMM
- Support safety unintended interrupt check function.

ETH
- Support Adding/ Removing Mac Address to/from the Rx Hardware Filter Table function.
- Support Get the Counter State function.

FLS
- Bug fix to correct the DET service report by using Det_ReportTransientFault() instead of Det_ReportRuntimeError() for error FLS_E_ERASE_FAILED, FLS_E_WRITE_FAILED, and FLS_E_UNEXPECTED_FLASH_ID.
- Perform fully testing for below functions:
    - Writing to the flash memory
    - Reading the FLS Driver’s state information
    - Reading result information of the last job
    - Job Processing
    - Reading the flash memory
    - Setting the flash driver’s operation mode
    - Erasing the flash memory
    - Canceling the ongoing job
    - Blank checking of flash memory
- Support Validating contents of flash memory function.

GPT

- Support Predef timer function.

ICCOM
- Support safety unintended interrupt check function.
- Support safety register write verify function

IIC
- Bug fix to use Dem_SetEventStatus function instead of Dem_ReportErrorStatus.

IPMMU
- Support safety unintended interrupt check function.
- Support safety register write verify function.
- Support safety EDC for IP Memory Management Unit function.

MCU
- Update the memory section name mapping that is using by MCU driver.
- Improve QAC message generation in generated code.
- Remove stand-by mode function due to hardware does not support this function.

PORT
- Bug fix to improve Port_SearchDirChangeablePin and Port_SearchDioAltModePin function.
- Bug fix to avoid crash while calling Port_Init function, when there is no port pin is configured in port group configuration.
- Support Port Pin Mode Setting

RFSO
- Support safety unintended interrupt check function.
- Bug fix to use Dem_SetEventStatus function instead of Dem_ReportErrorStatus.

SPI
- Bug fix to improve Spi_MSIOFEnableFrameSYNC function.
- Support switching asynchronous mode function interrupt function with fully functional testing.

THS
- Support check DET error for API CddThs_ConfigureThermalInterruption.

WDG
- None

3.9 Ver19.0.11

This version is to release DIO, PORT, ICCOM, IIC, SPI, FLS, GPT, MCU, WDG, CAN, ETH, THS, IPMMU, EMM, RFSO, and CRC module for V4H.

COMMON
- Support IPL package Rev.0.11.0.
- Support Enable/Disable Console Print function.

CAN
- Bug fix of generation tool in case configures total number of allocated transmit buffers on CanController is exceeded 64 buffers.
- Bug fix to correct operation of generation tool WRN080012.
- Bug fix to correct implementation of CanControllerSspOffset parameter.
- Support Disabling interrupts function
- Support Enabling interrupts function

CRC
- To support CDDCRC_E_PARAM_POINTER to CddCrc_ReadCompareResult function.

DIO
- Support exclusive control function.

EMM
- Update the name of parameter in parameter definition file and name of DEM error report of unintended interrupt check and register write verify check function.

ETH
- Update the function Eth_SetControllerMode and Eth_Init to change the DEM error report type to DEM_EVENT_STATUS_PREFAILED.
- Bug fix to set variable RxStatsFragments, RxStatsJabbers, and RxStatsCollisions in Eth_GetRxStats function, compliant with AUTOSAR requirement.
- Support Reading a list of values from the indexed controller according to IETF RFC 2819 function.
- Support maximum frame length of 1522bytes when VLAN used.

FLS
- Support Validating contents of flash memory function with full unit test.
- Bug fix to correct operation of Hyper flash read.
- Bug fix to update the verifying input step for Fls_Write, Fls_Read, Fls_BlankCheck, Fls_Compare and Fls_VerifyEraseAddressAndLength function.
- Bug fix to update function prototype of Fls_Compare, Fls_Write, Fls_Read, Fls_Init function, to comply with AUTOSAR.

GPT
- Support safety unintended interrupt check function.
- Improve the critical section implementation in Gpt_StopTimer and Gpt_DeInit function.
- Improve internal function calling by implement function pointer.
- Update the range of parameter GptChannelId in parameter definition file.

ICCOM
- Update the name of parameter in parameter definition file and name of DEM error report of register write verify function.
- Add ERR255016 in generation tool to support check parameter DEM setting.

IIC

- Bug fix on BSWMDT file to remove Dem_SetEventStatus and Det_ReportError in IMPLEMENTED-ENTRYS field.
- Bug fix on source/header file to correct for SW-version checking way and remove trailing space.
- Support C# generate tool.

IPMMU
- Improve QAC message comment in driver code.
- Support C# generation tool.

MCU
- Perform code improvement to comply coding rule and MISRA C rule of function Mcu_CPGInitPLLs, Mcu_CPGSetModuleClock, Mcu_RSTGetResetReason, and Mcu_RSTGetResetRawValue.

PORT
- Support FUSE Monitoring Register function.

RFSO
- Bug fix to correct module ID in BSWMDT and generated files.
- Coding improvement to improve the readability.
- Support C# generation tool.

SPI
- None

THS
- Bug fix to remove CDD_Ths_Debug.h file out of header file.
- Bug fix to correct range and name of parameter CDD_THS_TIMEOUT_ 2000US_COUNT in parameter definition file.
- Support C# generation tool.

WDG
- None

3.10 Ver19.0.12

This version is to release DIO, PORT, ICCOM, IIC, SPI, FLS, GPT, MCU, WDG, CAN, ETH, THS, IPMMU, EMM, RFSO, and CRC module for V4H.

COMMON
- Support IPL package Rev.0.12.0.

CAN
- Bug fix of parameter definition file to correct description of CanTransmitQueueBufferDepth parameter.
- Bug fix of generation tool to correct generated clock in case CLKC input clock source is used.
- Support safety unintended interrupt check function.
- Support Get Controller Transmission Error Counter function.
- Support Get Controller Reception Error Counter function.
- Support Self-Test function.

CRC
- Support safety unintended module stops check function.
- Support safety unintended interrupt check function.
- Support safety EDC with index for WCRC function.

DIO
- Improve sample application to add Dio_WriteChannelGroup, Dio_ReadChannelGroup, Dio_ReadChannelOutputValue, Dio_ReadChannelGroupOutputValue, Dio_MaskedWritePort into testing flow.
- Remove safety unintended module stop check function.

EMM
- None

ETH
- Support reads a list with drop counter values of the corresponding controller function.
- Support IEEE1722 packets filtering function.
- Support get the dropped packets and statistics figures function.
- Support safety unintended interrupt check function.
- Bug fix to prevent out-of-range access to arrays just in case parameter EthRxQueueIdx is not configured to zero-based indexing.

FLS
- Support suspending the ongoing job function.
- Support resuming the previous suspending job function.

GPT
- Bug fix to correct the getting Predef timer value by calling Gpt_GetPredefTimerValue function, just in case of change timer mode from sleep to normal mode by calling Gpt_SetMode.

ICCOM
- Update sample application to support SUCMT replacement to TMU timer.

IIC
- Support safety unintended interrupt check function.

IPMMU
- Bug fix to correct name of parameter definition of safety register write verify function.
- Bug fix to correct function name Dem_ReportErrorStatus to Dem_SetEventStatus.

MCU
- None

PORT
- Support safety unintended module stop check function.

RFSO
- None

SPI
- Support DMA transmission function.

THS
- None

WDG
- None

3.11 Ver 19.0.13

Module	Target Function	Background of upgrade	Description
CAN	Pretended Networking	Add	To support new function Pretended Networking.
	RAM Test Function	Add	To support new function RAM Test.
	-	Add	To support CWE rule check in Driver static test.
CRC	-	Add	To support CWE rule check in Driver static test.
EMM	-	Add	To support CWE rule check in Driver static test.
ICCOM	-	Update	Critical section usage in stub file: To unify critical section implementation in SchM_CddIccom.c source file.
	-	Update	Sample application: Update using Write Access Control Register (MFISWACNTR) in sample application.
	-	Add	To support CWE rule check in Driver static test.
IIC	-	Update	Update parameter "CddIicHwChannelSelect" in R1911_CDD_IIC_V4H.arxml to "PRE-COMPILE" option.
	-	Add	To support CWE rule check in Driver static test.
IPMMU	-	Add	To support CWE rule check in Driver static test.
RFSO	Output Error to ECM	Add	To support new function Output Error to ECM.
	-	Add	To support CWE rule check in Driver static test.
THS	-	Add	To support CWE rule check in Driver static test.
DIO	-	Update	Bug fix: to correct comment of Dem_SetEventStatus() function in driver code, remove redundant code in Generation tool code.
	-	Add	To support CWE rule check in Driver static test.
ETH	gPTP TimeStamp Retrieval, Setting, Correct	Add	To support gPTP TimeStamp Retrieval/Setting/Correct function.
	-	Add	To support CWE rule check in Driver static test.
FLS	Verifying the DDR Pattern Area	Add	To support Verifying the DDR Pattern Area function.
	Calibrating the timing and dummy cycle for DDR Read operation.	Add	To support Calibrating the timing and dummy cycle for DDR Read operation function.
	Setting the specific configuration for flash device.	Add	To support Setting the specific configuration for flash device function.
	Writing pattern values to DDR pattern	Add	To support Writing pattern values to DDR pattern function.
	-	Add	To support CWE rule check in Driver static test.
GENERIC	-	Update	To unify critical section implementation in SchM_Msn.c

GPT	-	Update	Bug fix: To remove redundant parameter GptClearPendingInterrupts in file source code file GptRCARIntermediate.cs. Bug fix: To add new method CheckWRN10001() in the file GptCommonValidation.cs. Bug fix: Updated [memclass] and [ptrclass] for Gpt_GpChannelConfig, Gpt_GpPredefTimerConfig, LpChannelConfig in Driver source files.
	-	Add	To support CWE rule check in Driver static test.
MCU	- Active and provide the lock status of PLL - Microcontroller reset	Update	Bug fix: update function Mcu_GetPllStatus(), Mcu_GetResetReason() and Mcu_GetResetRawValue() to return error status when the driver is not initialized. Bug fix: Remove MCU_STANDBY_MODE_OPERATION pre-processeor in all related files of driver code for V4H.
	-	Add	To support CWE rule check in Driver static test.
PORT	-	Update	Bug fix: to remove the macro PORT_VERSION_CHECK_EXT_MODULES pre-processor in version check file Port.c.
	Safety Mechanism: - FUSE Monitoring Register - Unintended Module Stop Check	Update	Bug fix: Use function Dem_SetEventStatus() to report Dem error instead of Dem_ReportErrorStatus().
	-	Update	Bug fix: to update memmap section PORT_STOP_SEC_DBTOC_DATA_UNSPECIFIED generated in Port_PBcfg.c
	-	Add	To support CWE rule check in Driver static test.
SPI	DMA Transmission	Add	To support DMA Transmission function.
	-	Add	To support CWE rule check in Driver static test.
WDG	-	Add	To support CWE rule check in Driver static test.

3.12 Ver 19.0.14

Module	Target Function	Background of upgrade	Description
CAN	Wakeup function	Remove	To remove wake-up function out of V4H.
	ECC safety mechanism	Add	To support new function RAM Test.
CRC	-	Update	To unify critical section implementation in SchM_CddCrc.c
	Stop data transfer, Unintended module stop check	Update	To fix bug which is related Dem error is raised by CddCrc_UnintendedModuleStopCheck after calling CddCrc_Stop
	Creating/Checking CRC code,	Update	To fix bug which related redundant “XORed” step in CRC independent mode.

	CRC mode function, KCRC mode function		
EMM	-	Update	To fix the generation tool, improve the checking of DemEventParameterRefs parameter input.
	-	Update	To unify critical section implementation in SchM_CddEmm.c
	-	Update	Update exclusive area for “GLOBALVAR_PROTECTION” in BSWMDT/BSWMD.
ICCOM	-	Update	Update [memclass] and [ptrclass] for FUNC, P2CONST, P2VAR, VAR macros to comply AUTOSAR requirement. Change {ALIGNMENT} postfix in memory sections.
	CddIccom_GetVersion Info	Update	Use the compiler abstraction macro P2VAR to define for pointer variable VersionInfoPtr.
IIC	-	Update	Update [memclass] from AUTOMATIC to TYPEDEF in type define.
	-	Update	To correct range of CddIic_Ch<n>SlaveInit input argument information.
IPMMU	-	Add	To add checking release version mismatching in source files.
	-	Update	To unify critical section implementation in SchM_CddIpmmu.c
	-	Update	To fix the generation tool, improve the checking of DemEventParameterRefs parameter input.
RFSO	-	Update	To update Reentrancy property of APIs in driver code and component user manual.
THS	-	Update	To implement the waiting time by software instead of using hardware Timer in OS functions GetCounterValue() and GetElapsedValue().
	-	Update	To fix the generation tool, improve the checking of DemEventParameterRefs parameter input.
DIO	-	Update	To unify critical section implementation in SchM_Dio.c
	-	Update	To fix the generation tool, improve the checking of DemEventParameterRefs parameter input.
ETH	-	-	No change.
FLS	-	Update	To add new WRN092003 to check if DDR is used, when FlsCalibration is configured as “False”.
	-	Update	To update [memclass] and [ptrclass] for FUNC, P2CONST, P2VAR, VAR macros to comply AUTOSAR requirement.
	Erasing the flash memory	Update	Update Fls_VerifyEraseAddressAndLength to add the condition of (E_OK == LddReturnValue) before check FLS_E_PARAM_LENGTH error.
	-	Update	Add error report when writing data and read hardware ID from flash device in Fls_HfProcessPPWithBuffer,

			Fls_SfPPNormal, Fls_HfPPNormal and Fls_ReadExternalFlashID function.
GENERIC	-	-	No change.
GPT	-	Update	To unify critical section implementation in SchM_Gpt.c
MCU	-	Update	To update clock value of following parameters: McuPllFrequency, McuZB3Clk, McuSDSRCClk, McuSD0HClk, McuSD0Clk, McuRPCD2Clk, McuMSOClk, McuPOST2Clk, McuRPCClk.
	-	Update	Bug fix to update the algorithm for the error ERR101029 and ERR101024.
	-	Update	To unify critical section implementation in SchM_Mcu.c
PORT	-	Update	To unify critical section implementation in SchM_Port.c
	-	Update	To remove DEM function in Port_ExclusiveControl(). Add the condition of checking DEM status after invoke PORT_EXIT_CRITICAL_SECTION in APIs. Change the condition of setting value PORT_UNINITIALIZED in Port_Init API.
	-	Remove	Generation tool change: remove ERR124007 due to duplicate ERR124010.
SPI	-	Update	Change DEM implementation in file Spi_RegWrite.h: value of SPI_REG_VERIFY macro from Dem_ReportErrorStatus to SPI_DEM_REPORT_ERROR
WDG	-	Update	To unify critical section implementation in SchM_Wdg.c
	-	Update	Remove redundant code in Wdg_RWDT_Init. Remove Functions Invoked Dem_ReportErrorStatus in Wdg_RWDT_TriggerFunc. Correct Dem_ReportErrorStatus to Dem_SetEventStatus.
	-	Update	Update [memclass] and [ptrclass] for P2CONST and CONST macros to comply AUTOSAR requirement.

3.13 Ver 19.0.15

Module	Target Function	Background of upgrade	Description
CAN	Can_SetControllerMode function	Update	Function Can_SetControllerMode, change the condition call Can_StopMode from sub-state is tentative transition to controller not bus-off. Function Can_StopMode, remove condition check is not bus-off before indicating mode change to CanIf.
	-	Update	Update ERR080014 to validate for Safety mechanism Unintended interrupt check when Unintended Interrupt check is enabled and DEM parameter CAN_E_INTERRUPT_CONTROLLER_FAILURE isn't configured.

	-	Update	In parameter definition file, correct attribute 'origin' of GATEWAY literal value CanObjectType must be Renesas.
CRC	-	Update	Update [memclass] and [ptrclass] for P2CONST macros to comply AUTOSAR requirement
	CddCrc_Stop function	Update	In sub-function CddCrc_WCRC_SetStop: update step of clearing IE, TE, and DE bit of RDMCHCR
EMM	-	Update	Update [memclass] and [ptrclass] for P2CONST macros to comply AUTOSAR requirement. Change to use new RAM section VAR_NO_INIT_PTR for using.
ICCOM	Generation Tool	Update	Update condition check of ERR255014 and ERR255015 to improve checking condition.
IIC	-	Update	Update [memclass] and [ptrclass] for P2CONST, P2VAR, VAR and CONSTP2CONST macros to comply AUTOSAR requirement. Change to use new RAM section VAR_NO_INIT_PTR.
IPMMU	-	Update	Update [memclass] for P2CONST macros to comply AUTOSAR requirement. Change to use new RAM section VAR_NO_INIT_PTR.
RFSO	-	Update	Update [memclass] for P2CONST macros to comply AUTOSAR requirement. Change to use new RAM section VAR_NO_INIT_PTR.
THS	-	Update	Update the [memclass] name from “CDD_THS” to “CDDTHS”. Change to use new RAM section VAR_NO_INIT_PTR.
DIO	Generation Tool	Remove	Remove ERR120016, WRN120001 in Generation tool.
	-	Update	Update memory allocation section name from DIO_START/STOP_SEC_CONST_UNSPECIFIED to DIO_START/STOP_SEC_CONFIG_DATA_UNSPECIFIED for some global variables.
ETH	-	Update	Update the prototype and comment of function in source code, make it consistency with implementation.
	Eth_SetIncrementTimeForGptp function	Update	Add macro cover for Parameter IncVal in function Eth_SetIncrementTimeForGptp.
	-	Update	To unify critical section implementation in SchM_Eth.c
	Frame transmission/reception interrupt handling	Update	Using Common interrupt transmission and reception when EthGlobalTimeSupport parameter is True and in TX INTERRUPT mode.
	-	Update	Update IS-REENTRANT tag for Eth_ProvideTxBuffer, Eth_UpdatePhysAddrFilter.
FLS	-	Update	Update to unify critical section name FLS_RAM_DATA_PROTECTION.
	-	Remove	Remove Fls_Debug.h including to comply with AUTOSAR R19-11.

	-	Update	Change memory section to VAR_NO_INIT_PTR for some global pointers.
GENERIC	-	Update	In arm Compiler.h: Add "memclass" value for P2VAR, P2CONST, CONSTP2CONST, CONST, CONSTP2VAR compiler abstraction macros. Remove macros NO_PROLOGUE and PRAGMA(x) In Interrupt.h: Change the 2nd input parameter of GIC_SetPriority() macro from “grpid” to “pri”.
GPT	-	Update	Update [memclass] for P2VAR macros to comply AUTOSAR requirement (TimeValuePtr and LpTimerValuePtr). Update syntax CONSTP2CONST for Gpt_GaaHwFunc and change memclass to GPT_CONST
MCU	Initialization	Update	Correct the RAM check RT-VRAM0 area to comply Hardware User Manual.
	Generation Tool	Update	Update ERR101004 to improve validation of mandatory parameter list.
	-	Update	Update [memclass] for P2VAR and P2CONST macros to comply AUTOSAR requirement.
	-	Update	Update internal function Mcu_CPGWriteCR to correct the critical section implementation.
PORT	-	Update	In BSWMDT file, update "NON-REENTRANT" to "SINGLE-CORE-REENTRANT" in <REENTRANCY-LEVEL> tag for Port_FUSEMonitoring.
	-	Update	In PDF file: Add mode ALT4 in GP3_14, add direction mode for each PortPinX/PortGroupY, remove redundant mode "ALT1" in GP6_n (n = 4..19), GP7_m (m = 0..4,6..8,11,12,15..20).
	Generation tool	Remove	Remove WRN124006 for V4H device.
SPI	Synchronous transmission function	Update	Remove GetCounterValue and GetElapsedValue function, replace by while loop count at function Spi_MSIOFTransmitSyncJob, Spi_MSIOFWaitForRegSet, Spi_MSIOFControlCS in driver code.
WDG	None	None	None

3.14 Ver 19.0.16

Module	Target Function	Background of upgrade	Description
CAN	-	Update	Update IS-REENTRANT tag of API Can_GetControllerRxErrorCounter, Can_GetControllerTxErrorCounter and Can_GetControllerErrorState in BSWMDT file.
	Sample application	Update	Update sample application test to change accessing flow of SRCR3 register.
CRC	-	Add	Add Generation tool error ERR255022 to detect duplicate DEM reference path in user setting.
	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.
EMM	-	Update	Correct format and remove some redundant section in Driver user manual.
	-	Update	Change name of critical section definition to <MSN>_INTERRUPT_CONTROL_PROTECTION. Update memory section name.
	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.
ICCOM	-	Update	Change name of critical section definition to <MSN>_RAM_DATA_PROTECTION and <MSN>_INTERRUPT_CONTROL_PROTECTION.
	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.
IIC	-	Update	Change name of critical section definition to <MSN>_RAM_DATA_PROTECTION and <MSN>_INTERRUPT_CONTROL_PROTECTION.
IPMMU	-	Update	Change name of critical section definition to <MSN>_INTERRUPT_CONTROL_PROTECTION. Update memory section name.
	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.
RFSO	-	Update	Change name of critical section definition to <MSN>_RAM_DATA_PROTECTION and <MSN>_INTERRUPT_CONTROL_PROTECTION.
THS	-	Update	Change name of critical section definition to <MSN>_RAM_DATA_PROTECTION and <MSN>_INTERRUPT_CONTROL_PROTECTION.
	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.
	-	Update	Correct format and remove some redundant section in Driver user manual
DIO	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.

	-	Update	Update Generation Tool and Driver to use macro DIO_MAX_PORT_WIDTH with value 32U instead of 30U. Correct error message of ERR120014, ERR120015 operation.
ETH	-	Update	Changed name function ISR to ETH_AVBnDATAISR, ETH_AVBnERRISR, ETH_AVBnMACISR. Added macro for ETH_AVBnDATAISR, ETH_AVBnERRISR, ETH_AVBnMACISR (n = 0..2).
FLS	Fls Initialization	Update	Remove setting for Fls_GenState and Fls_GenInitStatus when there is any DET error.
	-	Add	Add Generation tool error ERR092046 to detect duplicate DEM reference path in user setting.
	-	Update	Update description of ERR092021 to add validation for FLS_E_CLOCK_SET_FAILURE.
GENERIC	-	Update	Unify the format of Module dependency parts for all modules in Module Overview document. Unify format the path and execute batch command of Sample Application for all modules in Module overview document.
	-	Update	Update and unify Sample Application make file for all V4H MCAL modules can execute at the same time.
GPT	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.
	Generation Tool	Update	Update ERR100088 to fix error condition.
MCU	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.
	Generation Tool	Update	Remove method of error message ERR101019 and add method of information message INF101002, update ERR101024
	MCU Get PLL Status MCU Distribute PLL Clock	Update	Update the Mcu_CPGGetPllStatus function for calculation of all PLLs status mask. Update Mcu_CPGInitClock, Mcu_CPGDistributeClocks functions for setting a global variable for checking in Mcu_DistributePllClock.
PORT	Port Initialization, Port Set to Alternate Mode and Port Set to Dio Mode	Update	Remove calling of Port_SetValueUnintendedModuleStopCheck in APIs Port_Init, Port_SetToAlternateMode and Port_SetToDioMode.
	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.
	Generation Tool	Add	Add Generation error ERR124021.
SPI	Synchronous transmission function	Update	Remark unused of parameter SpiTimeClk2Cs in parameter definition. Add new RENESAS parameter SpiClk2CsCount to implement cycle count in software.

	Generation Tool	Update	Update content of INF083006 for count value instead of timeout value.
WDG	Sample application	Update	Update sample application configuration to comply with typical configuration requirement.

3.15 Ver 19.0.17

Module	Target Function	Background of upgrade	Description
CAN	Generation Tool	Add	Add Generation tool error ERR080151 to detect duplicate DEM reference path in user setting.
	Generation Tool	Update	Update condition check of ERR080146 to check CanIcomCalloutFunction is configured as NULL/ NULL_PTR.
	Generation Tool	Update	Update condition check of ERR080074 to support “CanObjectType” parameter equals “GATEWAY”.
CRC	-	Update	Update KCRC polynomials value of macro CDDCRC_KCRC_32_ETH, CDDCRC_KCRC_32_1EDC6F41, CDDCRC_KCRC_16_CCITT, CDDCRC_KCRC_8_SAE_J1850, and CDDCRC_KCRC_8_0x2F
	User manual	Add	Add information that CDDCRC module only supports 1 instance and “CddInstanceId” need to be configured as 0 in user manual.
EMM	Parameter definition	Update	Update the range value for “CddEmmErrorMaxCount” in “CddEmmDomainx” container (x = 10...13)
	Generation Tool	Add	Add Generation tool error ERR255009 to detect duplicate DEM reference path in user setting.
	User manual	Add	Add information that CDDEMM module only supports 1 instance and “CddInstanceId” need to be configured as 0 in User manual. Update the information relating supported range of parameter CddEmmAddressToSaveErrorStatus.
ICCOM	-	-	None
IIC	Generation Tool	Add	Add Generation tool error ERR255023 to detect duplicate DEM reference path in user setting.
	User manual	Add	Add information for new error message ERR255023.
IPMMU	User manual	Update	Add information about FFI use case. Add information that CDDIPMMU module only supports 1 instance and “CddInstanceId” need to be configured as 0 in user manual.
RFSO	Generation Tool	Add	Add Generation tool error ERR255029 to detect duplicate DEM reference path in user setting.
	User manual	Add	Add information for new error message ERR255029.

THS	User manual	Add	Add information that CDDEMM module only supports 1 instance and “CddInstanceId” need to be configured as 0 in user manual.
DIO	Sample application	Update	Update driver and Generation to compiler warning when only “channel-based read access to GPIO Port Pins” or “channel-based flip access to GPIO Port Pins” function enabling.
ETH	Generation Tool	Update	Update the generation rule of macro ETH_TX_QUEUE_CONFIG_<n> and ETH_RX_QUEUE_CONFIG_<n>.
FLS	-	-	None
GENERIC	-	-	None
GPT	-	-	None
MCU	Parameter definition	Update	Update the default value of parameter “McuInitClock”, “McuPll5ClockSetting/McuPllCircuitEnable” from “false” to “true”.
PORT	BSWMDT	Add	Add memory section “VAR_NO_INIT_32” Into BSWMDT.
SPI	DMA Transmission	Update	Update MCAL driver code to avoid unintended clearing of DMA transfer request bits, confirms DMA transmission completes successfully when Spi_SetAsyncMode(SPI_POLLING_MODE) is called after Spi_Init() in-case using DMA and SpiEnablePersistentHwConfiguration is “true”.
WDG	Generation Tool	Update	Update generation rule of error ERR102044.

3.16 Ver 19.0.18

Module	**Target Function**	**Background of upgrade**	**Description**
CAN	Driver code	Remove	Remove "clear interrupt"(if) decision for Transmit TxRx FIFO and Tx Queue in Can_TxConfirmationProcessing() (to avoid unintended transmit interrupt when using FIFO or Queue for transmission)
	User Manual	Add	Add information for interrupt mode.
CRC	Driver code	Update	Update Software version and Release version checking
EMM	-	-	No update
ICCOM	-	-	No update
IIC	-	-	No update
IPMMU	-	-	No update
RFSO	-	-	No update
THS	Initialization, Enable/Disable generating interruption,	Update	Update the Voltage and Temperature calculation

	Configure interruption value, Voltage monitoring, Temperature monitoring,		
	Get state of THS current operation	Update	Remove the setting to bit 24 (CNCTTST) of register THSCTR
	Parameter definition	Update	Add description “This parameter is not used for implementation” for parameters CddThsPtat1, CddThsPtat2, CddThsPtat3, CddThsThcode1, CddThsThcode2, CddThsThcode3
	User manual	Remove	Remove information about the using of configuration parameters CddThsPtat1, CddThsPtat2, CddThsPtat3, CddThsThcode1, CddThsThcode2, CddThsThcode3.
DIO	-	-	No update
ETH	Initialization	Update	Remove the setting to bit RSTA of register APSR
	User manual	Remove	Remove Throughput Measurement List information
FLS	-	-	No update
GENERIC	-	-	No update
GPT	-	-	No update
MCU	Parameter definition	Add	- To support Fractional multiplication PLL mode: + Add parameter McuFractionalMultiplication. + Add Enum value “FRACTIONAL_FIXED_FREQUENCY_MODE_ID_4” for parameter McuFreqDitherMode in container McuPll3ClockSetting - Update description for parameters
	Generation Tool	Add	Add Generation tool error ERR101060 for configuration of parameter McuFractionalMultiplication Add parameter McuFractionalMultiplication in container McuPll3ClockSetting to error ERR101004
	User manual	Add	Add information for new error message ERR101060. Add parameter McuFractionalMultiplication in container McuPll3ClockSetting to error ERR101004 Add information: the configuration parameters McuPll<n>ClockSetting (n = 1,..,6) in the McuPllClockSetting container must be configured in order
PORT	User manual	Add	Add information of “Source of Error” for PORT_E_UNINTENDED_MODULE_STOP_FAILURE
SPI	Driver code	Add	Add critical section protection for function Spi_MSIOFEnableFrameSYNC()
WDG	-	-	No update

3.17 Ver 19.0.19

Module	Target Function	Description
CAN	Parameter definition	- Update description for CanEnableTxRxFIFOInterrupt, CanEnableTransmitQueueInterrupt, CanEnableTransmitHistoryInterrupt and - Add new parameter CanTransmitHistoryInterruptSrcSel
	Sample Application	Support new parameter CanTransmitHistoryInterruptSrcSel
	Generation Tool	- Update Can_TxConfirmationProcessing function to clear interrupt history of Can_GaaRegs[LucUnit].pCmn->aaTHLSTS[LucCh] - Add new parameter CanTransmitHistoryInterruptSrcSel - Support new parameter CanTransmitHistoryInterruptSrcSel
	Can_TxConfirmationProcessing	- Update Can_TxConfirmationProcessing function to clear interrupt history of Can_GaaRegs[LucUnit].pCmn->aaTHLSTS[LucCh]
	User Manual	- Add new error message ERR080152, ERR080153 and ERR080154
CRC	-	No update
EMM	Parameter definition	- Change range value of all parameters CddEmmErrorMaxCount to 1..31 - Add parameter CddEmmBit0PAPeccErr, CddEmmBit1PAPedcErr, CddEmmBit3PAPSDMACedcErr in container CddEmmDomain41 - Delete parameters in CddEmmDomain1 - Change name of containers - Create container CddEmmDomain22 and parameter CddEmmBit28ICUMXclockmonitorErr
	BSWMDT	- Add function CddEmm_SetHoldMaskCounter, CddEmm_SupportControlExternalErrorRequest and CDDEMM_DOMAIN22_ISR
	Generation Tool	- Modify parameter in container CddEmmDomain1, CddEmmDomain41 - Add container CddEmmDomain22 - Support new feature External Control Request
	Sample application	- Add function CddEmm_SupportControlExternalErrorRequest and CddEmm_SetHoldMaskCounter - Add domain22 - Add Interrupt_Enable(194)
	Driver code	- Add function CddEmm_SetHoldMaskCounter and CddEmm_SupportControlExternalErrorRequest - Add function CddEmm_ControlCounter and CddEmm_SetCounter - Add function CDDEMM_DOMAIN22_ISR - Add global variable CddEmm_GblHoldCounterRequestMode and CddEmm_GblMaskCounterRequestMode
	User Manual	Support new feature Control External Error Request
ICCOM	-	No update

IIC	User Manual	- Update for Elements pNotification, pEnterRegProtect, pExitRegProtect, pEnterGlbProtect, pExitGlbProtect - Update for all element in type CddIic_DmaConfigType - Replace ucChannelSlaveMapping to ucFisrtBitSetupCycle, and correct name, type of ucSlaveAddress, and add element ucSclClkGenDiv.
IPMMU	Parameter definition	- Add description for new parameter CddIpmmuIRDomainSupport
	CddIpmmu_DomErrorDetect	- Remove implementation of IMSSTR register and add pre-compile condition for IR Domain support
	CddIpmmu_HwPmbErrorDetect	- Remove Unintended Interrupt Check - Update operation and return value
	CddIpmmu_HwMmuErrorDetect	- Remove Unintended Interrupt Check - Update operation and return value
	Generation Tool	- Support new parameter CddIpmmuIRDomainSupport - Remove information of IMSSTR register
	Sample application	- Add macro CDDIPMMU_IR_DOMAIN_SUPPORT
	User Manual	- Add preconditions to notify user about the configuration of parameter "CddIpmmuIRDomainSupport" before using IR domain - Add parameter "CddIpmmuIRDomainSupport" into error "ERR255004"
RFSO	Parameter definition	Update <INTRODUCTION> and <MAX> for parameter CddRfsoIntervalTimerDuration.
	Module Description	Change duplicated TimeoutMaxTime to TimeoutMinTime
	Generation tool	Update range for CheckERR255017 and CheckERR255018
	Driver code	- Change name macro CDDRFSO_MAX_CYCLE to CDDRFSO_INTERVAL_MAX_CYCLE - Update condition of LulCycle in API CddRfso_IntervalCycleConfigure. - Change name macro CDDRFSO_MAX_CYCLE to CDDRFSO_MAX_CYCLE_TIMEOUT_VALUE in API CddRfso_TimeoutCycleConfigure - Update condition in parameter check of CddRfso_CalcCountCycle.
	User manual	Update Range of IntervalTimerTime in CddRfso_IntervalTimeConfigure, IntervalTimerCycle in CddRfso_IntervalCycleConfigure
THS	Generation Tool	Remove code lines and comments related to THINITSTR, SEQ_ACT_MON, CVM_CTRL, IRQCTL
	Driver code	- Unify function(s) invoked and Registers Used of function header comment. - Update description of Global Variables in functions CddThs_SetInterruptionMode, CddThs_SetThermalInterruptConfig - Remove the checking of COR_PARA_VLD in function CddThs_CalculateAndSetTemperatureInput and

		CddThs_GetHWCurrentTemperature - The following functionality restrictions have been removed. • Enable/Disable generating interruption • Configure interruption value • Voltage monitoring • Temperature monitoring • Clear Error status
DIO	User Manual	Change section name from PUBLIC_CODE to DIO_PUBLIC_CODE_ROM, PRIVATE_CODE to DIO_PRIVATE_CODE_ROM, CONFIG_DATA_UNSPECIFIED to DIO_CFG_DATA_UNSPECIFIED
ETH	Generation tool	- Generate new macro ETH_TX_DESC_MAX, ETH_DESC_SIZE_<n> (n=0,1,2) - Update algorithm for generated value of macro ETH_RAM_SIZE_<n> (n=0,1,2).
	Eth_Ram_Alloc, Eth_Hw_Avb_SingleDescFrameSend	- Update Eth_Ram_Alloc function - Add new CR7_Invalidate_DCache_By_Addr and CR7_Flush_DCache_By_Addr function - Add new CR7_Flush_DCache_By_Addr for Eth_Hw_Avb_SingleDescFrameSend function.
	Eth_Hw_Avb_EnableRamArea	Update Descriptor
	Eth_GetTxBuffer(), Eth_Ram_Init, Eth_Ram_Alloc, Eth_Ram_GetNextFreeAddr	- Add new Eth_GaaDescSize, Eth_GaaMemPoolDesc_0, Eth_GaaMemPoolDesc_1, Eth_GaaMemPoolDesc_2, Eth_GaaMemPoolDescTable for descriptor. - Update function Eth_GetTxBuffer(), Eth_Ram_Init, Eth_Ram_Alloc, Eth_Ram_GetNextFreeAddr. - Update QAC message and Eth_InitializeBuffer function.
	User Manual	- Add information about functions CR7_Invalidate_DCache_By_Addr, CR7_Flush_DCache_By_Addr - Update memory section VAR_PORT_BUFFER_0, VAR_PORT_BUFFER_1, VAR_PORT_BUFFER_2. - Add descriptions for new memory sections: VAR_PORT_DESCRIPTOR_0, VAR_PORT_DESCRIPTOR_1, VAR_PORT_DESCRIPTOR_2
FLS	User Manual	- Remove “not support” from information related to features that supported in module function - Restriction was lifted by specifying the flash memory to be supported.
GENERIC	Driver code	In Interrupt_Cfg.h: - Add macro MFIS_xIICR1_ISR for ICCOM. - Add macro SPI_162_ISR In RCar_V4H_0.h: - Remove IMSSTR register (IPMMU) - Remove declarations of IRQCTL, THINITSTR, VMCODE1, VMCODE2, VMCODE3, TSCn_PTAT1, TSCn_PTAT2, TSCn_PTAT3 (n = 2..4)

		- Update register address for TSC1_PTAT1, TSC1_PTAT2, TSC1_PTAT3, TSCn_THCODE1, TSCn_THCODE2, TSCn_THCODE3 (n = 1..4) In device_cfg.c: - Correct the end address of MPU Area 4 for SDRAM. In V4H_translation.h: - Remove RENESAS_REG_OFST_IMSSTR (IPMMU) Remove translation macro of IRQCTL, THINITSTR, VMCODE1, VMCODE2, VMCODE3 - Update define value for RENESAS_TSCn_PTAT1, RENESAS_TSCn_PTAT2, RENESAS_TSCn_PTAT3 (n = 2..4)
	Module Overview	Section 3.4.1.7: - Correct Sample Application status variable to GaaTestResult. In Section 3.4.6.7: - Add function CddEmm_SupportControlExternalErrorRequest and CddEmm_SetHoldMaskCounter to Sample App
GPT	-	No update
MCU	Parameter definition	- Add new McuPllStopByA3DUL for McuPll<n>ClockSetting with n = 1,2,3,4,5,6 - Add new McuMultiplicationRatio, McuFreqDitherMode for McuPll5ClockSetting - Update parameter of McuModuleClockSupplySetting
	Sample application	Reload latest configuration with the update in Parameter definition
	Generation tool	- Update method ComputeMcuGaaPllSetting - Update feature ../McuPllnClockSetting/ McuPllStopConditions/McuPllStopByA3DUL - Update mandatory list with ERR101004 - Update correct value of ucNoOfClkRegs
	Driver code	Update function Mcu_CPGSetModuleClocks.
	User Manual	- Remove note to describe using parameters in McuPllClockSetting container In ERR101004: - Add McuPllStopByA3DUL for McuPll<n>ClockSetting/McuPllStopConditions (n= 1,2,3,4,5,6) - Add McuFreqDitherMode, McuMultiplicationRatio for McuPll5ClockSetting - Update Mcu<Bit>ClockSupplyEnable
PORT	Parameter definition	Update value FXR_TXEN# of PortPinInitialMode in PortGroup2\PortPin1 and PortGroup2\PortPin5
	Generation tool	- Correct comment of method CheckERR124016 and Ref ID of method CheckWRN124006 - Update generated information of WRN124006, WRN124005, WRN124004
	Driver code	Update device name in function description for all functions

	User Manual	- Add information about the configuration should only activate for one single pin to one given peripheral input function - Add WRN124006. - Update content of caution for “PortPinInitialMode” parameter
SPI	Driver code	- Update value of SPI_MSIOF_MAX_TX_FIFO_SIZE to 0x0100
	User Manual	- Correct memory section name as SPI_PUBLIC_CODE_ROM SPI_PRIVATE_CODE_ROM, CODE_FAST, VAR_INIT, VAR_NO_INIT_32, VAR_NO_INIT_UNSPECIFIED.
WDG	Driver code	Update content of QAC message.
	User Manual	Update ROM/RAM information.

3.18 Ver 19.0.20

Module	Classification	Description
ALL MODULES	User Manual	- Precaution: update information for “Translation XML File” and “Configuration XML File” in Generation Tool User's Manual.
CAN	Driver code	- Update name and value of macro version check.
	User manual	- Update ROM, RAM memory section name.
CRC	Driver code	- Update information of Functions Invoked, Registers Used.
	User manual	- Update ROM memory section name.
EMM	Driver code	- Update information of Functions Invoked, Registers Used and Global Variables Used.
	User manual	- Add information “Support external request control functionality”. - Update RAM memory section name.
ICCOM	Driver code	- Update information of Registers Used. - Correct error message for Mismatch in Release Revision Version. - Fix wrong comment for enSndCtaCurr and enSndCtaNext in CddIccom_ChannelStatusType.
	User manual	- Update ROM, RAM memory section name.
IIC	Driver code	- Update information of Registers Used. - Update error message of mismatch for revision version. - Add software version in header.
	Sample code	- Update value of CddIicClockFrequency in App_CDD_IIC_V4H_Sample.arxml.
	Generation tool	- Update value of variable CDF in method ComputeCddIicGaaSlaveConfig, CheckERR255022. - Update for formula for extern_load, ulextern_load of method ComputeCddIicGaaSlaveConfig.
	User manual	- Add note for description about Fix duty node and remove note for Variable duty description. - Add CddIic_Ch<n>NoticeCallback (<n> = 0..5) in table APIs provided by the IIC Complex Driver Component. - Add new section CddIic_Ch<n>NoticeCallback.

		- Update table DET Errors of IIC Complex Driver Component. - Update table DEM Errors of IIC Complex Driver Component. - Update ROM, RAM memory section name. - Add section “CODE” to X1 in figure IIC Complex Driver Component Memory Organization.
IPMMU	Driver code	- Update information of Functions Invoked, Registers Used.
	Generation tool	- Add methods CheckERR255029 to notify when same reference path is configured for the Dem event parameters.
	User manual	- Add CddIpmmu_MmuSetTransTableBase into “Address translation functionality”. - Update RAM memory section name. - Add new error message ERR255029.
RFSO	Driver code	- Update information of Registers Used.
	Generation tool	- Correct typo of <summary> description ERR255018.
	User manual	- Update ROM, RAM memory section name.
THS	User manual	- Update the description for "Get current temperature inside the LSI". - Update ROM, RAM memory section name.
DIO	Sample code	- Update loop value for final result check. - Update expected value for Masked Write Port Check
ETH	Driver code	- Update information of Functions Invoked, Registers Used.
	Generation tool	- Add generation tool error to notify when same reference path is configured for the Dem event parameters.
	User manual	- Update precondition for feature EthSwitchManagementSupport. - Update ROM, RAM memory section name. - Add new error message ERR088043.
FLS	Driver code	- Add START/END comments for fixing the violation of MISRA C Message.
	User manual	- Update ROM, RAM memory section name.
GENERIC	User manual	In Module Overview: - Correct file path of MCALConfGen.exe. - Update option for ARM Compiler.
GPT	Driver code	- Update macros for AUTOSAR release version information.
	Generation tool	- Add new MISRA C Message.
MCU	Generation tool	- Update method calculatePLLxVCO.
	User manual	- Add notice configure for ZG clock. - Add notice configure for PLL5 Control Register. - Update ROM, RAM memory section name.
PORT	Generation tool	- Improve QAC Misra C Message.
SPI	Driver code	- Update information of Functions Invoked, Registers Used.
	User manual	- Add new ROM, RAM memory section name.
WDG	Driver code	- Update information of Functions Invoked, Registers Used.
	Generation tool	- Add method CheckERR102052 to notify when same reference path is configured for the Dem event parameters.

	User manual	- Add new error message ERR102052.

3.19 Ver 19.0.21

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	User manual	EUM: - Section 19.5.3: Correct the description of API "CddRfso_GetCFEPinStatus" in table "APIs provided by the RFSO Complex Driver Component" as "This API gets status of FSO_CFE0, FSO_CFE1, CFEO0 and CFEO1 bits of selected RFSO channel." - Section 19.5.3.2. Correct “IntervalTimerTime” as "IntervalTime" in Row "Syntax" and "Parameters (In):" - Section 19.5.3.3. Correct “IntervalTimerCycle” as " IntervalCycle" in Row "Syntax" and "Parameters (In):"
THS	User manual	EUM: - Section 16.3 Architecture Details, description of De-Initialization: change IDLE to CDD_THS_IDLE and add information “HW “Standby mode”” - Sections 16.5.2.1, 16.5.2.4, 16.5.3.5, 16.5.3.6: Add note related to CDD_THS_IDLE - Section 16.5.3.2. CddThs_ConfigureThermalInterruption, row "Prototype": Update type of parameter InterruptionValue to “sint16"
DIO	-	No update.
ETH	User manual	EUM: - Section 8.2.5, Table ETH Driver Error List (3/4), in API Eth_MainFunction: remove row ETH_E_LATECOLLISION - Section 8.6.2, table DEM Errors of ETH Driver Component + Remove descriptions related to error code ETH_E_LATECOLLISION + In descriptions of error code ETH_E_REGISTER_CORRUPTION: Remove Eth_SetControllerMode - Section 8.9.1.2, table "ISR Function for the Device" ISR name is update as below: + ETH_AVB0ERRORISR becomes ETH_AVB0ERRISR + ETH_AVB0ERRORISR_CAT2 becomes ETH_AVB0ERRISR_CAT2 + ETH_AVB1ERRORISR becomes ETH_AVB1ERRISR

		+ ETH_AVB1ERRORISR_CAT2 becomes ETH_AVB1ERRISR_CAT2 + ETH_AVB2ERRORISR becomes ETH_AVB2ERRISR + ETH_AVB2ERRORISR_CAT2 becomes ETH_AVB2ERRISR_CAT2
FLS	-	No update.
GENERIC	Driver code	RCar_V4H_0.h: Update address of register OTPMONITOR3
GPT	-	No update.
MCU	Parameter definition	Change description for parameters: McuSYDM1ClockSupplyEnable: SYS-DMAC0 to SYS-DMAC1 McuSYDM2ClockSupplyEnable: SYS-DMAC1 to SYS-DMAC2 McuISP0ClockSupplyEnable: Channel 1 to Channel 0, McuISP1ClockSupplyEnable: Channel 2 to Channel 1
	Sample code	- Add #ifdef RAM_INITIALIZATION to cover Mcu_InitRamSection - Add #include "Mcu_PBTypes.h" - Remove MCU_TRUE and MCU_FALSE
PORT	Sample code	Update address of register OTPMONITOR3
SPI	Generation tool	- Update method GetulSITMDR1 to get correct value for register SITMDR1 for each Job - Update method CheckERR083090 and error messages ERR083090
	Sample code	Update configuration of SpiCsSelection, SpiPortPinSelect to be consistent in container SpiJob and SpiJob_002.
	User manual	EUM: - Section 14.6.2: Add API Spi_Cancel to “Related API(s)” of SPI_E_DATA_TX_TIMEOUT_FAILURE and SPI_E_WRITE_VERIFY_FAILURE TUM: - Section “13.6.1 Specific Error Messages”: + Add SpiCsSelection in list pf parameters that must be consistent when SpiEnablePersistentHwConfiguration is enabled. + Update error message ERR083090.
WDG	-	No update.

3.20 Ver 19.0.22

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.

IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	-	No update.
ETH	-	No update.
FLS	-	No update.
GENERIC	-	No update.
GPT	-	No update.
MCU	User manual	EUM: - Section 12.2.2. Preconditions: Update the precondition for McuResetReasonConf container
PORT	User manual	EUM: - Section 7.2.2. Preconditions: Update the precondition for Port Pin container configuration
SPI	-	No update.
WDG	User manual	TUM: - Section 14.6.1 Specific Error Messages Remove redundant parameter WdgTriggerLocation in table 14-2 Mandatory Configuration Parameters List for V4H

3.21 Ver 19.0.23

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	User manual	TUM: In section 16.7.2 Common Warning Messages: - Add Table 16-12 and update description for WRN255003
RFSO	-	No update.
THS	User manual	TUM: In section 15.6.2 Specific Warning Messages: - Update the description for WRN255001
DIO	-	No update.
ETH	-	No update.
FLS	Driver code	- Update precondition for functions: Fls_SfCompareDataManualMode, Fls_SfManualModeCompare, Fls_HfManualModeCompare, Fls_HfCompareDataManualMode and Fls_HfSwitchCompareMode. - Update precondition for declaration of functions:

		Fls_SfManualModeCompare, Fls_HfManualModeCompare and Fls_HfCompareDataManualMode. - Increase FLS_SW_PATCH_VERSION to 10.
	Sample code	- Update SW-VERSION to 1.1.10
GENERIC	-	No update.
GPT	-	No update.
MCU	Generation tool	Update tool version to 1.1.13 Update method GenerateParamConfigurationHandles Update Method computepPLLnCR1 to generate address PLL3CR1 register
	User manual	12. MCU - Section 12.2.2. Preconditions: Remove the precondition for McuResetReasonConf container.
PORT	Generation tool	Update tool version to 1.0.13 Update method GetPortPinHandles for fix sybolic name to PortConf
	Sample code	Change Port_Config to PortConf in arguments of functions
	User manual	7.PORT - Section 7.2.2. Preconditions: in precondition for Port Pin container configuration: change symbolic name from Port_Config to PortConf
SPI	-	No update.
WDG	-	No update.

3.22 Ver 19.0.24

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	-	No update.
ETH	-	No update.
FLS	-	No update.
GENERIC	-	No update.
GPT	-	No update.
MCU	-	No update.
PORT	Parameter definition	Remove MODSEL4,5,6,7 character in Enumeration value of PortPinInitialMode parameter for Port Group 4,5,6,7

	Generation tool	Modify gentool to remove the generation related to MODSEL4/5/6/7 register.
	Sample code	App_PORT_V4H_Sample.c Remove checkpoint for MODSEL4,6 in Port_SetPinMode_Check App_PORT_V4H_Sample.h Remove address of register MODSEL4,5,6,7
	User manual	EUM: - Section 7.2.2. Preconditions: + In precondition related to MODSEL registers, remove information of TSN0 and AVBn
SPI	User manual	EUM: - Section 14.2.2 Preconditions: Add limitation and workaround related to SpiSupportConcurrentSyncTransmit
WDG	-	No update.

3.23 Ver 19.0.25

Module	Classification	Description
CAN	User manual	EUM: - Section 5.2.1 General: Not supported DEEPSTOP functionality. TUM: - Section 4.6.1 Specific Error Messages: Remove redundant parameters CanIcomMissingMessageTimerValue, CanIcomMessageIdMask, CanIcomCounterValue, CanDeviceName in ERR080004.
CRC	-	No update.
EMM	User manual	EUM: - Section 18.2.2 Preconditions: + Correct name of bit EOE in ECMERROUTCTLR register to ERROUT - Section 18.10. Non-AUTOSAR environment integration: + Update information of Generation SoC from 3rd to 4th
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	User manual	EUM: - Section 19.6.1: Add CddRfso_IntervalTimerInterruptStatus, CddRfso_GetVersionInfo to the Related API(s) of CDDRFSO_E_PARAM_POINTER
THS	User manual	EUM: - Section 16.6.1 THS Complex Device Driver Component Development Errors: + Update the Related API(s) of Error Code CDD_THS_E_INVALID_VALUE to CddThs_ConfigureThermalInterruption.

		TUM: - Section 15.5 Precautions: + Change "CddThs_RCar.cfgxml" to "CddThs.cfgxml"
DIO	User manual	EUM: - Section 6.5.2.9: Change Dio_HwFuncTableType: Row "Name": Dio_HwFuncTableType - Section 6.5.2.10: Change Dio_HwConfigType: Row "Name": Dio_HwConfigType - Section 6.9.1 Multi-core: Not support multi-core
ETH	User manual	EUM: - Delete Eth_GetEgressTimeStamp API from table Table 8.4 ETH Driver Protected Resource List - Delete ETH_E_INV_MODE for Eth_EnableEgressTimeStamp from Table 8.6 ETH Driver Error List (2/4) - Add ETH_E_INV_PARAM for DET/DEM Errors handled field in Table 8.16 Eth_SetIncrementTimeForGptp - Add Eth_ProvideTxBuffer, Eth_GetCurrentTime, Eth_GetEgressTimeStamp, Eth_GetIngressTimeStamp for ETH_E_INV_MODE and Eth_SetIncrementTimeForGptp for ETH_E_INV_PARAM in Table 8.21 DET Errors of ETH Driver Component (2/2) - Add reference information in section 8.9.1.4 Parameter Definition File
FLS	-	No update.
GENERIC	User manual	Module Overview: Cover, footer and colophon: - Update Rev and issue date. Chapter 2. Reference documents: Update version of reference documents Section 5.1 Products: - Update MCAL Product Release Version for R-CAR/V4H.
GPT	User manual	EUM: - Section 10.2.1 General: Add information related to SASYNC/SASYNCD2 - Section 10.9.1 Multi-core / Multi-instantiation: Update the content to “GPT driver is not support Multi-core/Multi-instantiation.” Module Overview: Section 3.3.3 GPT Driver Component: - Add information of parameter “GPT_E_INTERRUPT_CONTROLLER_FAILURE” to table 3-28
MCU	User manual	EUM: - Section 12.3 Architecture Details: Update information of Clock Initialization Module Overview:

		Section 3.3.5.3 Folder Structure - Header file: Mcu_CLK_LLDriver.h update to "-" for V4H - Source Files: Mcu_CLK_LLDriver.c update to "-" for V4H Remove file Mcu_Irq.c, Mcu_Cfg.c
PORT	User manual	EUM: - Section 7.10.1 Stub modules handling: remove information of OS stub function
SPI	User manual	EUM: - Section 14.6.2: Remove Spi_Init, Spi_DeInit, Spi_MainFunction_Handling, Spi_AsyncTransmit, Spi_Cancel from the Related API(s) of SPI_E_DATA_TX_TIMEOUT_FAILURE. Module Overview: Section 3.3.8 SPI Driver Component: - Add information of parameter "SPI_E_INTERRUPT_CONTROLLER_FAILURE", "SPI_E_WRITE_VERIFY_FAILURE" to table 3-67
WDG	User manual	EUM: - Section 15.2.2 Preconditions: + Correct Frequency of RCLK to 32.8 kHz. + Correct name of name of Hardware IP from DBSC4 to DBSC5. - Section 15.3 Architecture Details + Correct number of section number to 15.2.4 WDG State Diagram. - Section 15.4 WDG Driver Component Header and Source File Description: + Correct name of Module Overiew to R-Car Gen4 AUTOSAR R19-11 MCAL User's Manual Modules Overview. - Add section 15.9 Device-Specific Information Module Overview: Section 3.3.9.2 Module Dependency: - Correct name of MCU clock from WDTBTCLKI to McuWDTClk.

3.24 Ver 19.0.26

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	-	No update.
ETH	-	No update.
FLS	-	No update.
GENERIC	-	No update.
GPT	-	No update.
MCU	User manual	EUM: - Section 12.2.1 General: Update mandatory configuration for PLL5 Control Register and Module Stop Control Register.
PORT	-	No update.
SPI	User manual	EUM: - Section 14.2.2 Preconditions: Add limitation inconsistent name of SYSDMAC channels instance and register name.
WDG	-	No update.

3.25 Ver 19.1.0

Module	Classification	Description
CAN	User manual	- Section 5.2.1 General: Update HW UM references information.
CRC	-	No update.
EMM	User manual	- Table 18-1: Update HW UM references information.
ICCOM	User manual	- Table 11-1: Update HW UM references information.
IIC	User manual	- Table 13-1: Update HW UM references information.
IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	-	No update.
ETH	-	No update.
FLS	-	No update.

GENERIC	User manual	Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: - Update Release Version in Table 1.1 2.Reference Documents - Update references version at Table 2.1 Reference Documents(1/2).
GPT	-	No update.
MCU	-	No update.
PORT	-	No update.
SPI	-	No update.
WDG	-	No update.

3.26 Ver 19.1.1

Module	Classification	Description
CAN	Generation tool	Update the calculation in the function to check ERR080137 and remove the unexpected raised error message that occurs when configuring the maximum number of transmit queue buffers depth on each CanController.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	-	No update.
ETH	-	No update.
FLS	-	No update.
GENERIC	-	No update.
GPT	-	No update.
MCU	-	No update.
PORT	-	No update.
SPI	-	No update.
WDG	-	No update.

3.27 Ver 19.1.2

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	-	No update.
ETH	-	No update.
FLS	-	No update.
GENERIC	Sample code	Update arm compiler path in sample app to use arm compiler version 6.16.2.

	User manual	**Embedded User Manual:** Cover, footer, and colophon: - Update Rev and issue date. 5.CAN: - Section 5.9.2: Add “Multi-Core / Multi-Instantiation” section. 6.DIO: - Section 6.9.1: Update “Multi-Core / Multi-Instantiation” information 7.PORT: - Section 7.9.2: Add “Multi-Core / Multi-Instantiation” section. 8.ETH: - Section 8.9.2: Add “Multi-Core / Multi-Instantiation” section. 9.FLS: - Section 9.10.2: Add “Multi-Core / Multi-Instantiation” section. 10.GPT: - Section 10.9.1: Update “Multi-Core / Multi-Instantiation” section. 11.ICCOM: - Section 11.9.2: Add “Multi-Core / Multi-Instantiation” section. 12.MCU: - Section 12.9.2: Add “Multi-Core / Multi-Instantiation” section. 13.IIC: - Section 13.9.2: Add “Multi-Core / Multi-Instantiation” section. 14.SPI: - Section 14.9.1: Add “Multi-Core / Multi-Instantiation” section (Remove “Inter Core Exclusive Control” section) 15.WDG: - Section 15.9.2: Add “Multi-Core / Multi-Instantiation” section. 16.THS: - Section 16.9.3: Add “Multi-Core / Multi-Instantiation” section. 17.IPMMU: - Section 17.9.2: Add “Multi-Core / Multi-Instantiation” section. 18.EMM: - Section 18.9.2: Add “Multi-Core / Multi-Instantiation” section. 19.RFSO: - Section 19.9.2: Add “Multi-Core / Multi-Instantiation” section. 20.CRC: - Section 20.9.2: Add “Multi-Core / Multi-Instantiation” section. **Tool User Manual:** - Cover, footer, and colophon: - Update Rev and issue date. 2.Reference Documents - Update references version at Table 2.1 Reference Documents (1/2). 12. IIC - Section 12.6.3: Add note for message INF255001. **Module Overview:** Cover, footer, and colophon: - Update Rev and issue date. Chapter 2. Reference documents: -Update version of reference documents Chapter 5: Section 5.1 Products: - Update MCAL Product Release Version for R-CAR/V4H. Section 5.2 Compiler:

		- Update ARM Compiler to 6.16.2
GPT	-	No update.
MCU	-	No update.
PORT	-	No update.
SPI	-	No update.
WDG	-	No update.

3.28 Ver 19.2.0

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	-	No update.
ETH	-	No update.
FLS	-	No update.

GENERIC	User manual	**Embedded User Manual:** Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: - Update Release Version in Table 1.1 2.Reference Documents - Update references version at Table 2.1 Reference Documents(1/2). 7.PORT: - Section 7.2.1: Add information support the parameter "PortPinInitialMode" is configured as CANFD5, the CANFD7 functionality will be reflected in these PortPin. 12.MCU: - Section 12.2.1: Add restriction related to parameters for the Module Stop Control Register must be always configured as False. **Tool User Manual:** - Cover, footer, and colophon: - Update Rev and issue date. 2.Reference Documents - Update references version at Table 2.1 Reference Documents (1/2). **Module Overview:** Cover, footer, and colophon: - Update Rev and issue date. Chapter 2. Reference documents: -Update version of reference documents Chapter 5: Section 5.1 Products: - Update MCAL Product Release Version for R-CAR/V4H.
GPT	-	No update.
MCU	-	No update.
PORT	-	No update.
SPI	-	No update.
WDG	-	No update.

3.29 Ver 19.2.1

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	-	No update.
ETH	-	No update.
FLS	-	No update.
GENERIC	-	No update.
GPT	-	No update.
MCU	-	No update.
PORT	-	No update.
SPI	-	No update.
WDG	-	No update.

3.30 Ver 19.2.2

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	Driver code	No update.
	Generation tool	- Add a new parameter, DioDomainId, to support Domain Protection of the RegionID/FFI feature. - Update to generate Dio_GaaPortGroup array based on the domain ID. - Update to check the new mandatory parameter: DioDomainId.
	Sample code	Reload the configuration file with the latest parameter definition.
ETH	-	No update.
FLS	Generation tool	- Add MCU as a required stub file input. - Update to generate macros FLS_CPG_RPCCKCR_ADDR, FLS_CPG_CPGWPR_ADDR, FLS_CPG_CPGWPCR_ADDR based on the domain ID.
GENERIC	Driver code	- Add new addresses to support Bus Domains 1, 2, and 3 for MCU and PORT registers. - Correct the address of MPU Area 4/5 for SDRAM.

	User manual	**Embedded User Manual:** Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: Update Supported Generation Tool Version in Table 1.2 2.Reference Documents - Update references version at Table 2.1 Reference Documents (1/2). 5.DIO - Table 5-2: Add parameter “DioDomainId”. 6.PORT: - At the Table 1-2 Parameter List for ERR124004 (1/3) Add the parameter “PortDomainId”. 11.MCU: - Section 11.6.1 Specific Error Messages, Add new mandatory parameter McuDomainId. **Tool User Manual:** Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: - Update Release Version in Table 1.1 5.DIO - At section 1.2.1 General: Add information support the parameter “DioDomainId”. 7.PORT: - At section 1.2.1 General: Add information support the parameter “PortDomainId”. 9.FLS - Section 1.2.2: Add precondition information related to MCU Bus Domain setting. 12.MCU: - Section 12.2.2: Add information related to parameter “McuDomainId” and Bus Domain protection setting. 14.SPI: - Section 14.2.1 General: Add new information about domain protection of regionID support port pin chip select. **Module Overview:** Cover, footer and colophon: - Update Rev and issue date. Chapter 2. Reference documents: - Update version of reference documents. Add section 3.5.5 Region ID Access Protection. Chapter 5: Section 5.1 Products: - Update MCAL Product Release Version for R-CAR/V4H.
GPT	-	No update.

MCU	Driver code	- Remove the address of RPCCKCR register for V4H device. - Increase SW-VERSION.
	Generation tool	- Add a new parameter, McuDomainId, to support Domain Protection of the RegionID/FFI feature. - Update to generate MCU_RPCCKCR_ADDRESS macro based on the domain ID. - Update to check the new mandatory parameter: McuDomainId.
	Sample app	- Reload the configuration file with the latest parameter definition. - Increase SW-VERSION.
PORT	Driver code	No update.
	Generation tool	- Add a new parameter, PortDomainId, to support Domain Protection of the RegionID/FFI feature. - Update to generate PORT_USER_BASE_ADDRESS macro(s) based on the domain ID. - Update to check the new mandatory parameter: PortDomainId.
	Sample app	Reload the configuration file with the latest parameter definition.
SPI	Generation tool	- Add PORT as a required stub file input. - Update to get the port pin address of chip select based on the domain ID.
WDG	-	No update.

3.31 Ver 19.2.3

Module	Classification	Description
CAN	-	No update.
CRC	-	No update.
EMM	-	No update.
ICCOM	-	No update.
IIC	-	No update.
IPMMU	-	No update.
RFSO	-	No update.
THS	-	No update.
DIO	-	No update.
ETH	Sample code	Update Rx verification process for interrupt mode.
FLS	-	No update.
GENERIC	User manual	**Embedded User Manual:** Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: - Update Release Version in Table 1.1 2.Reference Documents - Update references version at Table 2.1 Reference Documents(1/2). **Tool User Manual:** Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: Update Supported Generation Tool Version in Table 1.2 2.Reference Documents - Update references version at Table 2.1 Reference Documents (1/2). **Module Overview:** Cover, footer and colophon: - Update Rev and issue date. Chapter 2. Reference documents: - Update version of reference documents. Chapter 5: Section 5.1 Products: - Update MCAL Product Release Version for R-CAR/V4H.
GPT	-	No update.
MCU	-	No update.
PORT	-	No update.
SPI	-	No update.
WDG	-	No update.

3.32 Ver 19.3.0

Module	Classification	Description
CAN	-	No update.
CRC	Sample code	Add description files: + R1911_CDD_CRC_V4H_DataTypes.arxml + R1911_CDD_CRC_V4H_Interfaces.arxml + R1911_CDD_CRC_V4H_SWCD.arxml + R1911_CDD_CRC_V4H_SwcBswMap.arxml + R1911_CDD_CRC_V4H_BSWMD.arxml
EMM	Sample code	Add description files: + R1911_CDD_EMM_V4H_SwcBswMap.arxml
ICCOM	Sample code	Update description file: + Add all SWC-BSW-RUNNABLE using on RTE.
IIC	Sample code	Add description files: + R1911_CDD_IIC_V4H_DataTypes.arxml + R1911_CDD_IIC_V4H_SWCD.arxml + R1911_CDD_IIC_V4H_SwcBswMap.arxml
IPMMU	Sample code	Add description files: + R1911_CDD_IPMMU_V4H_SwcBswMap.arxml
RFSO	Sample code	Add description files: + R1911_CDD_RFSO_V4H_SwcBswMap.arxml
THS	Sample code	Add description files: + R1911_CDD_THS_V4H_SwcBswMap.arxml
DIO	-	No update.
ETH	-	No update.
FLS	-	No update.

GENERIC	User manual	**Embedded User Manual:** Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: - Update Release Version in Table 1.1 2.Reference Documents - Update references version at Table 2.1 Reference Documents(1/2). **Tool User Manual:** Cover, footer and colophon: - Update Rev and issue date. 1.Introduction: Update Supported Generation Tool Version in Table 1.2 2.Reference Documents - Update references version at Table 2.1 Reference Documents (1/2). **Module Overview:** Cover, footer and colophon: - Update Rev and issue date. Chapter 2. Reference documents: - Update version of reference documents. Chapter 5: Section 5.1 Products: - Update MCAL Product Release Version for R-CAR/V4H.
GPT	-	No update.
MCU	-	No update.
PORT	Driver code	- Update SW-VERSION to 1.1.12. - Update to fix a PORT issue causing unexpected output at port pin due to incorrect peripheral function configuration. - Update copyright to 2025.
	Generation tool	- Update tool version to 1.0.16. - Update to fix a PORT issue causing unexpected output at port pin due to incorrect peripheral function configuration. - Update copyright to 2025.
	Sample app	- Update SW-VERSION to 1.1.12.
SPI	-	No update.
WDG	-	No update.

4 Known Issues List (KIL)

Table 4-1 Known Issue List

Issue Number	Description of the issue	Work around
-	-	-

5 Fix Issues List (FIL)

Table 5-1 Fix Issue List

Issue Number	Description of the issue
OTLINT-16164	Resolved an issue with the PORT that caused unexpected output at the port pin due to incorrect configuration of the peripheral function.

6 Revision History

Rev.	Date	Description	
		Page	**Summary**
0.0.1	30 Nov, 2021	-	New Created.
0.0.2	28 Jan, 2022	-	Update release note for release Ver19.0.2
0.0.3	28 Feb, 2022	-	Update release note for release Ver19.0.3
0.0.4	28 Mar, 2022	-	Update release note for release Ver19.0.4
0.0.5	08 Apr, 2022	-	Update release note for release Ver19.0.4.001
0.0.6	25 Apr, 2022	-	Update release note for release Ver19.0.8
0.0.7	27 May, 2022	-	Update release note for release Ver19.0.9
0.0.8	27 Jun, 2022	-	Update release note for release Ver19.0.10
0.0.9	27 Jul, 2022	-	Update release note for release Ver19.0.11
0.0.10	30 Aug, 2022	-	Update release note for release Ver19.0.12
0.0.11	29 Sep, 2022	-	Update release note for release Ver19.0.13
0.0.12	28 Oct, 2022	-	Update release note for release Ver19.0.14
0.0.13	29 Nov, 2022	-	Update release note for release Ver19.0.15
0.0.14	28 Dec, 2022	-	Update release note for release Ver19.0.16
0.0.15	30 Jan, 2023	-	Update release note for release Ver19.0.17
0.0.16	28 Feb, 2023	-	Update release note for release Ver19.0.18
0.0.17	29 Mar, 2023	-	Update release note for release Ver19.0.19
0.0.18	26 Apr, 2023	-	Update release note for release Ver19.0.20
0.0.19	29 May, 2023	-	Update release note for release Ver19.0.21
0.0.20	28 Jun, 2023	-	Update release note for release Ver19.0.22
0.0.21	27 Jul, 2023	-	Update release note for release Ver19.0.23
0.0.22	29 Aug, 2023	-	Update release note for release Ver19.0.24
0.0.23	27 Sep, 2023	-	Update release note for release Ver19.0.25
0.0.24	27 Oct, 2023	-	Update release note for release Ver19.0.26
1.0.0	28 Nov, 2023	-	Update release note for release Ver19.1.0
1.0.1	26 Sep, 2024	-	Update release note for release Ver19.1.1
1.0.2	29 Oct, 2024	-	Update release note for release Ver19.1.2
2.0.0	27 Nov, 2024	-	Update release note for release Ver19.2.0
2.0.1	23 Dec, 2024	-	Update release note for release Ver19.2.1
2.0.2	22 Jan, 2025	-	Update release note for release Ver19.2.2
2.0.3	28 Feb, 2025	-	Update release note for release Ver19.2.3
3.0.0	27 Mar, 2025	-	Update release note for release Ver19.3.0

General Precautions in the Handling of Microprocessing Unit and Microcontroller Unit Products

The following usage notes are applicable to all Microprocessing unit and Microcontroller unit products from Renesas. For detailed usage notes on the products covered by this document, refer to the relevant sections of the document as well as any technical updates that have been issued for the products.

1. Precaution against Electrostatic Discharge (ESD)
   A strong electrical field, when exposed to a CMOS device, can cause destruction of the gate oxide and ultimately degrade the device operation. Steps must be taken to stop the generation of static electricity as much as possible, and quickly dissipate it when it occurs. Environmental control must be adequate. When it is dry, a humidifier should be used. This is recommended to avoid using insulators that can easily build up static electricity. Semiconductor devices must be stored and transported in an anti-static container, static shielding bag or conductive material. All test and measurement tools including work benches and floors must be grounded. The operator must also be grounded using a wrist strap. Semiconductor devices must not be touched with bare hands. Similar precautions must be taken for printed circuit boards with mounted semiconductor devices.
2. Processing at power-on
   The state of the product is undefined at the time when power is supplied. The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the time when power is supplied. In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the time when power is supplied until the reset process is completed. In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the time when power is supplied until the power reaches the level at which resetting is specified.
3. Input of signal during power-off state
   Do not input signals or an I/O pull-up power supply while the device is powered off. The current injection that results from input of such a signal or I/O pull-up power supply may cause malfunction and the abnormal current that passes in the device at this time may cause degradation of internal elements. Follow the guideline for input signal during power-off state as described in your product documentation.
4. Handling of unused pins
   Handle unused pins in accordance with the directions given under handling of unused pins in the manual. The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of the LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible.
5. Clock signals
   After applying a reset, only release the reset line after the operating clock signal becomes stable. When switching the clock signal during program execution, wait until the target clock signal is stabilized. When the clock signal is generated with an external resonator or from an external oscillator during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Additionally, when switching to a clock signal produced with an external resonator or by an external oscillator while program execution is in progress, wait until the target clock signal is stable.
6. Voltage application waveform at input pin
   Waveform distortion due to input noise or a reflected wave may cause malfunction. If the input of the CMOS device stays in the area between V_{IL} (Max.) and V_{IH} (Min.) due to noise, for example, the device may malfunction. Take care to prevent chattering noise from entering the device when the input level is fixed, and also in the transition period when the input level passes through the area between V_{IL} (Max.) and V_{IH} (Min.).
7. Prohibition of access to reserved addresses
   Access to reserved addresses is prohibited. The reserved addresses are provided for possible future expansion of functions. Do not access these addresses as the correct operation of the LSI is not guaranteed.
8. Differences between products
   Before changing from one product to another, for example to a product with a different part number, confirm that the change will not lead to problems. The characteristics of a microprocessing unit or microcontroller unit products in the same group but having a different part number might differ in terms of internal memory capacity, layout pattern, and other factors, which can affect the ranges of electrical characteristics, such as characteristic values, operating margins, immunity to noise, and amount of radiated noise. When changing to a product with a different part number, implement a system-evaluation test for the given product.

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