TRAVEO™ T2G family AUTOSAR MCAL PORT release notes

SRN223345 version 1.18

About this document

Scope and purpose

Thank you for your interest in the TRAVEO™ T2G family AUTOSAR MCAL PORT driver version 1.18. This document lists the installation requirements, software changes, limitations, and known issues.

Intended audience

This document is intended for anyone who uses the PORT 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 (Port_lib) section	Size (in bytes)
.text	3348
Combined	3348

GHS (Port_src) section	Size (in bytes)
.text	5108
.bss	4
.rodata	5756
Combined	10868

IAR (Port_lib) section	Size (in bytes)
.text	3086
Combined	3086

IAR (Port_src) section	Size (in bytes)
.text	11558
.bss	4
.rodata	5308
Combined	16870

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)
Port_Init	88
Port_SetPinDirection	52
Port_RefreshPortDirection	36
Port_GetVersionInfo	12
Port_SetPinMode	48
Port_GetStatus	124
Port_GetAmuxSplitCtlStatus	32
Port_SetToDioMode	40
Port_SetToAlternateMode	44
Port_SetTrigger	60
Port_ActTrigger	44
Port_DeactTrigger	20
Port_GetTriggerIdStatus	32
Port_GetTriggerCmdStatus	24

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 the 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)
Port_Init	104
Port_SetPinDirection	44
Port_RefreshPortDirection	32
Port_GetVersionInfo	16
Port_SetPinMode	44
Port_GetStatus	120
Port_GetAmuxSplitCtlStatus	36
Port_SetToDioMode	44
Port_SetToAlternateMode	44
Port_SetTrigger	56
Port_ActTrigger	48
Port_DeactTrigger	24
Port_GetTriggerIdStatus	36
Port_GetTriggerCmdStatus	28

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
1.18.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 Port_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-12633 - [SWS_Port_00071] Call Port_Init after a reset

Title: [SWS_Port_00071] Call Port_Init after a reset

Description: [SWS_Port_00071] [The Port Driver module's environment shall call the function Port_Init after a reset in order to reconfigure the ports and port pins of the MCU.
] ( )

Reason for rejection: Port driver supports only Post-Build. Therefore, Port_init is called without reset in case of reconfiguration.

T2MC-12637 - [SWS_Port_00121] API: Port_Init parameter

Title: [SWS_Port_00121] API: Port_Init parameter

Description: [SWS_Port_00121] [The function Port_Init shall always have a pointer as a parameter, even though for the configuration variant VARIANT-PRE-COMPILE, no configuration set shall be given. In this case, the Port Driver module's environment
shall pass a NULL pointer to the function Port_Init.] (SRS_BSW_00414)

Reason for rejection: Port driver supports only Post-Build. Therefore, the parameter to Port_Init is not a NULL pointer.

T2MC-12679 - [SWS_Port_00147] VARIANT-PRE-COMPILE

Title: [SWS_Port_00147] VARIANT-PRE-COMPILE

Description: [SWS_Port_00147] [VARIANT-PRE-COMPILE.
Only parameters with "Pre-compile time" configuration are allowed in this variant.
The intention of this variant is to optimize the parameters configuration for a source code delivery.] ( )

Reason for rejection: Port module does not support pre-compile.

T2MC-12557 - [SWS_Port_00204] Port.c optionally include

Title: [SWS_Port_00204] Port.c optionally include

Description: [SWS_Port_00204] [Port.c shall optionally include Port_Cbk.h and Dem.h Port.c has implicit access to the Port_Cfg.h file through the Port.h file.] ( )

Reason for rejection: This requirement is optional. The Port module has no callback function and the Dem module is not used; therefore, this requirement is not applicable.

T2MC-12558 - [SWS_Port_00205] Port_Lcfg.c

Title: [SWS_Port_00205] Port_Lcfg.c

Description: [SWS_Port_00205] [Port_Lcfg.c shall include Port_MemMap.h and Port.h]
( )

Reason for rejection: LT configuration is not supported; therefore, there is no *Port_Lcfg.c* file.

T2MC-12630 - [SWS_Port_00217] Initializing One-time writable registers

Title: [SWS_Port_00217] Initializing One-time writable registers

Description:

[SWS_Port_00217] [One-time writable registers that require initialisation directly after reset shall be initialised by the startup code.] (SRS_SPAL_12461)

Reason for rejection: There is no register corresponding to this requirement.

T2MC-18206 - [SWS_Port_00227] Not applicable requirements

Title: [SWS_Port_00227] Not applicable requirements

Description: [SWS_Port_00227] [These requirements are not applicable to this specification.] (SRS_BSW_00005, SRS_BSW_00006, SRS_BSW_00007, SRS_BSW_00010, SRS_BSW_00160, SRS_BSW_00161, SRS_BSW_00162, SRS_BSW_00164, SRS_BSW_00167, SRS_BSW_00168, SRS_BSW_00170, SRS_BSW_00172, SRS_BSW_00307, SRS_BSW_00308, SRS_BSW_00309, SRS_BSW_00321, SRS_BSW_00325, SRS_BSW_00326, SRS_BSW_00328, SRS_BSW_00329, SRS_BSW_00330, SRS_BSW_00331, SRS_BSW_00333, SRS_BSW_00334, SRS_BSW_00335, SRS_BSW_00336, SRS_BSW_00341, SRS_BSW_00342, SRS_BSW_00343, SRS_BSW_00344, SRS_BSW_00347, SRS_BSW_00355, SRS_BSW_00357, SRS_BSW_00359, SRS_BSW_00360, SRS_SPAL_12463, SRS_SPAL_12462, SRS_SPAL_12265, SRS_SPAL_12092, SRS_SPAL_12078, SRS_SPAL_12077, SRS_SPAL_12067, SRS_SPAL_12064, SRS_SPAL_12129, SRS_SPAL_12075, SRS_SPAL_12063, SRS_SPAL_12169, SRS_SPAL_00157, SRS_SPAL_12069, SRS_SPAL_12068, SRS_SPAL_12267, SRS_SPAL_12056, SRS_BSW_00440, SRS_BSW_00439, SRS_BSW_00437, BSW00434, SRS_BSW_00433, SRS_BSW_00432, BSW00431, SRS_BSW_00429, SRS_BSW_00428, SRS_BSW_00427, SRS_BSW_00426, SRS_BSW_00425, SRS_BSW_00424, SRS_BSW_00423, BSW00421, BSW00420, SRS_BSW_00419, SRS_BSW_00417, SRS_BSW_00416, SRS_BSW_00413, SRS_BSW_00398, SRS_BSW_00395, SRS_BSW_00387, SRS_BSW_00378, SRS_BSW_00377, SRS_BSW_00376, SRS_BSW_00375, SRS_BSW_00373, SRS_BSW_00371, SRS_BSW_00370)

Reason for rejection: Named RQMs are not applicable.

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4 Limitations

T2MC-12687 - [ECUC_Port_00123] PortDevErrorDetect

Title: [ECUC_Port_00123] PortDevErrorDetect

Description:

SWS Item	**ECUC_Port_00123:**		
Name	PortDevErrorDetect		
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 a safety mechanism (fault detection), detection of development errors cannot be disabled.

T2MC-12722 - [ECUC_Port_00127] PortPinId

Title: [ECUC_Port_00127] PortPinId

Description:

SWS Item	**ECUC_Port_00127:**		
Name	PortPinId		
Description	Pin Id of the port pin. This value will be assigned to the symbolic name derived from the port pin container short name.		
Multiplicity	1		
Type	EcucIntegerParamDef (Symbolic Name generated for this parameter)		
Range	1 .. 65535		
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: PortPinId values depend on the specified port pin and can be set to "0". Therefore, the range of PortPinId is defined from 0 to 65535. However, the AMDC checker will detect an error, even though the range

in AUTOSAR specification is from 1 to 65535. Therefore, the implementation deviates from the AUTOSAR specification in the range of PortPinId. Error;Port_Merged.arxml;nobody;Rule A207: Minimum value of parameter 'Port/PortConfigSet/PortContainer/PortPin/PortPinId' in VSMD (0) may not be smaller than the minimum value defined in StMD (1).; The symbolic name assigned to a port pin is implementation-optimized, and is different from the entered PortPinId value. Thus, you cannot call port functions with the entered PortPinId value.

T2MC-31386 - [PORT] API: Port_ActTrigger PORT_E_TR_CMD_STATUS

Title: [PORT] API: Port_ActTrigger PORT_E_TR_CMD_STATUS

Description: If DET is enabled, the Port_ActTrigger function shall report the PORT_E_TR_CMD_STATUS error and return without any other action, if the trigger command is activated.

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

T2MC-31389 - [PORT] API: Port_DeactTrigger PORT_E_TR_CMD_STATUS

Title: [PORT] API: Port_DeactTrigger PORT_E_TR_CMD_STATUS

Description: If DET is enabled, the Port_DeactTrigger function shall report the PORT_E_TR_CMD_STATUS error and return without any other action, if the trigger command is deactivated or activated with edge sensitive.

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

T2MC-17582 - [PORT] API: Port_SetToAlternateMode PORT_E_MODE_UNCHANGEABLE

Title: [PORT] API: Port_SetToAlternateMode PORT_E_MODE_UNCHANGEABLE

Description: If DET is enabled, the Port_SetToAlternateMode function shall report the PORT_E_MODE_UNCHANGEABLE error and return without any other action, if the parameter PortPinModeChangeable is set to FALSE.
Configuration of Port_SetToAlternateMode: All ports and port pins shall be configured by the configuration tool.

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

T2MC-17579 - [PORT] API: Port_SetToDioMode PORT_E_MODE_UNCHANGEABLE

Title: [PORT] API: Port_SetToDioMode PORT_E_MODE_UNCHANGEABLE

Description: If DET is enabled, the Port_SetToDioMode function shall report the PORT_E_MODE_UNCHANGEABLE error and return without any other action, if the parameter PortPinModeChangeable is set to FALSE.
Configuration of Port_SetToDioMode: All ports and port pins shall be configured by the configuration tool.
Limitation: DET error detection mechanism is used as a safety mechanism (fault detection), development errors are always detected.

T2MC-31374 - [PORT] API: Port_SetTrigger PORT_E_TR_CMD_STATUS

Title: [PORT] API: Port_SetTrigger PORT_E_TR_CMD_STATUS

Description: If DET is enabled, the Port_SetTrigger function shall report the PORT_E_TR_CMD_STATUS error and return without any other action, if the trigger command is activated with same trigger group as the specified group.

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

T2MC-12791 - [PORT] AUTOSAR C implementation rules

Title: [PORT] 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-12632 - [SWS_Port_00043] API: Port_Init avoid glitches and spikes

Title: [SWS_Port_00043] API: Port_Init avoid glitches and spikes

Description: [SWS_Port_00043] [The function Port_Init shall avoid glitches and spikes on the affected port pins.] (SRS_SPAL_12057)

Limitation: In the hardware specification, while initializing I/Os that are connected to a live bus (such as I2C), make sure the peripheral and HSIOM (HSIOM_PRT_SELx) are properly configured before turning the I/O ON to avoid producing glitches on the bus.

T2MC-12596 - [SWS_Port_00077] Check the function parameters in the order

Title: [SWS_Port_00077] Check the function parameters in the order

Description: [SWS_Port_00077] [If default error detection is enabled the Port Driver module shall check the function parameters in the order in which they are passed and skip further parameter checking if one check fails.

Example: For the function Port_SetPinDirection, the first parameter to be passed is the pin ID. This parameter shall identify the relevant port pin of the MCU's port. The second parameter passed corresponds to the direction to change on the port pin.] (SRS_SPAL_12448)

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

T2MC-12597 - [SWS_Port_00087] Skip the desired functionality, if development error has been detected

Title: [SWS_Port_00087] Skip the desired functionality, if development error has been detected

Description: [SWS_Port_00087] [If default error detection is enabled and the Port Driver module has detected an error, the desired functionality shall be skipped and the requested service shall return without any action.] (SRS_BSW_00323, SRS_BSW_00406)

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

T2MC-12654 - [SWS_Port_00223] API: Port_SetPinMode PORT_E_MODE_UNCHANGEABLE

Title: [SWS_Port_00223] API: Port_SetPinMode PORT_E_MODE_UNCHANGEABLE

Description: [SWS_Port_00223] [If Det is enabled, the function Port_SetPinMode shall report PORT_E_MODE_UNCHANGEABLE error and return without any other action, if the parameter PortPinModeChangeable is set to FALSE.] ( )
Configuration of Port_SetPinMode: All ports and port pins shall be configured by the configuration tool. See PORT117.

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

T2MC-12649 - [SWS_Port_00225] API: Port_GetVersionInfo PORT_E_PARAM_POINTER

Title: [SWS_Port_00225] API: Port_GetVersionInfo PORT_E_PARAM_POINTER

Description: [SWS_Port_00225] [if Det is enabled, the parameter versioninfo shall be checked for being NULL. The error PORT_E_PARAM_POINTER shall be reported in case the value is a NULL pointer.] ( )

Limitation: DET error detection mechanism is used as a 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-39176 - [All] Correcting vendor-specific module definition

Title: [All] Correcting vendor-specific module definition

Description: The following rules should be followed in the vendor-specific module definition.

- The multiplicity of each AUTOSAR parameter, reference and container is not correctly derived.
- The DEFAULT-VALUE of each parameter is not valid.
- If the target of DESTINATION-REF is not the standard AUTOSAR container, the reference should not start with '/AUTOSAR/EcucDefs/'.

T2MC-38075 - [PORT] The duration of exclusive area in Port_Init is too long

Title: [PORT] The duration of exclusive area in Port_Init is too long

Description: Port_Init shall initialize a large number of registers. As a result, the duration of exclusive area in Port_Init is too long.

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-50519 - [General] Export issue with MCAL ES10_20180308

Title: [General] Export issue with MCAL ES10_20180308

Description: An example of the issue is described below.

The configuration exported from Tresos does not correspond to the real configuration shown in Tresos. See the attached example.

The issue concerns other modules too, not only the Port described in attached pdf file.

T2MC-52239 - [PORT/DIO] Support TRAVEO™ T2G-B-H-8M

Title: [PORT/DIO] Support TRAVEO™ T2G-B-H-8M

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

The following materials will be changed on PORT and DIO module

- User guide: Add TRM of TRAVEO™ T2G-B-H-8M in related documentation
- Release notes: Add compiler options for TRAVEO™ T2G-B-H-8M (Cortex®-M7 core)

T2MC-39480 - [PORT] Show the warning for unconnected port pins

Title: [PORT] Show the warning for unconnected port pins

Description: Some port pins can be configured but are not connected to physical pins.

When these pins are configured on Tresos, a warning message needs to be displayed.

T2MC-38117 - [PORT] SLOW_IOx needs to be supported

Title: [PORT] SLOW_IOx needs to be supported

Description: The SLOW_IOx parameter has been added in MXS40-IP-IOSS.xlsm Rev.176603.
SLOW_IOx: Indicates that pin #x exists for this port with slew control feature.

The configuration parameter PortPinOutputSlowSlewRateEnable can be set to true only if SLOW_IOx is true.

T2MC-38116 - [PORT] Trigger manipulation present needs to be supported

Title: [PORT] Trigger manipulation present needs to be supported

Description: The specification for some trigger groups have been updated in MXS40-Product-TVIIBE1M.xlsm Rev.180061.

The parameters ManipulationPresent for trigger group #10, 11 are modified to "No".

Therefore, PORT module needs to support trigger manipulation present.

If trigger manipulation present is "No", following configuration parameters cannot be used for these trigger groups/trigger 1-to-1 groups:

- PortTrInvertEnable
- PortTrSensitiveType
- PortTr1To1InvertEnable
- PortTr1To1SensitiveType

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.

T2MC-57556 - [PORT] Change a label of trigger 1-to-1 groups

Title: [PORT] Change a label of trigger 1-to-1 groups

Description: A trigger 1-to-1 group label in H/W document was revised and resource properties file was updated.

Therefore, PORT module's *.arxml file should be changed.

Name: SCB To DW1

Label: SCB_TO_DW0 -> should be changed to SCB_TO_DW1

TriggerGroupNr: 2

T2MC-50665 - [PORT] Change register names as same as register TRM

Title: [PORT] Change register names as same as register TRM

Description: In the H/W register TRM (002-24402 etc.), register name was changed from GPIO_PRT_CFG_IN_GPIO5V to GPIO_PRT_CFG_IN_AUTOLVL.

Therefore, PORT module should use latest one.

T2MC-52818 - [PORT] Mismatched explanation with TRM in user guide

Title: [PORT] Mismatched explanation with TRM in user guide

Description: There are mismatched explanations with TRM in PORT module's user guide.

T2MC-56154 - [PORT] The range inconsistency between Port.xdm and Port.arxml

Title: [PORT] The range inconsistency between Port.xdm and Port.arxml

Description:

(1) PortPinId is calculated as follow:

(Port Number * 8) + Pin Number

The minimum number of PortPinId should be "0" in case of Port 0 Pin 0.

However, <MIN> for PortPinId in Port.arxml is set to "1".

The above modification leads to an AMDC check error:

Error;Port_Merged.arxml;nobody;Rule A207: Minimum value of parameter 'Port/PortConfigSet/PortContainer/PortPin/PortPinId' in VSMD (0) may not be smaller than minimum value defined in StMD (1).;

This error needs to be deviated. The limitation should be described in T2MC-12722.

(2) The range of PortTriggerConfigSetId has inconsistency

Port.xdm: 0-255

Port.arxml: 0-65535

8.5 Module SW-Version 1.7

T2MC-59628 - [PORT] Warning message with AMDC 1.0.17

Title: [PORT] Warning message with AMDC 1.0.17

Description: The following warning message was displayed after updating AMDC to version 1.0.17.

Warning; Port_Merged.arxml;nobody;Rule A205: Parameter 'Port/PortGeneral/PortIncludeFile' has no multiplicity config class entry for VARIANT_POST_BUILD.;

T2MC-65917 - [PORT] Wrong port pin IDs are generated

Title: [PORT] Wrong port pin IDs are generated

Description: Normally, Port module generates the port pin macros based on the resource properties file.

- #define PORT_PIN_P000_0 ((Port_PinType)0U)
- #define PORT_PIN_P000_1 ((Port_PinType)1U)
- #define PORT_PIN_P000_2 ((Port_PinType)2U)
- #define PORT_PIN_P000_3 ((Port_PinType)3U)

However, when the pins in a port are discontinuous, the wrong macros are generated.

- #define PORT_PIN_P000_2 ((Port_PinType)0U)
- #define PORT_PIN_P000_3 ((Port_PinType)1U)

8.6 Module SW-Version 1.8

T2MC-65902 - [PORT] ICU setting is initialized at every calling of Port_Init()

Title: [PORT] ICU setting is initialized at every calling of Port_Init()

Description: When calling Port_Init(), the following registers are always initialized to '0'.

- GPIO_PRT.INTR_MASK
- GPIO_PRT.INTR_SET
- GPIO_PRT.INTR_CFG

A customer would like to maintain these register statuses. However, Port module does not have that feature.

T2MC-78534 - [PORT] MediaLB input buffer mode is not supported regardless of hardware manual

Title: [PORT] MediaLB input buffer mode is not supported regardless of hardware manual

Description: MediaLB, one of input buffer modes is not supported for TRAVEO™ T2G.

However, this mode was described in hardware manual.

It should be removed from Port configuration.

T2MC-65996 - [PORT] Port module does not support Config variant: Pre-Compile

Title: [PORT] Port module does not support Config variant: Pre-Compile

Description: Port module supports only Post-Build for Config variant. But, Pre-Compile allows to be selected.

T2MC-54373 - [PORT] Support drive select trim

Title: [PORT] Support drive select trim

Description: New features are added to cluster device (GPIO_ver4, CFG_OUT2):

Drive select trim for IO pin, 15 Ohm to 120 Ohm in 7 steps.

T2MC-78483 - [PORT] User guide update to describe the limitation of Port_Init() for JTAG protocol.

Title: PORT] User guide update to describe the limitation of Port_Init() for JTAG protocol.

Description: ROM/Flash Boot configures all JTAG/SWD pins including P2_0 which serves as JTAG reset input (TRSTn) pin.

JTAG TRSTn pin is optional and therefore user application can configure this pin to some other mode (e.g. GPIO). If the debug protocol is JTAG, and application executes Port_Init() with TRSTn pin configured as GPIO or not configured, then debug session crashes.

The solution is to change the mode of TRSTn pin to GPIO via debugger script according to the specified sequence in case debug protocol is JTAG. If the debug protocol is SWD, then this is not required. Above limitation regarding to Port_Init() should be included in the Port user guide

T2MC-77594 - Support IAR compiler

Title: Support IAR compiler

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

T2MC-82039 - Arxml files do not support latest resource properties files

Title: Arxml files do not support latest resource properties files

Description: Resource properties files have been updated and available pins/modes/triggers were added or modified.

However, arxml files have not been updated. If using arxml and set unavailable parameters, an error would occur.

8.7 Module SW-Version 1.9

T2MC-83797 - [PORT] Modify the arxml file to support TRAVEO™ T2G-B-H-8M Rev.B

Title: [PORT] Modify the arxml file to support TRAVEO™ T2G-B-H-8M Rev.B

Description: The arxml file of Port module must be modified to support TRAVEO™ T2G-B-H-8M Rev.B device.

8.8 Module SW-Version 1.10

T2MC-90338 - [PORT] Tresos warning in case of no debug pin configuration

Title: [PORT] Tresos warning in case of no debug pin configuration

Description: If debug pins are not configured in the Tresos, then execution of Port_Init() overwrites debug pin configuration with the default configuration (e.g. GPIO). This causes the debugger to disconnect from the device and debugger is not able to perform flash/erase/debug operation anymore.

Tresos shall give warning if debug pin is not properly configured or not configured at all.

Tresos can look for CPUSS_SWJ_SWO_TDO, CPUSS_SWJ_SWCLK_TCLK, CPUSS_SWJ_SWDIO_TMS, CPUSS_SWJ_SWDOE_TDI modes to find debug pins of the device. After that, Tresos should check whether these pins are configured for these modes in all configured PortConfigSet. If not configured, then Tresos should issue a warning.

T2MC-91381 - [PORT] Port.arxml is inconsistent with Port.xdm

Title: [PORT] Port.arxml is inconsistent with Port.xdm

Description: Following values in *Port.arxml* is inconsistent with *Port.xdm*:

- Description of PortPinDirection
- Description of PortDefPinOutputInBufEnable
- Description of Port1To1OutputTrigger

Following attributes are not set in *Port.xdm*:

- SCOPE/POST-BUILD-VARIANT-VALUE in PortPinOutputInBufEnable
- SCOPE/POST-BUILD-VARIANT-VALUE in PortDefPinOutputInBufEnable

POST-BUILD-VARIANT-MULTIPLICITY is not configured for each parameter in *Port.arxml.*

POSTBUILDVARIANTMULTIPLICITY is not configured for the following multiplicity parameters in *Port.xdm*.

PortContainer, PortPin, PortAmuxSplitCell, PortIncludeFile, PortTriggerConfigSet, PortTrGroupContainer, PortOutputTrigger, PortTr1To1GroupContainer, Port1To1OutputTrigger

T2MC-91799 - [PORT] Modify the arxml file to support TRAVEO™ T2G-B-H-4M

Title: [PORT] Modify the arxml file to support TRAVEO™ T2G-B-H-4M

Description: The *arxml* file of Port module must be modified to support TRAVEO™ T2G-B-H-4M devices.

Following enumerations are added for PortTr1To1OutputName:

TCPWM_0_TR_ONE_CNT_IN_158, TCPWM_0_TR_ONE_CNT_IN_161, TCPWM_0_TR_ONE_CNT_IN_164, TCPWM_0_TR_ONE_CNT_IN_167, TCPWM_0_TR_ONE_CNT_IN_170, TCPWM_0_TR_ONE_CNT_IN_173, TCPWM_0_TR_ONE_CNT_IN_176, TCPWM_0_TR_ONE_CNT_IN_179

Deleted unnecessary enumerations from PortTrGroupName:

PDMA0_TR, TCPWM_TO_PDMA0

8.9 Module SW-Version 1.11

T2MC-92210 - [PORT] 1/8 drive strength is not supported for S40E GPIO pins

Title: [PORT] 1/8 drive strength is not supported for S40E GPIO pins.

Description: 1/8 drive strength was implemented in S40S GPIO pins, but this feature is removed from S40E.

The enumeration PORT_PIN_OUT_STRENGTH_1_8 is deleted from following parameters:

- PortPinOutputDriveStrength
- PortDefPinOutputDriveStrength

8.10 Module SW-Version 1.12

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.

8.11 Module SW-Version 1.13

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.

8.12 Module SW-Version 1.14

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.

T2MC-166474 - [PORT] Add configuration option to PortPinOutputDriveStrength /PortDefPinOutputDriveStrength for cluster device

Title: [PORT] Add configuration option to PortPinOutputDriveStrength /PortDefPinOutputDriveStrength for cluster device

Description: Support updated TRAVEO™ T2G cluster device.

Those devices have I/O cell variants, HSIO_STD, and GPIO_SMC. Those variants have different drive strength encoding from the GPIO variant. Therefore, to support these I/O cell variants, change the PortPinOutputDriveStrength /PortDefPinOutputDriveStrength configuration options.

T2MC-166135 - [PORT] Change default config set initialization scope

Title: [PORT] Change default config set initialization scope

Description: The PORT module initializes non-bonded pins with default config set.
Non-bonded pins are not connected to physical pin. Therefore, their pins register value must not be changed from then initial value at reset.

Change the default config set initialization policy as follows:

- If all pins in a port are not bonded to physical pins, change the default config set initialization to never access the registers corresponding to the port.
- If some pins are not bonded to the physical pins in a port, change to initialize the register bits corresponding to non-bonded pins with the initial value at reset instead of the default config set.

Note: *See “Limitations” for details of the limitation on the requirement ECUC_Port_00127 caused by this change.*

T2MC-166472 - [PORT] Enumeration definitions in arxml are added for cluster device

Title: [PORT] Enumeration definitions in arxml are added for cluster device

Description: The following additional options are available for the configuration in cluster device:

- PortPinName
- PortPinInitialMode
- PortPinMode
- PortTrGroupName
- PortTrOutputName

- PortTrInputName

To support a cluster device, add new enumerations into the arxml file.

T2MC-87773 - [PORT] Extension parameters are added for 4M/6M cluster devices

Title: [PORT] Extension parameters are added for 4M/6M cluster devices

Description: Cluster devices provide the functionality of extra slew rate control and extra drive strength in some ports. To support those functions, add a new configuration and initialization into the PORT module.

T2MC-159143 - [PORT] The PORT module accesses registers which are not described in the datasheet

Title: [PORT] The PORT module accesses registers which are not described in the datasheet

Description: The PORT module accesses the SMART IO registers even if a port does not contain the SMART IO function.

Access to those unavailable registers does not affect HW behavior; however, on performance point of view, unnecessary register access should be avoided.

Therefore, remove register accesses to unavailable registers.

T2MC-166473 - [PORT] Support intermittent pin numbering for cluster device

Title: [PORT] Support intermittent pin numbering for cluster device

Description: Support updated TRAVEO™ T2G cluster device.

Those devices have intermittent pin numbering.

e.g.) P000 has 0, 2, 3 pins. Pin 1 isn't mounted.

The current PORT module assumes that all pins are numbered contiguously. Therefore, intermittent pin numbering causes a build error. Change the pin config value generation logic to support intermittent pin numbering.

8.13 Module SW-Version 1.15

T2MC-170826 - [PORT] Add configuration guard for HSIO_ENH and HSIO_ENH_PDIFF IO cells

Title: [PORT] Add configuration guard for HSIO_ENH and HSIO_ENH_PDIFF IO cells

Description: Support the updated cluster (TRAVEO™ T2G-C-2D-6M) device.

This device has HSIO_ENH and HSIO_ENH_PDIFF IO cells. Those cells do not support the following features:

- Input buffer threshold selection (Supports only CMOS mode)
  controlled by PRT.CFG_IN.VTRIP_SELx register and PRT.CFG_IN.AUTOLVL.
  Corresponding PORT configurations are PortPinInputBufferMode and Port5VPinInputBufferMode.
- Output drive selection controlled by PRT.CFG_OUT.DRIVE_SELx
  Corresponding PORT configuration is PortPinOutputDriveStrength.

With the current PORT module, those configurations can be changed with HSIO_ENH and HSIO_ENH_PDIFF pins. When those configurations are changed, the change doesn't affect the I/O behavior; it is ignored by HW. However, to avoid user confusion, those configurations should be changed as non-configurable for HSIO_ENH and HSIO_ENH_PDIFF pins.

T2MC-170828 - [PORT] Enumeration definitions in arxml are added for TRAVEO™ T2G-C-2D-6M B0 device

Title: [PORT] Enumeration definitions in arxml are added for TRAVEO™ T2G-C-2D-6M B0 device

Description: Support the updated cluster (TRAVEO™ T2G-C-2D-6M B0) device.

This change was detected from new resource property files for them.

There are additional options to following configuration in the cluster device.

- PortPinInitialMode
- PortPinMode
- PortTrOutputName
- PortTrInputName

To support the cluster device, add new enumerations into the arxml file.

T2MC-170540 - [PORT] Unused structure member found

Title: [PORT] Unused structure member found

Description: Unused structure member has been found inside MCAL code.

The following structure members are not used:

- numberOfTriggerGroups in Port_ConfigType
- numberOf1To1TriggerGroups in Port_ConfigType
- reserve in Port_DriverEnvType
- reserve in Port_PinChannelConfigType
- reserve in Port_AmuxSplitCtlConfigType
- reserve in Port_TriggerGroupType
- reserve in Port_AmuxSplitCtlStatusType
- reserve in Port_TriggerCmdStatusType

This would not affect any functions and its behavior. However, the unused structure members should be removed because they are redundant.

T2MC-170823 - [PORT] Need to guarantee the order of register settings between relevant peripherals for robustness

Title: [PORT] Need to guarantee the order of register settings between relevant peripherals for robustness

Description: If a driver controls different peripherals that have different bridges and buffers, the order of access must be guaranteed.

The access order reversal has not been observed with MCAL modules. However, theoretically, there is a possibility of its occurring.

Therefore, it should be added to the register read back process in order to guarantee the order of access.

Port should guarantee the order of the following:

- Port pin settings and other peripheral settings
- Trigger component settings and other peripheral settings

The following is updated in release V1.11.0.

T2MC-178667 - [PORT] Add a limitation about Port_ActTrigger()

Title: [PORT] Add a limitation about Port_ActTrigger()

Description: Add the following note to the Limitation chapter of the Port release notes.

There is a possibility that unintended trigger may be issued on the CYT3DL series when Port_ActTrigger() is called.

8.14 Module SW-Version 1.16

T2MC-178686 - [PORT] Enumeration definitions of `PortPinMode` and `PortPinInitialMode` are added for cluster entry devices in arxml

Title: [PORT] Enumeration definitions of `PortPinMode` and `PortPinInitialMode` are added for cluster entry devices in arxml

Description: Some peripheral pin functions are newly added for cluster entry devices. To support the new functions, it is necessary to add new enumeration definitions of `PortPinMode` and `PortPinInitialMode` in Port.arxml.

The following enumeration definitions are added:

- Added `SRSS_IO_CLK_HF_2` to `PortPinMode` and `PortPinInitialMode`.
- Added `LCD_COM_x (x: 0-35)` to `PortPinMode` and `PortPinInitialMode`.
- Added `LCD_SEG_x (x: 0-35)` to `PortPinMode` and `PortPinInitialMode`.

T2MC-178687 - [PORT] An unintended trigger may be issued when `Port_ActTrigger()` is called

Title: [PORT] An unintended trigger may be issued when `Port_ActTrigger()` is called

Description: If SW does not follow the restrictions described in the latest version of the TRM (see Note *1), an unintended trigger may be issued when the `Port_ActTrigger()` function is called.

If the `Port_ActTrigger()` function modifies the PERI.TR_CMD: ACTIVATE bit and other bits at the same time, the silicon may issue an unintended trigger.

A hardware restriction was added to the PERI.TR_CMD register as follows (See Note *1).
Note: When ACTIVATE is '1', SW should not modify the other register fields. SW MUST NOT set ACTIVATE bit to '1' while updating the other register bits simultaneously. At first the SW MUST update the other register bits as needed, and then set ACTIVATE to '1' with a new register write.

This workaround must be implemented in the Port module to avoid this issue. This issue affects all TRAVEO™ T2G series MCUs.

Note *1: TRAVEO™ T2G automotive cluster 2D registers technical reference manual (TRM) (TVII-C-2D-4M) Document Number: 002-29854 Rev*D

The information on the unintended trigger, added per T2MC-178667, is removed from the release note.

T2MC-179489 - [PORT] Memory allocation to unintended sections

Title: [PORT] Memory allocation to unintended sections

Description: In *Port.c*, `Port_TriggerComponent` is defined in the `Port_InitTriggerComponent()` function as a function-internal static variable.

To apply the AUTOSAR MemMap mechanism to `Port_TriggerComponent`, `Port_TriggerComponent` should be defined at outside of any functions and should be surrounded by MemMap macros.

However, `Port_TriggerComponent` is defined in function local scope.

As a result, `Port_TriggerComponent` cannot be allocated in the intended section specified by MemMap.

8.15 Module SW-Version 1.17

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.

T2MC-183989 - [PORT] Enumeration definitions of PortTrOutputName and PortTrInputName are added for cluster high devices in ARXML

Title: [PORT] Enumeration definitions of PortTrOutputName and PortTrInputName are added for cluster high devices in ARXML

Description: Some input triggers and output triggers are newly added for cluster high device resource files. So, the new enumeration definitions of PortTrOutputName and PortTrInputName in Port.arxml must be added.

Add enumeration definitions as follows:

- AXI_DMAC_0_TR_IN_4 ~ 7 to PortTrOutputName
- AXI_DMAC_0_TR_OUT_4 ~ 7 to PortTrInputName

T2MC-183990 - [PORT] Modify the restriction condition of the HSIO enhance cell for cluster high devices

Title: [PORT] Modify the restriction condition of the HSIO enhance cell for cluster high devices

Description: Some PortPin cell types are newly added for cluster high device resource files.
_STG (staggered IOs) are added for the existing PortPin cell type. PORT pin functions are the same for I/Os with _STG and without _STG.

The MCAL PORT driver has restricted some PORT pin functions when the cell type is HSIO_ENH or HSIO_ENH_PDIFF.
In this change request, the Port driver adds HSIO_ENH_STG and HSIO_ENH_PDIFF_STG for the restriction condition.

T2MC-184008 - [PORT] Update the description for Drive Select for HSIO_STDLN in the tresos PortPinOutputDriveExt parameter

Title: [PORT] Update the description for Drive Select for HSIO_STDLN in the tresos PortPinOutputDriveExt parameter

Description: The description for Drive Select in TRAVEO™ T2G Automotive MCU cluster 2D architecture TRM (002-25800) has been updated. The tresos parameter description and the port module user guide have descriptions similar to the one in the TRM Table 22-6.
For a better explanation, the tresos parameter description and Port module user guide should be updated according to the TRM.

Summary of changes in TRM Table 22-6:

- Changed the table index from DRIVE_SEL_EXT to the combination of DRIVE_SEL_EXT and SLEW_EXT.
- The table columns Voltage Range, Frequency, and Load are merged to one Description column.

8.16 Module SW-Version 1.18

T2MC-184097 - [PORT] Added description to PortPinDirection parameter when a pin is used for analog port in GPIO mode.

Title: [PORT] Added description to PortPinDirection parameter when a pin is used for analog port in GPIO mode

Description: Added description to PortPinDirection parameter in EB tresos when a pin is used for analog port in GPIO mode because this modification makes the setting clearer.
Also, the same description is added to the user guide.

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