User Manual

for S32K14X RESOURCE Driver

Document Number: UM2RESOURCEASR4.2 Rev0002R1.0.1
Rev. 1.0

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Chapter 1
Revision History

Table 1-1. Revision History

Revision	Date	Author	Description
1.0	13/07/2018	NXP MCAL Team	Updated version for ASR 4.2.2S32K14X1.0.1 Release

Chapter 2
Introduction

This User Manual describes NXP Semiconductors AUTOSAR ECU Resource Manager (RESOURCE) for S32K14X .

AUTOSAR RESOURCE driver configuration parameters are described in RESOURCE Driver chapter of this document. RESOURCE driver requirements and APIs are also described in RESOURCE Driver chapter of this document. The RESOURCE configuration plugin is described in the Tresos Configuration Plug-in chapter.

2.1 Supported Derivatives

The software described in this document is intented to be used with the following microcontroller devices of NXP Semiconductors .

Table 2-1. S32K14X Derivatives

NXP Semiconductors	s32k148_lqfp144, s32k148_lqfp176, s32k148_mapbga100, s32k146_lqfp144, s32k146_lqfp100, s32k146_lqfp64, s32k146_mapbga100, s32k144_lqfp100, s32k144_lqfp64, s32k144_mapbga100, s32k142_lqfp100, s32k142_lqfp64, s32k118_lqfp48, s32k118_lqfp64

All of the above microcontroller devices are collectively named as S32K14X .

2.2 Overview

AUTOSAR (AUTomotive Open System ARchitecture) is an industry partnership working to establish standards for software interfaces and software modules for automobile electronic control systems.

AUTOSAR

- paves the way for innovative electronic systems that further improve performance, safety and environmental friendliness.
- is a strong global partnership that creates one common standard: "Cooperate on standards, compete on implementation".
- is a key enabling technology to manage the growing electrics/electronics complexity. It aims to be prepared for the upcoming technologies and to improve cost-efficiency without making any compromise with respect to quality.
- facilitates the exchange and update of software and hardware over the service life of the vehicle.

2.3 About this Manual

This Technical Reference employs the following typographical conventions:

Boldface type: Bold is used for important terms, notes and warnings.

Italic font: Italic typeface is used for code snippets in the text. Note that C language modifiers such "const" or "volatile" are sometimes omitted to improve readability of the presented code.

Notes and warnings are shown as below:

Note

This is a note.

2.4 Acronyms and Definitions

Table 2-2. Acronyms and Definitions

Term	Definition
API	Application Programming Interface
ASM	Assembler Language
AUTOSAR	Automotive Open System Architecture
BSMI	Basic Software Make file Interface
C/CPP	C and C++ Source Code
DEM	Diagnostic Event Manager
DET	Development Error Tracer
N/A	Not Applicable
MCU	Micro Controller Unit
VLE	Variable Length Encoding

2.5 Reference List

Table 2-3. Reference List

#	Title	Version
1	Specification of RESOURCE Driver	AUTOSAR Release 4.2.2
2	S32K14X Reference Manual	Reference Manual, Rev. 7, 4/2018
3	S32K142 Mask Set Errata for Mask 0N33V (0N33V)	30/11/2017
4	S32K144 Mask Set Errata for Mask 0N57U (0N57U)	30/11/2017
5	S32K146 Mask Set Errata for Mask 0N73V (0N73V)	30/11/2017
6	S32K148 Mask Set Errata for Mask 0N20V (0N20V)	30/11/2017
7	S32K118 Mask Set Errata for Mask 0N97V (0N97V)	26/02/2018

Chapter 3
Driver

3.1 Requirements

RESOURCE is an EB Tresos specific module, so AUTOSAR only specifies some guidelines for the design and configuration. Other details for this module can be found in EB tresos Studio developer's guide. (See Table Reference List).

3.2 Driver Design Summary

The RESOURCE is only a configuration module so it does not contain any executable code. The configuration set in this module is used by EB Tresos Studio to load derivative specific data into all other driver configuraitons.

3.3 Hardware Resources

None.

3.4 Deviation from Requirements

Since this is a EB Tresos specific Module, there are no AUTOSAR requirements for the functionality. AUTOSAR provides some guidelines for design and configuration the RESOURCE Module.

Table 3-1. Deviations Status Column Description

Term	Definition
N/A	Not available
N/T	Not testable
N/S	Out of scope
N/I	Not implemented
N/F	Not fully implemented

Below table identifies the AUTOSAR requirements that are not fully implemented, implemented differently, or out of scope for the driver.

Table 3-2. Driver Deviations Table

Requirement	Status	Description	Notes
N/A	N/A	N/A	N/A

3.5 Driver limitations

None

3.6 Driver usage and configuration tips

None

3.7 Runtime Errors

The module does not generate any DEM errors at runtime.

Table 3-3. Runtime Errors

Function	Error Code	Condition triggering the error
N/A	N/A	N/A

3.8 Software specification

The following sections contains driver software specifications.

3.8.1 Define Reference

The RESOURCE is only a configuration module so it does not contain any constants or defines.

3.8.2 Enum Reference

The RESOURCE is only a configuration module so it does not contain any enumerations.

3.8.3 Function Reference

The RESOURCE is only a configuration module so it does not contain any functions.

3.8.4 Structs Reference

The RESOURCE is only a configuration module so it does not contain any data structures.

3.8.5 Types Reference

The RESOURCE is only a configuration module so it does not contain any data types.

3.9 Symbolic Names Disclaimer

All containers having the symbolic name tag set as true in the Autosar schema will generate defines like:

#define <Container_Short_Name> <Container_ID>

For this reason it is forbidden to duplicate the name of such containers across the MCAL configuration, or to use names that may trigger other compile issues (e.g. match existing #ifdefs arguments).

Chapter 4
Tresos Configuration Plug-in

This chapter describes the Tresos configuration plug-in for the RESOURCE Driver. The most of the parameters are described below.

4.1 Configuration elements of Resource

Included forms :

- CommonPublishedInformation
- ResourceGeneral

Table 4-1. Revision table

Revision	Date
4.1.0	2010-12-03

4.2 Form CommonPublishedInformation

Common container, aggregated by all modules. It contains published information about vendor and versions.

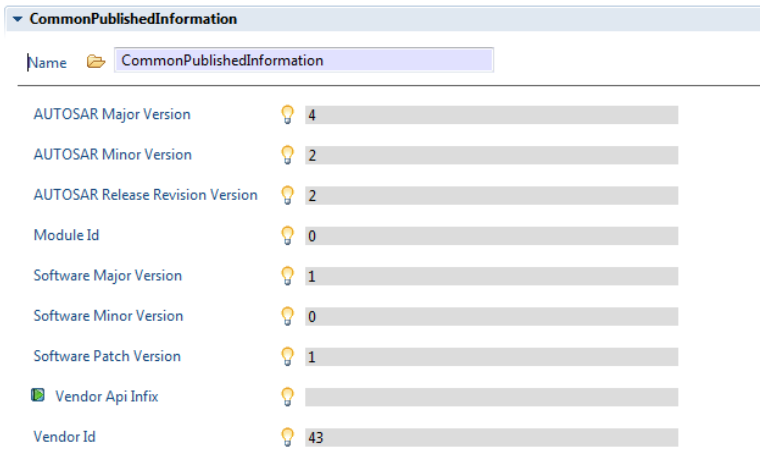

Figure 4-1. Tresos Plugin snapshot for CommonPublishedInformation form.

4.2.1 ArReleaseMajorVersion (CommonPublishedInformation)

Major version number of AUTOSAR specification on which the appropriate implementation is based on.

Table 4-2. Attribute ArReleaseMajorVersion (CommonPublishedInformation) detailed description

Property	Value
Label	AUTOSAR Major Version
Type	INTEGER_LABEL
Origin	Custom
Symbolic Name	false
Default	4
Invalid	Range >=4 <=4

4.2.2 ArReleaseMinorVersion (CommonPublishedInformation)

Minor version number of AUTOSAR specification on which the appropriate implementation is based on.

Table 4-3. Attribute ArReleaseMinorVersion (CommonPublishedInformation) detailed description

Property	Value
Label	AUTOSAR Minor Version
Type	INTEGER_LABEL
Origin	Custom
Symbolic Name	false
Default	2
Invalid	Range >=2 <=2

4.2.3 ArReleaseRevisionVersion (CommonPublishedInformation)

Revision version number of AUTOSAR specification on which the appropriate implementation is based on.

Table 4-4. Attribute ArReleaseRevisionVersion (CommonPublishedInformation) detailed description

Property	Value
Label	AUTOSAR Release Revision Version
Type	INTEGER_LABEL
Origin	Custom
Symbolic Name	false
Default	2
Invalid	Range >=2 <=2

4.2.4 ModuleId (CommonPublishedInformation)

Module ID of this module from Module List.

Table 4-5. Attribute ModuleId (CommonPublishedInformation) detailed description

Property	Value
Label	Module Id
Type	INTEGER_LABEL
Origin	Custom
Symbolic Name	false

Table continues on the next page...

Table 4-5. Attribute ModuleId (CommonPublishedInformation) detailed description (continued)

Property	Value
Default	0
Invalid	Range >=0 <=0

4.2.5 SwMajorVersion (CommonPublishedInformation)

Major version number of the vendor specific implementation of the module. The numbering is vendor specific.

Table 4-6. Attribute SwMajorVersion (CommonPublishedInformation) detailed description

Property	Value
Label	Software Major Version
Type	INTEGER_LABEL
Origin	Custom
Symbolic Name	false
Default	1
Invalid	Range >=1 <=1

4.2.6 SwMinorVersion (CommonPublishedInformation)

Minor version number of the vendor specific implementation of the module. The numbering is vendor specific.

Table 4-7. Attribute SwMinorVersion (CommonPublishedInformation) detailed description

Property	Value
Label	Software Minor Version
Type	INTEGER_LABEL
Origin	Custom
Symbolic Name	false
Default	0
Invalid	Range >=0 <=0

4.2.7 SwPatchVersion (CommonPublishedInformation)

Patch level version number of the vendor specific implementation of the module. The numbering is vendor specific.

Table 4-8. Attribute SwPatchVersion (CommonPublishedInformation) detailed description

Property	Value
Label	Software Patch Version
Type	INTEGER_LABEL
Origin	Custom
Symbolic Name	false
Default	1
Invalid	Range >=1 <=1

4.2.8 VendorApiInfix (CommonPublishedInformation)

In driver modules which can be instantiated several times on a single ECU, BSW00347 requires that the name of APIs is extended by the VendorId and a vendor specific name. This parameter is used to specify the vendor specific name. In total, the implementation specific name is generated as follows: <ModuleName>_>VendorId>_<VendorApiInfix><Api name from SWS>. E.g. assuming that the VendorId of the implementor is 123 and the implementer chose a VendorApiInfix of "v11r456" a api name Can_Write defined in the SWS will translate to Can_123_v11r456Write. This parameter is mandatory for all modules with upper multiplicity > 1. It shall not be used for modules with upper multiplicity =1.

Table 4-9. Attribute VendorApiInfix (CommonPublishedInformation) detailed description

Property	Value
Label	Vendor Api Infix
Type	STRING_LABEL
Origin	Custom
Symbolic Name	false
Default	
Enable	false

4.2.9 VendorId (CommonPublishedInformation)

Vendor ID of the dedicated implementation of this module according to the AUTOSAR vendor list.

Table 4-10. Attribute VendorId (CommonPublishedInformation) detailed description

Property	Value
Label	Vendor Id
Type	INTEGER_LABEL
Origin	Custom
Symbolic Name	false
Default	43
Invalid	Range >=43 <=43

4.3 Form ResourceGeneral

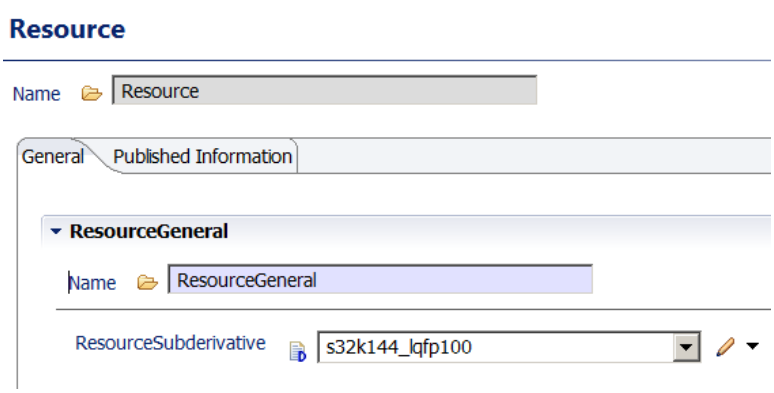

Figure 4-2. Tresos Plugin snapshot for ResourceGeneral form.

4.3.1 ResourceSubderivative (ResourceGeneral)

Sub-derivative selector for the current platform.

Table 4-11. Attribute ResourceSubderivative (ResourceGeneral) detailed description

Property	Value
Origin	Custom
Symbolic Name	false

Table continues on the next page...

Table 4-11. Attribute ResourceSubderivative (ResourceGeneral) detailed description (continued)

Property	Value
Default	One of the possible values from the "Range"
Range	s32k148_lqfp144, s32k148_lqfp176, s32k148_mapbga100, s32k146_lqfp144, s32k146_lqfp100, s32k146_lqfp64, s32k146_mapbga100, s32k144_lqfp100, s32k144_lqfp64, s32k144_mapbga100, s32k142_lqfp100, s32k142_lqfp64, s32k118_lqfp48, s32k118_lqfp64

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