TRAVEO™ T2G family AUTOSAR MCAL GPT release notes

SRN223356 version 1.13

About this document

Scope and purpose

Thank you for your interest in the TRAVEO™ T2G family AUTOSAR MCAL GPT driver version 1.13. This document lists the installation requirements, software changes, limitations, and known issues.

Intended audience

This document is intended for anyone who uses the general purpose timer (GPT) driver of the TRAVEO™ T2G family.

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1 System requirements and recommendations

Software prerequisites	Supported version
EB tresos Studio package for Infineon	26.2.0

1.1 Supported compilers

Green Hills Software, compiler v2017.1.4

IAR Embedded Workbench 8.0, EWARM FS 8.22.3

1.2 Compiler options

This section summarizes the compiler options used to build and test the module. When changing the compiler options, the module must be considered untested.

Compiler	Option (Cortex®-M4F core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm4f -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fsingle`

Compiler	Option (Cortex®-M7 core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm7 -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fhard`

Compiler	Option (Cortex®-M4F core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M4 -e --fpu=VFPv4_sp -Ohs --no_size_constraints`

Compiler	Option (Cortex®-M7 core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M7 -e --fpu=VFPv5_d16 -Ohs --no_size_constraints`

1.3 Library compiler options

If a binary library has been delivered with this module, it has been built using the following options:

Compiler	Option (Cortex®-M4F core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm4f -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fsingle`

Compiler	Option (Cortex®-M7 core)
Green Hills Software, compiler v2017.1.4	`-cpu=cortexm7 -thumb -thumb_lib -C99 --short_enum -align4 --no_commons --no_alternative_tokens -asm3g -preprocess_assembly_files -nostartfiles -globalcheck=normal -globalcheck_qualifiers --prototype_errors -Wformat -Wimplicit-int -Wshadow -Wtrigraphs -Wundef -reject_duplicates -c -list -Ospeed -OI -Olink -Ointerproc -Omax -fhard`

Compiler	Option (Cortex®-M4F core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M4 -e --fpu=VFPv4_sp -Ohs --no_size_constraints`

Compiler	Option (Cortex®-M7 core)
IAR Embedded Workbench 8.0, EWARM FS 8.22.3	`--debug --endian=little --cpu=Cortex-M7 -e --fpu=VFPv5_d16 -Ohs --no_size_constraints`

1.4 Memory consumption

GHS (Gpt_lib) section	Size (in bytes)
.text	4430
.rodata	56
Combined	4486

GHS (Gpt_src) section	Size (in bytes)
.text	2324
.bss	44
.data	2

GHS (Gpt_src) section	Size (in bytes)
.rodata	296
Combined	2666

IAR (Gpt_lib) section	Size (in bytes)
.text	3740
Combined	3740

IAR (Gpt_src) section	Size (in bytes)
.text	2054
.bss	44
.data	2
.rodata	258
Combined	2358

Note: *The memory consumption of *_src.lib depends on the configuration.*

Note: *The listed memory consumption will vary depending on customer configuration.*

Explanatory notes for this section

Section	Description
.text	Program code
.data	Variables with explicitly initialized values
.bss	Variables that are not explicitly initialized
.rodata	Read-only data

1.5 Stack consumption

1.5.1 Green Hills Software

Function	Max stack usage (in bytes)
`Gpt_GetVersionInfo`	12
`Gpt_Init`	40
`Gpt_DeInit`	28
`Gpt_GetTimeElapsed`	32
`Gpt_GetTimeRemaining`	28
`Gpt_StartTimer`	32
`Gpt_StopTimer`	24
`Gpt_EnableNotification`	28
`Gpt_DisableNotification`	28
`Gpt_SetMode`	36
`Gpt_DisableWakeup`	28

Function	Max stack usage (in bytes)
Gpt_EnableWakeup	28
Gpt_CheckWakeup	24
Gpt_CheckChannelStatus	72
Gpt_CheckPredefTimerStatus	80
Gpt_GetPredefTimerValue	56
Gpt_SetPrescaler	32
Gpt_SetPredefTimerPrescaler	60
GPT_Isr_Vector_274_Cat1	32
GPT_Isr_Vector_274_Cat2	32
GPT_Isr_Vector_275_Cat1	32
GPT_Isr_Vector_275_Cat2	32

Note: *Stack consumption has been evaluated using the gstack utility program, which is part of the Green Hills release package. To enable the measurement of stack consumption in your project, build the source code according to the instructions given in the "Measuring Stack Consumption" section of the module's user guide.*

Note: *The listed stack consumption will vary depending on customer configuration.*

Note: *The GHS stack consumption listed in the release notes was measured using the additional compile option "-gs". The GHS compiler cannot measure stack consumption for the selected optimization level (see compilation options). Green Hills cannot exclude possible effects of "-gs" on optimization and stack consumption. Therefore, Infineon cannot guarantee the accuracy of these values. For more information on measuring GHS stack consumption, see the section gstack utility program in Build_arm.pdf.*

1.5.2 IAR Embedded Workbench

Function	Max stack usage (in bytes)
Gpt_GetVersionInfo	16
Gpt_Init	28
Gpt_DeInit	36
Gpt_GetTimeElapsed	32
Gpt_GetTimeRemaining	32
Gpt_StartTimer	32
Gpt_StopTimer	16
Gpt_EnableNotification	20
Gpt_DisableNotification	20
Gpt_SetMode	40
Gpt_DisableWakeup	32
Gpt_EnableWakeup	32
Gpt_CheckWakeup	32
Gpt_CheckChannelStatus	56

Function	Max stack usage (in bytes)
Gpt_CheckPredefTimerStatus	72
Gpt_GetPredefTimerValue	40
Gpt_SetPrescaler	32
Gpt_SetPredefTimerPrescaler	48
GPT_Isr_Vector_274_Cat1	40
GPT_Isr_Vector_274_Cat2	40
GPT_Isr_Vector_275_Cat1	40
GPT_Isr_Vector_275_Cat2	40

Note: *To enable the measurement of stack consumption in your project, build the source code with the linker option "`--enable_stack_usage --log call_graph`". See stack usage analysis of the IAR C/C++ development guide for details.*

Note: *The listed stack consumption will vary depending on customer configuration.*

1.6 Note on "*_Bswmd.arxml"

Note that the <*Module*>*_Bswmd.arxml* files are templates that can be freely modified by the customer or RTE vendor.
These are in the *output**generated**swcd* subfolder of your project folder.
Named files are not tested.

1.7 Release details

Module software version
1.13.x (x=software patch version; see the delivery notes for details)

AUTOSAR specification version (ASR)
4.2.2

Target
MXS40

MCAL configuration settings	Supported derivatives
See the resource release notes	See the resource release notes

Corresponding Gpt_MemMap.h stub file version
1.0.1

2 Installation

See the installation manual for EB tresos Studio for INFINEON AUTOSAR software products and installation manual for MCAL42-TRAVEO.

3 Deviations from AUTOSAR

T2MC-22902 - [GPT] Error notification: Report to DEM

Title: [GPT] Error notification: Report to DEM

Description: [GPT] If production errors are specified for GPT module:
Production errors shall be reported to Diagnostic Event Manager[7]. (BSW00369, BSW00339)

Reason for rejection: Because there is no HW error, the GPT module cannot detect any production error.

T2MC-13416 - [SWS_Gpt_00257] Configuration specification: Variants: Pointer for initialization function

Title: [SWS_Gpt_00257] Configuration specification: Variants: Pointer for initialization function

Description: [SWS_Gpt_00257] [The initialization function of this module shall always have a pointer as a parameter. For variant "Pre-compile time" (no pointer to configuration is available) a null pointer shall be passed.] (SRS_BSW_00414)

Reason for rejection: Because post-build is supported, a null pointer is not passed.

T2MC-13238 - [SWS_Gpt_00337] Debugging: Operation mode and state

Title: [SWS_Gpt_00337] Debugging: Operation mode and state

Description: [SWS_Gpt_00337] {OBSOLETE} [The operation mode of the GPT driver and the state of each timer channel shall be available for debugging.] ( )

Reason for rejection: AUTOSAR debugging is not supported.

T2MC-13266 - [SWS_Gpt_00355] Function definitions: `Gpt_Init` behavior: Initialize one-time writable registers

Title: [SWS_Gpt_00355] Function definitions: `Gpt_Init` behavior: Initialize one-time writable registers

Description: [SWS_Gpt_00355] [One-time writable registers that require initialization directly after reset shall be initialized by the startup code] (SRS_SPAL_12461)

Reason for rejection: One-time writable registers do not exist in the registers used by the Gpt driver.

T2MC-13453 - [SWS_Gpt_00381] Not applicable requirements

Title: [SWS_Gpt_00381] Not applicable requirements

Description: [SWS_Gpt_00381] [These requirements are not applicable to this specification.]
(SRS_BSW_00344, SRS_BSW_00159, SRS_BSW_00167, SRS_BSW_00170,
SRS_BSW_00398, SRS_BSW_00416, SRS_BSW_00437, SRS_BSW_00168, SRS_BSW_00423, SRS_BSW_00424,
SRS_BSW_00425, SRS_BSW_00426, SRS_BSW_00427, SRS_BSW_00428, SRS_BSW_00429, SRS_BSW_00432,
SRS_BSW_00433, SRS_BSW_00422, SRS_BSW_00417, SRS_BSW_00161, SRS_BSW_00162, SRS_BSW_00005,
SRS_BSW_00415, SRS_BSW_00325, SRS_BSW_00342, SRS_BSW_00160, SRS_BSW_00007, SRS_BSW_00413,
SRS_BSW_00347, SRS_BSW_00307, SRS_BSW_00373, SRS_BSW_00335, SRS_BSW_00348, SRS_BSW_00353,
SRS_BSW_00361, SRS_BSW_00328, SRS_BSW_00006, SRS_BSW_00439, SRS_BSW_00357, SRS_BSW_00377,
SRS_BSW_00378, SRS_BSW_00306, SRS_BSW_00308, SRS_BSW_00309, SRS_BSW_00359, SRS_BSW_00360,
SRS_BSW_00440, SRS_BSW_00330, SRS_BSW_00331, SRS_BSW_00009, SRS_BSW_00172, SRS_BSW_00010,
SRS_BSW_00333, SRS_BSW_00321, SRS_BSW_00341, SRS_BSW_00334, SRS_SPAL_12462, SRS_SPAL_12463,

SRS_SPAL_12068, SRS_SPAL_12075, SRS_SPAL_12064, SRS_SPAL_12077, SRS_SPAL_12078, SRS_SPAL_12092, SRS_SPAL_12265)

Reason for rejection: Named RQMs are not applicable.

4 Limitations

T2MC-13421 - [ECUC_Gpt_00321]: Configuration specification: `GptDriverConfiguration GptDevErrorDetect`

Title: [ECUC_Gpt_00321]: Configuration specification: `GptDriverConfiguration GptDevErrorDetect`

Description:

SWS Item	**ECUC_Gpt_00321:**		
Name	`GptDevErrorDetect`		
Description	Switches the Default Error Tracer (DET) detection and notification ON or OFF. - true: enabled (ON). - false: disabled (OFF).		
Multiplicity	1		
Type	`EcucBooleanParamDef`		
Default Value	--		
Post-Build Variant Value	False		
Value Configuration Class	***Pre-compile time***	X	All Variants
	Link time	--	
	Post-build time	--	
Scope / Dependency	scope: local		

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13426 - [ECUC_Gpt_00329]: Configuration specification: `GptClockReferencePoint`

Title: [ECUC_Gpt_00329]: Configuration specification: `GptClockReferencePoint`

Description:

SWS Item	**ECUC_Gpt_00329:**
Container Name	`GptClockReferencePoint`
Description	This container contains a parameter, which represents a reference to a container of the type `McuClockReferencePoint` (defined in module MCU). A container is needed to support multiple clock references (hardware dependent).
Configuration Parameters	

Limitation: Only clock sources related to the TCPWM resource are displayed in `GptClockReferencePoint`. If the associated clock source is not configured in the MCU module, the clock source will not be displayed in `GptClockReferencePoint`.

T2MC-13435 - [ECUC_Gpt_00332]: Configuration specification: `GptChannelConfiguration GptChannelTickValueMax`

Title: [ECUC_Gpt_00332]: Configuration specification: `GptChannelConfiguration GptChannelTickValueMax`

Description:

SWS Item	**ECUC_Gpt_00332:**		
Name	`GptChannelTickValueMax`		
Description	Maximum value in ticks, the timer channel is able to count. With the next tick, the timer rolls over to zero.		
Multiplicity	1		
Type	`EcucIntegerParamDef`		
Range	0 .. 18446744073709551615		
Default Value	--		
Post-Build Variant Value	True		
Value Configuration Class	***Pre-compile time***	X	VARIANT-PRE-COMPILE
	Link time	--	
	Post-build time	X	VARIANT-POST-BUILD
Scope / Dependency	scope: ECU		

Limitation: Because the GPT module is functional, minimum value is modified to 1.

T2MC-13438 - [ECUC_Gpt_00333]: Configuration specification: `GptChannelConfiguration GptChannelClkSrcRef`

Title: [ECUC_Gpt_00333]: Configuration specification: `GptChannelConfiguration GptChannelClkSrcRef`

Description:

SWS Item	**ECUC_Gpt_00333:**		
Name	`GptChannelClkSrcRef`		
Description	Reference to the `GptClockReferencePoint` from which the channel clock is derived.		
Multiplicity	0..1		
Type	Reference to [`GptClockReferencePoint`]		
Post-Build Variant Multiplicity	true		
Post-Build Variant Value	true		
Multiplicity Configuration Class	***Pre-compile time***	X	VARIANT-PRE-COMPILE
	Link time	--	
	Post-build time	X	VARIANT-POST-BUILD
Value Configuration Class	***Pre-compile time***	X	VARIANT-PRE-COMPILE
	Link time	--	
	Post-build time	X	VARIANT-POST-BUILD

Scope / Dependency	scope: local

Limitation: Only clock sources related to this Gpt channel are displayed in `GptChannelClkSrcRef`. If the associated clock source is not configured in the MCU module, the clock source will not be displayed in `GptChannelClkSrcRef`.

T2MC-16510 - [GPT] AUTOSAR C implementation rules

Title: [GPT] AUTOSAR C implementation rules

Description: The MCAL modules shall fulfill all design and implementation guidelines as described in Specification of C Implementation Rules AUTOSAR_TR_CImplementationRules.pdf.

Limitation: Out of scope: keyword macros 'CONST' and 'VAR' are not required for declaration/definition of the local variable, function parameter, and structure/union fields.

T2MC-13314 - [SWS_Gpt_00084] Function definitions: `Gpt_StartTimer` behavior: Raise the error `GPT_E_BUSY`

Title: [SWS_Gpt_00084] Function definitions: `Gpt_StartTimer` behavior: Raise the error `GPT_E_BUSY`

Description: [SWS_Gpt_00084] [If default error detection for the GPT module is enabled: If the function `Gpt_StartTimer` is called on a channel in state "running", the function shall raise the error `GPT_E_BUSY`.] ()

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13294 - [SWS_Gpt_00210] Function definitions: `Gpt_GetTimeElapsed` behavior: Raise the error `GPT_E_PARAM_CHANNEL`

Title: [SWS_Gpt_00210] Function definitions: `Gpt_GetTimeElapsed` behavior: Raise the error `GPT_E_PARAM_CHANNEL`

Description: [SWS_Gpt_00210] [If default error detection for the GPT module is enabled: If the parameter Channel is invalid (not within the range specified by configuration), the function `Gpt_GetTimeElapsed` shall raise the development error `GPT_E_PARAM_CHANNEL` and shall return the value “0”.] ()

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13304 - [SWS_Gpt_00211] Function definitions: `Gpt_GetTimeRemaining` behavior: Raise the error `GPT_E_PARAM_CHANNEL`

Title: [SWS_Gpt_00211] Function definitions: `Gpt_GetTimeRemaining` behavior: Raise the error `GPT_E_PARAM_CHANNEL`

Description: [SWS_Gpt_00211] [If default error detection for the GPT module is enabled: If the parameter Channel is invalid (not within the range specified by configuration), the function `Gpt_GetTimeRemaining` shall raise the error `GPT_E_PARAM_CHANNEL` and shall return the value “0”.] ()

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13311 - [SWS_Gpt_00212] Function definitions: `Gpt_StartTimer` behavior: Raise the error `GPT_E_PARAM_CHANNEL`

Title: [SWS_Gpt_00212] Function definitions: `Gpt_StartTimer` behavior: Raise the error `GPT_E_PARAM_CHANNEL`

Description: [SWS_Gpt_00212] [If default error detection for the GPT module is enabled: If the parameter Channel is invalid (not within the range specified by configuration), the function `Gpt_StartTimer` shall raise the error `GPT_E_PARAM_CHANNEL`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13322 - [SWS_Gpt_00213] Function definitions: `Gpt_StopTimer` behavior: Raise the error `GPT_E_PARAM_CHANNEL`

Title: [SWS_Gpt_00213] Function definitions: `Gpt_StopTimer` behavior: Raise the error `GPT_E_PARAM_CHANNEL`

Description: [SWS_Gpt_00213] [If default error detection for the GPT module is enabled: If the parameter Channel is invalid (not within the range specified by configuration), the function `Gpt_StopTimer` shall raise the error `GPT_E_PARAM_CHANNEL`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13330 - [SWS_Gpt_00214] Function definitions: `Gpt_EnableNotification` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (invalid channel)

Title: [SWS_Gpt_00214] Function definitions: `Gpt_EnableNotification` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (invalid channel)

Description: [SWS_Gpt_00214] [If default error detection for the GPT module is enabled: If the parameter Channel is invalid (not within the range specified by configuration), the function `Gpt_EnableNotification` shall raise the error `GPT_E_PARAM_CHANNEL`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13360 - [SWS_Gpt_00215] Function definitions: `Gpt_DisableWakeup` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (invalid channel or no wakeup channel)

Title: [SWS_Gpt_00215] Function definitions: `Gpt_DisableWakeup` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (invalid channel or no wakeup channel)

Description: [SWS_Gpt_00215] [If default error detection for the GPT module is enabled: If the parameter Channel is invalid (not within the range specified by configuration) or channel wakeup is not enabled by configuration (`GptEnableWakeup`), the function `Gpt_DisableWakeup` shall raise the error `GPT_E_PARAM_CHANNEL`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13369 - [SWS_Gpt_00216] Function definitions: `Gpt_EnableWakeup` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (invalid channel or no wakeup channel)

Title: [SWS_Gpt_00216] Function definitions: `Gpt_EnableWakeup` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (invalid channel or no wakeup channel)

Description: [SWS_Gpt_00216] [If default error detection for the GPT module is enabled: If the parameter Channel is invalid (not within the range specified by configuration) or channel wakeup is not enabled by configuration (`GptEnableWakeup`), the function `Gpt_EnableWakeup` shall raise the error `GPT_E_PARAM_CHANNEL`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13338 - [SWS_Gpt_00217] Function definitions: `Gpt_DisableNotification` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (invalid channel)

Title: [SWS_Gpt_00217] Function definitions: `Gpt_DisableNotification` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (invalid channel)

Description: [SWS_Gpt_00217] [If default error detection for the GPT module is enabled: If the parameter Channel is invalid (not within the range specified by configuration), the function `Gpt_DisableNotification` shall raise the error `GPT_E_PARAM_CHANNEL`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13312 - [SWS_Gpt_00218] Function definitions: `Gpt_StartTimer` behavior: Raise the error `GPT_E_PARAM_VALUE`

Title: [SWS_Gpt_00218] Function definitions: `Gpt_StartTimer` behavior: Raise the error `GPT_E_PARAM_VALUE`

Description: [SWS_Gpt_00218] [If default error detection for the GPT module is enabled: The function `Gpt_StartTimer` shall raise the error `GPT_E_PARAM_VALUE` if the parameter Value is "0" or not within the allowed range (exceeding the maximum timer resolution).] (SRS_BSW_00323)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13282 - [SWS_Gpt_00220] Function definitions: `Gpt_DeInit` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00220] Function definitions: `Gpt_DeInit` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00220] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_DeInit` shall raise the error `GPT_E_UNINIT`.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13293 - [SWS_Gpt_00222] Function definitions: `Gpt_GetTimeElapsed` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00222] Function definitions: `Gpt_GetTimeElapsed` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00222] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_GetTimeElapsed` shall raise the error `GPT_E_UNINIT` and shall return the value “0”.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13303 - [SWS_Gpt_00223] Function definitions: `Gpt_GetTimeRemaining` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00223] Function definitions: `Gpt_GetTimeRemaining` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00223] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_GetTimeRemaining` shall raise the error `GPT_E_UNINIT` and shall return the value “0”.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13313 - [SWS_Gpt_00224] Function definitions: `Gpt_StartTimer` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00224] Function definitions: `Gpt_StartTimer` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00224] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_StartTimer` shall raise the error `GPT_E_UNINIT`.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13323 - [SWS_Gpt_00225] Function definitions: `Gpt_StopTimer` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00225] Function definitions: `Gpt_StopTimer` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00225] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_StopTimer` shall raise the error `GPT_E_UNINIT`.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13329 - [SWS_Gpt_00226] Function definitions: `Gpt_EnableNotification` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00226] Function definitions: `Gpt_EnableNotification` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00226] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_EnableNotification` shall raise the error `GPT_E_UNINIT`.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13337 - [SWS_Gpt_00227] Function definitions: `Gpt_DisableNotification` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00227] Function definitions: `Gpt_DisableNotification` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00227] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_DisableNotification` shall raise the error `GPT_E_UNINIT`.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13349 - [SWS_Gpt_00228] Function definitions: `Gpt_SetMode` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00228] Function definitions: `Gpt_SetMode` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00228] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_SetMode` shall raise the error `GPT_E_UNINIT`.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13361 - [SWS_Gpt_00229] Function definitions: `Gpt_DisableWakeup` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00229] Function definitions: `Gpt_DisableWakeup` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00229] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_DisableWakeup` shall raise the error `GPT_E_UNINIT`.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13368 - [SWS_Gpt_00230] Function definitions: `Gpt_EnableWakeup` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00230] Function definitions: `Gpt_EnableWakeup` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00230] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_EnableWakeup` shall raise the error `GPT_E_UNINIT`.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13350 - [SWS_Gpt_00231] Function definitions: `Gpt_SetMode` behavior: Raise the error `GPT_E_PARAM_MODE`

Title: [SWS_Gpt_00231] Function definitions: `Gpt_SetMode` behavior: Raise the error `GPT_E_PARAM_MODE`

Description: [SWS_Gpt_00231] [If default error detection for the GPT module is enabled: The function `Gpt_SetMode` shall raise the error `GPT_E_PARAM_MODE` if the parameter Mode is invalid.] ()

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13281 - [SWS_Gpt_00234] Function definitions: `Gpt_DeInit` behavior: Raise the error `GPT_E_BUSY`

Title: [SWS_Gpt_00234] Function definitions: `Gpt_DeInit` behavior: Raise the error `GPT_E_BUSY`

Description: [SWS_Gpt_00234] [If default error detection for the GPT module is enabled: If any timer channel is in state "running", the function `Gpt_DeInit` shall raise the error `GPT_E_BUSY`.] ()

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13268 - [SWS_Gpt_00307] Function definitions: `Gpt_Init` behavior: Raise the error `GPT_E_ALREADY_INITIALIZED`

Title: [SWS_Gpt_00307] Function definitions: `Gpt_Init` behavior: Raise the error `GPT_E_ALREADY_INITIALIZED`

Description: [SWS_Gpt_00307] [If Default Error Tracer for the GPT module is enabled: If the GPT driver is not in operation mode "uninitialized", the function `Gpt_Init` shall raise the error `GPT_E_ALREADY_INITIALIZED`.] ()

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13376 - [SWS_Gpt_00325] Function definitions: `Gpt_CheckWakeup` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00325] Function definitions: `Gpt_CheckWakeup` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00325] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_CheckWakeup` shall raise the error `GPT_E_UNINIT`.] (SRS_BSW_00406)

Limitations

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13236 - [SWS_Gpt_00332] Error detection: Behavior at error detection

Title: [SWS_Gpt_00332] Error detection: Behavior at error detection

Description: [SWS_Gpt_00332] [If the `GptDevErrorDetect` switch is enabled:
When a development error occurs the corresponding GPT function shall skip the desired functionality (leave service without any action).] (SRS_SPAL_12448)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13257 - [SWS_Gpt_00338] Function definitions: `Gpt_GetVersionInfo` behavior: Raise the error

Title: [SWS_Gpt_00338] Function definitions: `Gpt_GetVersionInfo` behavior: Raise the error

Description: [SWS_Gpt_00338] [If default error detection for the GPT module is enabled:
If the parameter `VersionInfoPtr` is a null pointer, the function `Gpt_GetVersionInfo` shall raise the error `GPT_E_PARAM_POINTER`.] (SRS_BSW_00323)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13415 - [SWS_Gpt_00342] Configuration specification: Variants: Support variant

Title: [SWS_Gpt_00342] Configuration specification: Variants: Support variant

Description: [SWS_Gpt_00342] [At least one of the following variants has to be supported by implementation:

- VARIANT-PRE-COMPILE
- VARIANT-POST-BUILD

] (SRS_BSW_00397, SRS_BSW_00399, SRS_BSW_00400)

Limitation: VARIANT-PRE-COMPILE is not supported.

T2MC-13331 - [SWS_Gpt_00377] Function definitions: Gpt_EnableNotification behavior: Raise the error `GPT_E_PARAM_CHANNEL` (no valid notification)

Title: [SWS_Gpt_00377] Function definitions: `Gpt_EnableNotification` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (no valid notification)

Description: [SWS_Gpt_00377] [If default error detection for the GPT module is enabled: If no valid notification function is configured (`GptNotification`), the function `Gpt_EnableNotification` shall raise the error `GPT_E_PARAM_CHANNEL`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13339 - [SWS_Gpt_00379] Function definitions: `Gpt_DisableNotification` behavior: Raise the error `GPT_E_PARAM_CHANNEL` (no valid notification)

Title: [SWS_Gpt_00379] Function definitions: `Gpt_DisableNotification` behavior: Raise the errors `GPT_E_PARAM_CHANNEL` (no valid notification)

Description: [SWS_Gpt_00379] [If default error detection for the GPT module is enabled: If no valid notification function is configured (`GptNotification`), the function `Gpt_DisableNotification` shall raise the error `GPT_E_PARAM_CHANNEL`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13383 - [SWS_Gpt_00398] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the error `GPT_E_UNINIT`

Title: [SWS_Gpt_00398] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the error `GPT_E_UNINIT`

Description: [SWS_Gpt_00398] [If default error detection for the GPT module is enabled: If the driver is not initialized, the function `Gpt_GetPredefTimerValue` shall raise the error `GPT_E_UNINIT`. Otherwise (if default error detection is not enabled), it shall return `E_NOT_OK`.] (SRS_BSW_00406)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13384 - [SWS_Gpt_00399] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the development error `GPT_E_PARAM_PREDEF_TIMER`

Title: [SWS_Gpt_00399] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the development error `GPT_E_PARAM_PREDEF_TIMER`

Description: [SWS_Gpt_00399] [If default error detection for the GPT module is enabled: If the parameter PredefTimer is invalid, the function `Gpt_GetPredefTimerValue` shall raise the development error `GPT_E_PARAM_PREDEF_TIMER`. Otherwise (if default error detection is not enabled), it shall return `E_NOT_OK`.] (SRS_BSW_00323)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13385 - [SWS_Gpt_00400] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the development error `GPT_E_PARAM_PREDEF_TIMER`

Title: [SWS_Gpt_00400] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the development error `GPT_E_PARAM_PREDEF_TIMER`

Description: [SWS_Gpt_00400] [If default error detection for the GPT module is enabled: If the GPT Predef Timer passed by the parameter `PredefTimer` is not enabled, the function `Gpt_GetPredefTimerValue` shall raise the development error `GPT_E_PARAM_PREDEF_TIMER`. Otherwise (if default error detection is not enabled), it shall return `E_NOT_OK`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13386 - [SWS_Gpt_00401] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the error `GPT_E_MODE`

Title: [SWS_Gpt_00401] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the error `GPT_E_MODE`

Description: [SWS_Gpt_00401] [If default error detection for the GPT module is enabled: If the driver is in "sleep mode", the function `Gpt_GetPredefTimerValue` shall raise the error `GPT_E_MODE`. Otherwise (if default error detection is not enabled), it shall return `E_NOT_OK`.] ( )

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

T2MC-13387 - [SWS_Gpt_00403] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the development error `GPT_E_PARAM_POINTER`

Title: [SWS_Gpt_00403] Function definitions: `Gpt_GetPredefTimerValue` behavior: Raise the development error `GPT_E_PARAM_POINTER`

Description: [SWS_Gpt_00403] [If default error detection for the GPT module is enabled: If the parameter `TimeValuePtr` is a null pointer, the function `Gpt_GetPredefTimerValue` shall raise the development error `GPT_E_PARAM_POINTER`. Otherwise (if default error detection is not enabled), it shall return `E_NOT_OK`.] (SRS_BSW_00369, SRS_BSW_00323)

Limitation: DET error detection mechanism is used as safety mechanism (fault detection), development errors are always detected.

5 Known defects

The listed issues were known at the day this release note was generated. Further problems may have been discovered in the meantime. For an up-to-date list of known issues, contact your Infineon sales representative.

This release has no known issues at the time of release.

6 Documentation

All user guides for MCAL drivers are in the *doc* subdirectory of the *installation* directory. The default location is:

C:\INFINEON_ESDB\Tresos26_2_0\doc

7 Technical support

If you have questions related to the driver, contact the local support application engineer.

8 Version history

8.1 Module SW-Version 1.3

Initial module setup.

8.2 Module SW-Version 1.4

T2MC-38077 - [GPT, ICU, PWM] Wrong config data is generated when ordering of configuration is changed

Title: [GPT, ICU, PWM] Wrong config data is generated when ordering of configuration is changed

Description: In Tresos GUI, when the order of configuration is changed intentionally the following configuration lists, the configuration data is generated by wrong order. In such cases, the module API cannot operate correctly. It should be generated not by the index list but by the channel ID.

GPT: `GptChannelConfiguration`
ICU: `IcuChannelGroup`
PWM: `PwmChannelGroup`

T2MC-38097 - [GPT] API execution time deterioration

Title: [GPT] API execution time deterioration

Description: As a result of implementing the function of TRAVEO™ T2G, it is necessary to improve the GPT API execution time. The main cause is due to the influence of improvement of interrupt process implemented by TRAVEO™ T2G to reduce interrupting if not necessary.

T2MC-38074 - File extension should be changed from .bmd to .arxml

Title: File extension should be changed from .bmd to .arxml

Description: The file extension should be changed from *.bmd to *.arxml.
Each module still has an autosar/<module>.bmd file.

8.3 Module SW-Version 1.5

T2MC-39747 - [All] Checking for valid C function name and including filename in configuration parameters

Title: [All] Checking for valid C function name and including filename in configuration parameters

Description: Checking for valid C function name:
Check all configuration parameters related to the function name to see if it is a valid C function name.
A part of parameters are not checked.
If an invalid function name is set, a compile error will occur during the build process, which is inconvenient for users.
Therefore, it is better to check whether the configured function names are valid C function names in advance (i.e. during configuration phase).

Checking for valid filename:
Check all configuration parameters related to the file name to see if it is valid.
A part of parameters cannot check the fact that empty file name (i.e. ".h") is wrong.
If an invalid file name is set, a compile error will occur during the build process, which is inconvenient for

users.
Therefore, it is better, to check in advance, whether the configured file names are valid.

This CR is intended to solve the inconvenience.

T2MC-41850 - [General] <CODE-DESCRIPTORS> Node should be added to the *arxml* files of all modules

Title: [General] <CODE-DESCRIPTORS> Node should be added to the *arxml* files of all modules

Description: For all modules, the <CODE-DESCRIPTORS> Node needs to be added for the RTE within the BSWMD *arxml* file.

T2MC-43302 - [GPT, ICU, OCU, PWM] Improve trigger configuration check

Title: [GPT, ICU, OCU, PWM] Improve trigger configuration check

Description: If the input trigger resource for TCPWM is shared by other modules, a warning message is output. To improve usability and prevent misuse, make conflict processing clear when it is shared in related config parameters.

The related configurations are as follows. For more details, please see the attached file.

GPT

- `GptPredefTimerStartTriggerSelect`
- `GptInputTriggerSelection`

ICU

- `IcuInputTriggerSelection`
- `IcuChannelGroupStartTrigger`
- `IcuChannelGroupStopTrigger`

OCU

- `OcuStartTriggerSelect0`
- `OcuStartTriggerSelect1`

PWM

- `PwmChannelGroupStartTrigger`
- `PwmChannelGroupStopTrigger`
- `PwmStartTriggerSelect0`
- `PwmStartTriggerSelect1`
- `PwmStartDelayTrigger`

T2MC-50710 - [GPT] `Gpt_GetPredefTimerValue` cannot get timer value with different bit length

Title: [GPT] `Gpt_GetPredefTimerValue` cannot get timer value with different bit length

Description: `Gpt_GetPredefTimerValue` can only get a timer value by the bit length as configured in `GptPredefTimerType`.

E.g. When `GptPredefTimer1usEnablingGrade` is configured with `GPT_PREDEF_TIMER_1US_16_24BIT_ENABLED`, `Gpt_GetPredefTimerValue` can get only 16 or 24-bit timer as configured in `GptPredefTimerType`.

T2MC-48176 - [GPT] `Gpt_SetPredefTimerPrescaler` unexpectedly starts Predef timer in SLEEP mode

Title: [GPT] `Gpt_SetPredefTimerPrescaler` unexpectedly starts Predef timer in SLEEP mode

Description: When `Gpt_SetPredefTimerPrescaler` is called in SLEEP mode, it starts Predef timer after changing pre-scaler. In SLEEP mode, `Gpt_SetPredefTimerPrescaler` should not start Predef timer.

T2MC-39457 - [GPT] Support TRAVEO™ T2G-B-H-8M

Title: [GPT] Support TRAVEO™ T2G-B-H-8M

Description: AUTOSAR MCAL supports the TRAVEO™ T2G-B-H-8M.

TCPWM resource data has instances of TCPWM. Therefore, Gpt driver must identify TCPWM resource instances in the following cases.

- TCPWM resources for all instances need to be obtained from the resource properties file and made selectable in the module configuration.
- Instance support is required for processing associated with TCPWM resources (for example, configuration, generated code, etc.).

In addition to the above, users guide needs update.

8.4 Module SW-Version 1.6

T2MC-50612 - [General] Delete device-dependent information from the user guide

Title: [General] Delete device-dependent information from the user guide

Description: Any device-dependent information should not be included in the user guide. Therefore, delete the datasheet name from the related documentation in the user guide.

8.5 Module SW-Version 1.7

T2MC-59530 - [GPT] Channel state inconsistency may occur due to HW state transition delay

Title: [GPT] Channel state inconsistency may occur due to HW state transition delay

Description: Channel state inconsistency may occur due to HW state transition delay. When the system clock frequency is much faster than the tick frequency of TCPWM counter, there is a possibility that some API functions might not work correctly.

`Gpt_CheckChannelStatus()` function might returns `E_NOT_OK` after `Gpt_StopTimer()`.
`Gpt_CheckPredefTimerStatus()` function might returns `E_NOT_OK` after `Gpt_SetMode(GPT_MODE_SLEEP)`.

T2MC-59531 - [GPT] Correction of prescale and input trigger selection of external input clock

Title: [GPT] Correction of prescale and input trigger selection of external input clock

Description: In case of external clock input (`CLK_EXT`), the following configuration parameters should be corrected:

#1. `GptChannelPrescale`
Prescale value should be fixed to 1 since the prescaler cannot be used in the case of the external clock.

#2. `GptInputTriggerSelection`
Allow to select trigger multiplexer as clock sources of external input clock for external clock input functional enhancement.

Note: *Modification of #2 affects resource conflict check processing in ICU, OCU, and PWM modules (xdm files, user guides).*

T2MC-59484 - [GPT] Improve hardware trigger output

Title: [GPT] Improve hardware trigger output

Description: Trigger output shall be improved for flexibility. All trigger destinations shall be supported, not just ADC.
Therefore, following changes shall be made:

1. Configuration parameter `GptHardwareTriggeredAdc` shall be renamed to `GptHwTriggerOutputLine`.
2. `GptHwTriggerOutputLine` shall allow all trigger outputs that are connectable to any HW (not just ADC) on the particular chip.

T2MC-63245 - [GPT] Interrupt service routine for one-shot mode is not generated without notification enable

Title: [GPT] Interrupt service routine for one-shot mode is not generated without notification enable

Description: Interrupt service routine for one-shot mode is not generated when `GptNotification` and `GptEnableWakeup` are disabled. In that case, a default interrupt service routine is called after timer expiration and channel status is not updated.

T2MC-63852 - [GPT] Missing the section symbol around the function `Gpt_CheckConfigPtr`

Title: [GPT] Missing the section symbol around the function `Gpt_CheckConfigPtr`

Description: There is no section symbol around `Gpt_CheckConfigPtr`. Missing section symbols cause memory allocation issues with map file in GHS. `Gpt_CheckConfigPtr` should be surrounded by the section symbol `GPT_START_SEC_CODE_ASIL_B` and `GPT_STOP_SEC_CODE_ASIL_B`.

8.6 Module SW-Version 1.8

T2MC-66360 - [GPT] Config pointer is used before breakage check in ISR handler

Title: [GPT] Config pointer is used before breakage check in ISR handler

Description: The GPT interrupt function uses the configuration pointer placed in RAM before its breakage check. If the configuration pointer is broken, it may cause hardware error at timer expiration (one-shot mode or notification/wakeup function is enabled) due to software-unaligned access.

T2MC-66373 - [GPT] `Gpt_CheckPredefTimerStatus` does not return correct interval value after `Gpt_DeInit`

Title: [GPT] `Gpt_CheckPredefTimerStatus` does not return correct interval value after `Gpt_DeInit`

Description: `Gpt_CheckPredefTimerStatus` returns the configured interval value different from the uninitialized value in the uninitialized state after `Gpt_DeInit`. In the case that 16-bit or 24-bit Predef timer is configured with 32-bit TCPWM counter, the wrong interval value is returned.

T2MC-68253 - [GPT] No reference clock config leak check for external clock

Title: [GPT] No reference clock config leak check for external clock

Description: When `GptChannelClkSrc` is configured with `CLK_EXT` (external clock), reference clock configuration is required; however, there is no configuration leak check for `CLK_EXT`. If the user forgets to configure the reference clock for a GPT timer of external clock source, the timer cannot start. Besides, the default value of the Predef timer service should be changed to ‘disable’ because the default value is ‘enable’ in spite of it being an optional service.

T2MC-77594 - Support IAR compiler

Title: Support IAR compiler

Description: Support IAR compiler (IAR EWARM FS 8.22.3.15992).

T2MC-77796 - [GPT] Missing entry in Gpt_Bswmd.arxml file

Title: [GPT] Wrong module description in Gpt_Bswmd.arxml file

Description: The following should be updated in Gpt module description file Gpt_Bswmd.arxml.

(Add) `Gpt_Init`: <CAN-ENTER-EXCLUSIVE-AREA-REF DEST="EXCLUSIVE-AREA">/TS_T40D13M1I0R0/BswDescr/Gpt/GptBehavior/GPT_EXCLUSIVE_AREA_0</CAN-ENTER-EXCLUSIVE-AREA-REF>

(Delete) `Gpt_GetPredefTimerValue`: <CAN-ENTER-EXCLUSIVE-AREA-REF DEST="EXCLUSIVE-AREA">/TS_T40D13M1I0R0/BswDescr/Gpt/GptBehavior/GPT_EXCLUSIVE_AREA_0</CAN-ENTER-EXCLUSIVE-AREA-REF>

(Update) Gpt_Isr_Vector_[IRQ_NUM]_Cat1/Cat2: The condition for generating Gpt_Isr_Vector_[IRQ_NUM]_Cat1/Cat2.

8.7 Module SW-Version 1.9

T2MC-91518 - [GPT] EcuM is always required for GPT building

Title: [GPT] EcuM is always required for GPT building

Description: There is conflict between the GPT user guide and the source code of GPT driver. The *EcuM.h* file is always required for compiling and linking. EcuM should be required only when GptReportWakeupSource is enabled or the ISR of a wakeup source services the wakeup event as described in the user guide.

T2MC-91217 - [GPT] Gpt.xdm is inconsistent with Gpt.arxml

Title: [GPT] Gpt.xdm is inconsistent with Gpt.arxml

Description: There are some inconsistencies between the *Gpt.xdm* and *Gpt.arxml* files in the following definitions:

Gpt.xdm:

- REFINED_MODULE_DEF definition is redundant.
- IMPLEMENTATIONCONFIGCLASS and POSTBUILDVARIANTMULTIPLICITY are incorrect in some parameters.
- `GPT_EcuParameterDefinition` is missing.

Gpt.arxml:

- MULTIPLICITY-CONFIG-CLASSES is missing in GptChannelTickFrequency.
- SCOPE is missing in `GptInputTriggerSelection` and `GptChannelPrescale`.
- POST-BUILD-VARIANT-MULTIPLICITY is incorrect in some parameters.
- Also, there are some minor inconsistencies in the description of some parameters.

T2MC-90772 - [GPT] Wrong trigger resource can be configured in `GptPredefTimerStartTriggerSelect`

Title: [GPT] Wrong trigger resource can be configured in `GptPredefTimerStartTriggerSelect`

Description: In `GptPredefTimerStartTriggerSelect` on EB tresos, both TCPWM instances 0 and 1 are displayed and can be configured as a trigger for the Gpt Predef timers. `GptPredefTimerStartTriggerConfiguration` should configure only the same TCPWM instance selected in the `GptPredefTimer` configuration.

8.8 Module SW-Version 1.10

T2MC-97382 - Macro definition at variable declaration is missing and the limitation is not mentioned in release notes

Title: Macro definition at variable declaration is missing and the limitation is not mentioned in release notes

Description: Macro definitions are not used when declaring some variables and pointers (in FLS, MCU, PORT, SPI, and WDG).

According to AUTOSAR specification:
[SWS_COMPILER_00026]
#define VAR(vartype, memclass)

True:
volatile P2VAR(Spi_DmaChannelRegsType, AUTOMATIC, REGSPACE) retPtr;

False:
volatile Spi_DmaChannelRegsType * retPtr;

This issue is present in the following cases:

- All types of pointer declaration/definition are defined without macros.

These contain the function parameter/global variable/local variable/structure field/union field.

- All types of function declaration/definition are defined without macros.
- When there is nested macro usage in function macros.
- Raw pointer is used in the function macro:

e.g., FUNC(int *, memclass) function(void);

- Global variable or static variable in the function is not defined with macros.

To fully comply with the above cases, change variable and function definitions in FLS, MCU, PORT, SPI, and WDG.

In requirements, keyword macros 'CONST' and 'VAR' are not required for declaration/definition of the local variable, function parameter, and structure/union fields.

The information must be described in all release notes.

T2MC-39519 - Support EB tresos V26.2.0

Title: Support EB tresos V26.2.0

Description: Support EB tresos V26.2.0

[Impact]
Strict AUTOSAR specification and check for parameter configuration errors are implemented in EB tresos V26.2.0.
In addition, handling of reference paths (relative paths) such as system description file (ARXML) is changed in EB tresos V26.2.0.

Therefore, if the current ECUC configuration definitions XML file contains deviations or errors, you may find errors during import to tresos26. In that case, the ECUC configuration definitions XML file must be modified appropriately.
In addition, if the current ARXML file contains unresolvable paths, you may find errors during import to tresos26. In that case, ARXML file must be modified.

The SW has been tested; no risks except for the low-level risk listed above were found.

T2MC-97128 - Unnecessary exclusive control for a process

Title: Unnecessary exclusive control for a process

Description: Some modules have exclusive control in the section where only variables and registers are written atomically. Exclusive control should not be performed for a process that is clearly not affected by interference.

8.9 Module SW-Version 1.11

T2MC-164408 - Improvement of interrupt register clear processing

Title: Improvement of interrupt register clear processing

Description: Some modules clear the interrupt register by read modify write (RMW). However, there is a possibility that unintended bits might also be cleared, if some bits are already set before clearing, because the attribute of the interrupt register is RW1C (every bit is cleared upon writing 1).

Also, unnecessary read access to the register reduces performance.
Therefore, change the clearing process to write intended bit only.

T2MC-164778 - Support MISRA C:2012 coding rule

Title: Support MISRA C:2012 coding rule

Description: Support MISRA C:2012 coding rule.

The MISRA C:2012 coding rule checks the source code.
If a deviation from the rules is required, add the deviation comment to the code and report the result.
If a deviation is for MISRA-C:2004 only, remove the deviation comment.

8.10 Module SW-Version 1.12

T2MC-164831 - [ALL] Misleading comment in Module_MemMap.h

Title: [ALL] Misleading comment in Module_MemMap.h

Description: *{Mip}_MemMap.h* files are provided as sample template files. But, the file header comment cannot be modified, which is a contradiction. To resolve this contradiction, change the file header comment to allow user modification.
Also, to make sure that the file is not a part of the commercial product, move the *{Mip}_MemMap.h* files to the *MemMap* stub folder.

8.11 Module SW-Version 1.13

T2MC-170819 - [GPT] Some parameters are inconsistent between XDM and ARXML

Title: [GPT] Some parameters are inconsistent between XDM and ARXML

Description: The post-build multiplicity definition of the `GptChannelTickFrequency` is inconsistent between XDM and ARXML files. The XDM file needs to be changed to FALSE.

Currently, when a Gpt channel uses an external input clock (`GptChannelClkSrc` is `CLK_EXT`) as a clock source, the `GptChannelTickFrequency` is omitted because the frequency depends on the external clock, but the inconsistency can be resolved by changing it to allow the user to update it.

T2MC-170801 - [GPT] Need to guarantee the order of register settings between relevant peripherals

Title: [GPT] Need to guarantee the order of register settings between relevant peripherals

Description: If a driver controls different peripherals that have different bridges and buffers, then the order of access needs to be guaranteed. It is also necessary to guarantee the order of CPU instruction and peripheral operations if needed.
GPT driver before `Port_ActTrigger` called must meet the order. Therefore, the read back process should be added to avoid this issue.

T2MC-170543 - [GPT] Unused structure members found

Title: [GPT] Unused structure members found

Description: Unused structure members have been found inside MCAL code.
Structure members `ChannelNumber` and `timerfct` of `Gpt_ChannelConfigStruct` are not used.
This issue would not affect any function and its behavior. However, the unused structure members should be removed as it is redundant.

Also, the following definitions are no longer necessary after the member `timerfct` is removed:
`GPT_TIMERMAX`, `GPT_TIMERCOUNTER`, `Gpt_TimerType`.

T2MC-170664 - Limitation on notification is missing in the user guide

Title: Limitation on notification is missing in the user guide

Description: There is a possibility that notifications might occur (under a particular condition) even if the notification is disabled. This unexpected behavior would hardly ever occur; however, it should be described in the user guide with a workaround.

[Conditions]

- Notification is enabled in advance before the notification is called.
- Notification is changed to be disabled in a few cycles just before the notification is called.

[Workaround]

Disable the notification in advance prior to running the service.

The following is supported in release V1.10.0.

T2MC-172517 - Add a description on DeepSleep in the user guide

Title: Add a description on DeepSleep in the user guide

Description: Add a note on DeepSleep mode in the user guide.

The following are supported in release V1.12.0.

T2MC-178684 - Addition of necessary steps before entering DeepSleep mode in the user guide

Title: Addition of necessary steps before entering DeepSleep mode in the user guide

Description: Add the information in the user guide on the API that needs to be called to stop the TCPWM counter before entering DeepSleep mode.

T2MC-178688 - Addition of the notice for Arm® errata and workaround in the user guide

Title: Addition of the notice for Arm® errata and workaround in the user guide

Description: Add a notice for Arm® Cortex®-M4 errata 838869 and software workaround in the user guide.

Version history

The following are supported in release V1.15.0.

T2MC-183983 - Update copyright notice and disclaimer statement

Title: Update copyright notice and disclaimer statement

Description: Copyright notice and disclaimer statement in the file header comment are updated to follow the up-to-date specifications.

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