



Elektrobit

MCAL release notes

for CORTEXM S32K14X

product release 8.5.1



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1. Overview of MCAL release notes

Welcome to the MCAL release notes. These release notes are target and derivative-specific.

[Chapter 2, “Supported toolchain”](#) provides information about the supported toolchain.

[Chapter 3, “Scope of this release”](#) provides specific information about the hardware-dependent third-party modules contained in this EB tresos AutoCore release:

- ▶ AUTOSAR version and revision of your hardware-dependent modules
- ▶ SWS version and revision
- ▶ Module version
- ▶ Supplier of your hardware-dependent modules

1.1. Location of MCAL documentation

Depending on the platform release that you purchased, some of the modules may be supplied to Elektrobit Automotive GmbH by third-parties. All MCAL modules are documented outside of these release notes. This documentation contains additional information about the third-party MCAL modules and the changes that were made by Elektrobit Automotive GmbH.

You can find the MCAL module documentation in the following locations:

- ▶ `$TRESOS_BASE/doc/5.0_MCAL_modules`
- ▶ `$TRESOS_BASE/plugins/<Module name>/doc`
- ▶ In the online help of EB tresos Studio.

For information about the online help in EB tresos Studio, see the EB tresos Studio user documentation.

2. Supported toolchain

This release of EB tresos AutoCore supports IAR compiler version 8.11.2

2.1. Toolchain options

The toolchain options summarize under which conditions this release needs to be built. The release is tested using these toolchain options. If you change the toolchain options, consider this release *untested*.

Compiler	Options
iccarm	<code>--no_wrap_diagnostics -e --cpu Cortex-M4 --fpu None --debug --dlib_config "\$(TOOLPATH_COMPILER)/arm/inc/c/DLib_Config_Normal.h" --endian_little --cpu_mode thumb -Ol --no_cse --no_unroll --no_inline --no_code_motion --no_tbaa --no_clustering --no_scheduling -D_ICCARM_ -DOSIARARM -DTS_ARCH_FAMILY=CORTEXM -DTS_ARCH_DERIVATE=S32K14X -D_IAR_C_S32K14x_ -DCANSM_NO_SYMBOLS_WITHOUT_PREFIX -DCOMM_DONT_PROVIDE_LEGACY_SYMBOLIC_NAMES -DNM_DONT_PROVIDE_LEGACY_SYMBOLIC_NAMES -DCOMPILERCFG_EXTENSION_MCAL_FILE -DDISABLE_MCAL_INTERMODULE_ASR_CHECK</code>
Assembler	Options
iasmarm	<code>--cpu Cortex-M4 --fpu None -s+ -r</code>
Linker	Options
ilinkarm	<code>--no_wrap_diagnostics --semihosting</code>

3. Scope of this release

3.1. Platforms Module

This release of the `Platforms` module contains the mandatory and derivative-specific implementation part of the `Base` module.

This `Platforms` module shall be used only for S32K14X derivatives.

This module is tested only on hardware with the same sub-derivative as the third-party MCAL version. Other sub-derivatives are not tested.

3.2. Third-party MCAL version

This release contains the MCAL release S32K14X_MCAL_4.2_RTM_HF3_1.0.1 including P1_HF1, P2 and P3 from NXP.

This release of EB tresos AutoCore is tested only with sub-derivative s32k144_lqfp100.

3.3. Third-party MCAL modules

This release includes the hardware-dependent third-party MCAL modules listed in the table below in alphabetical order.

Module name	AUTOSAR version and revision	SWS version and revision	Module version	Supplier
Adc	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Can	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Crcu	4.2.2 []	0.0.0 [Rev_0000]	10.1.0	NXP
Dio	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Eep	4.2.2 []	3.2.0 [Rev_0003]	10.1.0	NXP
Eth	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Fee	4.2.2 []	2.0.0 [Rev_0003]	10.1.0	NXP
FIs	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP

Module name	AUTOSAR version and revision	SWS version and revision	Module version	Supplier
Gpt	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
I2c	4.2.2 []	4.3.1 [Rev_0001]	10.1.0	NXP
Icu	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Lin	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Mcem	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Mcl	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Mcu	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Ocu	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Port	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Pwm	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Resource	4.2.2 []	0.0.0 []	10.1.0	NXP
Spi	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP
Wdg	4.2.2 []	4.2.2 [Rev_0002]	10.1.0	NXP

Table 3.1. Third-party hardware-dependent modules

3.4. Third-party MCAL changes by Elektrobit Automotive GmbH

The customer or the MCAL supplier delivers the third-party MCAL modules to Elektrobit Automotive GmbH. The intention of the MCAL changes are to provide EB tresos Studio plug-ins for the delivered MCAL modules. Afterwards, these plug-ins enable you to seamlessly integrate third-party components into EB tresos Studio and its toolchain.

3.4.1. Use of original or updated version in third-party MCAL modules

The EB tresos Installer is the installation tool for the third-party MCAL modules. For more information on the EB tresos Installer, see 1.1_EB_tresos_installation_guide.pdf. In the EB tresos Installer, you can choose one of the following options:

- During installation it is possible to disable the update package. Afterwards, only original MCAL modules are part of your installation. For more information, see [Section 3.4.2, “Structural changes”](#).

- ▶ If you also install the update package, all changes by Elektrobit Automotive GmbH that are described in [Section 3.4.3, “Context changes”](#) are part of your EB tresos AutoCore installation.

Additionally, with this update package you can switch between the original version and the updated version of each MCAL module.

The update package includes the `perform_MCAL_change.bat` batch file in each module plug-in in the root folder. Use this batch file to switch from one version to another.

In the `perform_MCAL_change.bat`, you need to specify one of the following parameters:

- ▶ `EB_update`: Update files in the plug-in with content of Elektrobit Automotive GmbH.
- ▶ `origin`: Reset the files in the plug-in with vendor content.

This batch file can also be executed within the build environment provided by Elektrobit Automotive GmbH by using the following rules:

- ▶ `<MODULE>_MCAL_origin`: Changes MCAL module `<MODULE>`, e.g. Adc, to vendor origin version.
- ▶ `<MODULE>_MCAL_EB_update`: Changes MCAL module `<MODULE>`, e.g. Adc, to updated version.
- ▶ `complete_MCAL_origin`: Changes all MCAL modules in this project to vendor origin version.
- ▶ `complete_MCAL_EB_update`: Changes all MCAL modules in this project to updated version.

WARNING**Changes due to execution of the batchfile affects all projects**

The changes affect all projects that use the changed plug-in. Therefore, execute the batchfile before code generation for your project.

3.4.2. Structural changes

The first step is to convert the third-party plug-in to an EB tresos Studio plug-in and to add makefiles for the build environment supplied by Elektrobit Automotive GmbH.

For each MCAL module, an EB tresos Studio plug-in installation file is part of the EB tresos AutoCore delivery of the MCAL package.

The folder structure of an EB tresos Studio plug-in:

- ▶ `autosar`:

Includes AUTOSAR module description file(s), e.g. BMD file(s). These files are optional and not used by EB tresos Studio. However, they can be used by other configuration tools and are therefore copied if delivered.

- ▶ `config`:

EB tresos schema file for module configuration, e.g. XDM or ARXML files. Elektrobit Automotive GmbH creates this file if the MCAL supplier does not provide it.

► `config_ext:`

EB tresos schema file(s) for preconfiguration and/or recommended configuration, e.g. XDM or ARXML. These files are only included if the MCAL supplier provides them.

► `doc:`

Includes the MCAL documentation for this module. The documentation is only included if the MCAL supplier provides documentation.

The corresponding `anchors.xml` file in the root folder of the plug-in contains the location of this documentation which is shown in the EB tresos Studio help.

► `generate*:`

This folder is used for code generation templates or for an external generator. Multiple folders are possible.

`generate*` folder(s) (e.g. `generate_PB`, `generate_PC`) can include following sub-folder(s):

► `src:`

Includes generated source file templates.

► `include:`

Includes generated include file templates.

► `make:`

Includes generated makefile templates.

► `include:`

Includes static include files.

► `src:`

Includes static source files.

► `generate_swcd/swcd:`

Includes the BSWMD file which is mandatory since AUTOSAR 4.0. This file is used by BSW modules and EB tresos studio wizards provided by Elektrobit Automotive GmbH.

► `resource` or `resources:`

Includes optional xml-based service needs assistant files or properties files which are used by EB tresos Studio.

► `META-INF:`

Includes the eclipse manifest file that defines plug-in dependencies.

EB tresos Studio can find all plug-in information using the eclipse manifest and the `plugin.xml` file in the root folder of the plug-in.

► `make:`

Includes makefiles for the build environment provided by Elektrobit Automotive GmbH. These files are always provided by Elektrobit Automotive GmbH..

3.4.3. Context changes

Some changes made by Elektrobit Automotive GmbH are due to missing or incomplete files. Additionally, some EB tresos Studio features are enabled. These changes are separated from the original installation file.

For each updated MCAL module, an EB tresos Studio plug-in installation file is provided as part of the EB tresos AutoCore delivery of the updated MCAL package.

The folder structure and its context changes for the updated EB tresos Studio plug-in:

► `generate_swcd/swcd:`

The BSWMD file is necessary if your project uses the EB tresos AutoCore Generic `Rte` or `MemMap` modules. Therefore, if the delivered file is not working, a workaround BSWMD file is provided. This workaround BSWMD file can also be adapted by the customer. With the workaround BSWMD file, the following issues are supported:

- Exclusive areas generation in `Rte` module.
- Main function mapping in `Rte` module.
- `MemMap` header file(s) generation in `MemMap` module.

► `resource` or `resources:`

Includes several xml-based service needs assistant or properties files which are provided by Elektrobit Automotive GmbH. These files support the customer to faster complete a valid configuration:

- Calculate Service Needs (`SvcAs_Trigger`) wizard is working for:
 - Dem event generation in the EB tresos AutoCore Generic `Dem` module.
 - `EcuM` initialization in the EB tresos AutoCore Generic `EcuM` module.
- Can Buffer Assignment Assistant needs a properties file for derivate-specific `Can` parameters.
- `SchM` Main function handling in the EB tresos AutoCore Generic `Rte` module.

The changed files of an EB tresos Studio plug-in:

► `plugin.xml` file

This file is extended to add the HandleIDs (AutoHandleId), the Calculate Service Needs (SvcAs_Trigger) wizard, the importer support and the BSWMD generation if necessary.

- Any non-working `source/header` file

If failures are found during integration tests, Elektrobit Automotive GmbH corrects the source files. This service depends on the IP/QP packages ordered. The changes are reported to the MCAL supplier and to the customer. For more information, see the `ImportantNotes.txt` file which is part of this EB tresos AutoCore delivery.

Each changed file has an original version and an updated version for the changes made by Elektrobit Automotive GmbH. These files can be identified by the `.origin_version` and `.EB_update` file extensions. With these two files you can verify the changes made by Elektrobit Automotive GmbH.

WARNING



Changes by Elektrobit Automotive GmbH

All modifications are provided for convenience only and Elektrobit Automotive GmbH does not assume any responsibility for your use of the modifications.

You may use the modification at your discretion and your own risk or use the unmodified files provided with this distribution.

Elektrobit Automotive GmbH notified the modifications to the supplier of the third-party code. You must get in contact with the third-party supplier in order to obtain official versions, e.g. updated versions with bug-fixes.

You must ensure that your use of the modified versions is permitted under your license agreement with the third-party supplier.
