

Document Title	SRS_DIODriver: Complete Change Documentation 4.3.0 - 4.3.1
Document Owner	AUTOSAR
Document Responsibility	AUTOSAR
Document Identification No	695
Document Status	Final
Part of AUTOSAR Standard	Classic Platform
Part of Standard Release	4.3.1

Table of Contents

1	SRS_DIODriver	3
1.1	Specification Item SRS_Dio_12003	3
1.2	Specification Item SRS_Dio_12004	9
1.3	Specification Item SRS_Dio_12005	16
1.4	Specification Item SRS_Dio_12006	22
1.5	Specification Item SRS_Dio_12007	29
1.6	Specification Item SRS_Dio_12008	35

1 SRS_DIODriver

1.1 Specification Item SRS_Dio_12003

Trace References:

RS_BRF_01864

Content:

Type:	Valid
Description:	The DIO Driver shall provide a service that writes a data word to the assigned DIO port.
Rationale:	Basic functionality
Applies to:	
Use Case:	Write access to an entire DIO port.
Supporting Material:	BMW Specification MCAL V1.0a, REQ MAL10.3.0

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

- RfC #78035: SRS requirements refer to BMW specificatons

Problem description:

AUTOSAR documents shall not relate to any particular company.

The requirements below reference various BMW specifications and have to be corrected.

Document: SRS_EEPROMDriver:

[SRS_Eep_00087] The EEPROM driver shall provide an asynchronous read function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00088] The EEPROM driver shall provide an asynchronous write function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel

function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00092] The EEPROM driver shall only write data if at least one data value of the affected erasable block is different from the data value to be written

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same time

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processing

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle

"Supporting Material: BMW Specification MCAL V1.0a"

Document: SRS_SPALGeneral:

[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism

"Supporting Material: BMW Specification MCAL V1.0a, [...]"

[SRS_SPAL_12057] All driver modules shall implement an interface for initialization

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.0"

Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella.

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

Chapter 5 "General Requirements on Basic Software"

The ECU application experience is taken from the following concrete applications:

Sunroof and power window ECU

Diesel engine ECU

ESP ECU

BMW, DC and VW standard software packages (Standard Core, Standard Software Platform, Standard Software Core) including OSEK OS, communication modules, bootloader, basic diagnostic functions for the domains listed above

Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different and incompatible communication layouts)."

Document: SRS_ADCDriver:

[SRS_Adc_12280] The ADC Driver shall allow a specific result access modes for each ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.2.0."

[SRS_Adc_12283] The ADC driver shall mask out information bits from the conversion result not belonging to the ADC value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.1."

[SRS_Adc_12819] The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12288] Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to the assigned DIO port

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[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

====

CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "-" in SRS_BSW_00305

====

CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

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CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

====

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064, SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.2 Specification Item SRS_Dio_12004

Trace References:

RS_BRF_01864

Content:

Type:	Valid
Description:	The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port.
Rationale:	Allow for simultaneous setting of a group of DIO channels of a DIO port that has multiple external assignments.
Applies to:	
Use Case:	Write access to DIO ports with multiple assignments.
Supporting Material:	BMW Specification MCAL V1.0a, REQ MAL10.3.1–

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

- RfC #78035: SRS requirements refer to BMW specifications

Problem description:

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Document: SRS_EEPROMDriver:

[SRS_Eep_00087] The EEPROM driver shall provide an asynchronous read function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00088] The EEPROM driver shall provide an asynchronous write function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00092] The EEPROM driver shall only write data if at least one data value of the affected erasable block is different from the data value to be written

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same

time

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processin

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle

"Supporting Material: BMW Specification MCAL V1.0a"

Document: SRS_SPALGeneral:

[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism

"Supporting Material: BMW Specification MCAL V1.0a, [...]"

[SRS_SPAL_12057] All driver modules shall implement an interface for initialization

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.0"

Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella.

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

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Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different and incompatible communication layouts)."

Document: SRS_ADCDriver:

[SRS_Adc_12280] The ADC Driver shall allow a specific result access modes for each ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.2.0."

[SRS_Adc_12283] The ADC driver shall mask out information bits from the

conversion result not belonging to the ADC value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.1."

[SRS_Adc_12819] The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12288] Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.0"

[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit

of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

====

CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "-" in SRS_BSW_00305

====

CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

====

CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

===

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064,
SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –
 –Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.3 Specification Item SRS_Dio_12005

Trace References:

RS_BRF_01864

Content:

Type:	Valid
Description:	The DIO Driver shall provide a service for write access to single DIO channels (specific port pins).
Rationale:	Efficient handling of single DIO channels.
Applies to:	
Use Case:	Write access to a particular DIO channel (port pin).
Supporting Material:	BMW Specification MCAL V1.0a, REQ MAL10.5.0–

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

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"Supporting Material: BMW Specification MCAL V1.0a"

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"Supporting Material: BMW Specification MCAL V1.0a"

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"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

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[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations

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[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

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[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

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Agreed solution:

CP_SRS_ADCCDriver

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SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

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CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "–" in SRS_BSW_00305

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CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

====

CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

====

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064, SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.4 Specification Item SRS_Dio_12006

Trace References:

RS_BRF_01864

Content:

Type:	Valid
Description:	The DIO Driver shall provide a service for reading a data word from the assigned DIO port.
Rationale:	Basic functionality

Applies to:	
Use Case:	Read access to an entire DIO port.
Supporting Material:	BMW Specification MCAL V1.0a, REQ MAL10.4.0

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

- RfC #78035: SRS requirements refer to BMW specifications

Problem description:

AUTOSAR documents shall not relate to any particular company. The requirements below reference various BMW specifications and have to be corrected.

Document: SRS_EEPROMDriver:

[SRS_Eep_00087] The EEPROM driver shall provide an asynchronous read function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00088] The EEPROM driver shall provide an asynchronous write function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00092] The EEPROM driver shall only write data if at least one data value of the affected erasable block is different from the data value to be written

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same time

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processin

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle

"Supporting Material: BMW Specification MCAL V1.0a"

Document: SRS_SPALGeneral:

[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism

"Supporting Material: BMW Specification MCAL V1.0a, [...]"

[SRS_SPAL_12057] All driver modules shall implement an interface for initialization

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.0"

Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella.

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

Chapter 5 "General Requirements on Basic Software"

The ECU application experience is taken from the following concrete applications:

Sunroof and power window ECU

Diesel engine ECU

ESP ECU

BMW, DC and VW standard software packages (Standard Core, Standard Software Platform, Standard Software Core) including OSEK OS, communication modules, bootloader, basic diagnostic functions for the domains listed above

Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different and incompatible communication layouts)."

Document: SRS_ADCDriver:

[SRS_Adc_12280] The ADC Driver shall allow a specific result access modes for each ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.2.0."

[SRS_Adc_12283] The ADC driver shall mask out information bits from the conversion result not belonging to the ADC value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.1."

[SRS_Adc_12819] The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12288] Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.0"

[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

====

CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "-" in SRS_BSW_00305

====

CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

====

CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

===

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064, SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.5 Specification Item SRS_Dio_12007

Trace References:

RS_BRF_01864

Content:

Type:	Valid
Description:	The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port.
Rationale:	Basic functionality
Applies to:	
Use Case:	Read access to DIO ports with multiple assignments.
Supporting Material:	BMW Specification MCAL V1.0a, REQ MAL10.4.1–

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

- RfC #78035: SRS requirements refer to BMW specifications

Problem description:

AUTOSAR documents shall not relate to any particular company.

The requirements below reference various BMW specifications and have to be corrected.

Document: SRS_EEPROMDriver:

[SRS_Eep_00087] The EEPROM driver shall provide an asynchronous read

function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00088] The EEPROM driver shall provide an asynchronous write function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00092] The EEPROM driver shall only write data if at least one data value of the affected erasable block is different from the data value to be written

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same time

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processin

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle

"Supporting Material: BMW Specification MCAL V1.0a"

Document: SRS_SPALGeneral:

[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism

"Supporting Material: BMW Specification MCAL V1.0a, [...]"

[SRS_SPAL_12057] All driver modules shall implement an interface for initialization

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.0"

Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella.

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

Chapter 5 "General Requirements on Basic Software"

The ECU application experience is taken from the following concrete applications:

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Diesel engine ECU

ESP ECU

BMW, DC and VW standard software packages (Standard Core, Standard Software Platform, Standard Software Core) including OSEK OS, communication modules, bootloader, basic diagnostic functions for the domains listed above

Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different and incompatible communication layouts)."

Document: SRS_ADCDriver:

[SRS_Adc_12280] The ADC Driver shall allow a specific result access modes for each ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.2.0."

[SRS_Adc_12283] The ADC driver shall mask out information bits from the conversion result not belonging to the ADC value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.1."

[SRS_Adc_12819] The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12288] Based on the channel group configuration the ADC driver

shall be able to handle the buffers of stream jobs

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.0"

[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

====

CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "-" in SRS_BSW_00305

====

CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

====

CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

====

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level

configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064,
SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1

1.6 Specification Item SRS_Dio_12008

Trace References:

RS_BRF_01864

Content:

Type:	Valid
Description:	The DIO Driver shall provide a service for reading one bit of an assigned DIO channel (specific port pin).
Rationale:	Efficient handling of single DIO channels.
Applies to:	
Use Case:	Read access to a particular DIO channel.
Supporting Material:	BMW Specification MCAL V1.0a, REQ MAL10.6.0–

RfCs affecting this spec item between releases 4.3.0 and 4.3.1:

- RfC #78035: SRS requirements refer to BMW specifications

Problem description:

AUTOSAR documents shall not relate to any particular company.

The requirements below reference various BMW specifications and have to be corrected.

Document: SRS_EEPROMDriver:

[SRS_Eep_00087] The EEPROM driver shall provide an asynchronous read function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00088] The EEPROM driver shall provide an asynchronous write function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00089] The EEPROM driver shall provide an asynchronous erase function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00090] The EEPROM driver shall provide a synchronous cancel function

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00091] The EEPROM driver shall provide a synchronous function which returns the job processing status

"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00096] EEPROM driver static shall be configured
"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00092] The EEPROM driver shall only write data if at least one data value of the affected erasable block is different from the data value to be written
"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00094] The EEPROM driver shall handle the EEPROM memory segmentation
"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_00095] The EEPROM driver shall handle only one job at the same time
"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12047] The EEPROM driver shall provide a function that has to be called for job processin
"Supporting Material: BMW Specification MCAL V1.0a"

[SRS_Eep_12050] The job processing function of the EEPROM driver shall process only as much data as the EEPROM hardware can handle
"Supporting Material: BMW Specification MCAL V1.0a"

Document: SRS_SPALGeneral:

[SRS_SPAL_12056] All driver modules shall allow the static configuration of notification mechanism
"Supporting Material: BMW Specification MCAL V1.0a, [...]"

[SRS_SPAL_12057] All driver modules shall implement an interface for initialization
"Supporting Material: BMW Specification MCAL V1.0a, MAL1.0.0"

[SRS_SPAL_12063] All driver modules shall only support raw value mode
"Supporting Material: BMW Specification MCAL V1.0a, MAL1.6.0"

[SRS_SPAL_12064] All driver modules shall raise an error if the change of the operation mode leads to degradation of running operations
"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.2"

SRS_SPAL_12067 All driver modules shall set their wake-up conditions depending on the selected operation mode

"Supporting Material: BMW Specification MCAL V1.0a, MAL1.5.0"

Document: SRS_PWMDriver:

[SRS_Pwm_12293] The PWM driver shall allow the static configuration of PWM channel properties

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4 The idle level configuration covers the active phase requirement from Hella.

[SRS_Pwm_12295] The PWM driver shall provide a service for setting the duty cycle of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.x"

[SRS_Pwm_12297] The PWM driver shall provide a service for setting the period of a selected channel

"Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0; Kojak movies (in case you do not know Kojak)"

Document: SRS_BSWGeneral:

Chapter 5 "General Requirements on Basic Software"

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BMW, DC and VW standard software packages (Standard Core, Standard Software Platform, Standard Software Core) including OSEK OS, communication modules, bootloader, basic diagnostic functions for the domains listed above

Infotainment control ECU

[SRS_BSW_00305] Data types naming convention

"Supporting Material: BMW Standard Core Programming Guidelines"

Document: SRS_COM:

[SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile-

or build-time, particularly for future concepts running at BMW (reuse an ECU within another vehicle product line with different and incompatible communication layouts)."

Document: SRS_ADCDriver:

[SRS_Adc_12280] The ADC Driver shall allow a specific result access modes for each ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.2.0."

[SRS_Adc_12283] The ADC driver shall mask out information bits from the conversion result not belonging to the ADC value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.1."

[SRS_Adc_12819] The ADC Driver shall provide a synchronous service for reading the last valid conversion results of the selected channel group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12291] The ADC Driver shall provide a service for querying the status of an ADC Channel Group

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12288] Based on the channel group configuration the ADC driver shall be able to handle the buffers of stream jobs

"Supporting Material: BMW Specification MCAL V1.0a."

[SRS_Adc_12292] If the ADC provides signed values, the ADC driver shall put the sign bit into the MSB of the return value

"Supporting Material: BMW Specification MCAL V1.0a, MAL14.4.2."

Document: SRS_DIODriver:

[SRS_Dio_12003] The DIO Driver shall provide a service that writes a data word to the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.0"

[SRS_Dio_12004] The DIO Driver shall provide a service that writes a selectable number of adjoining bits to an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.3.1"

[SRS_Dio_12005] The DIO Driver shall provide a service for write access to

single DIO channels

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12006] The DIO Driver shall provide a service for reading a data word from the assigned DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.0"

[SRS_Dio_12007] The DIO Driver shall provide a service for reading a selectable number of adjoining bits from an assigned part of a DIO port

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.4.1"

[SRS_Dio_12008] The DIO Driver shall provide a service for reading one bit of an assigned DIO channel

"Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.6.0"

Agreed solution:

CP_SRS_ADCDriver

SRS_Adc_12280, SRS_Adc_12283, SRS_Adc_12819, SRS_Adc_12291,
SRS_Adc_12288, SRS_Adc_12292

Change from:

Supporting Material: BMW Specification MCAL V1.0a, [...]

to:

Supporting Material: –

====

CP_SRS_BSWGeneral

replace "BMW Standard Core Programming Guidelines" by "-" in SRS_BSW_00305

===

CP_SRS_COM

Update [SRS_Com_00177] AUTOSAR COM and LargeDataCOM shall support multiple configuration stages

"Use Case: It must be possible to configure the handled bus frames after compile- or build-time, for example when reusing an ECU within another vehicle product line with different and incompatible communication layouts."

====

CP_SRS_DIODriver

SRS_Dio_12003, SRS_Dio_12004, SRS_Dio_12005, SRS_Dio_12006,
SRS_Dio_12007, SRS_Dio_12008

Change from:

Supporting Material: BMW Specification MCAL V1.0a, REQ MAL10.x.x

to:

Supporting Material: –

====

CP_SRS_EEPROMDriver

SRS_Eep_00087, SRS_Eep_00088, SRS_Eep_00089, SRS_Eep_00090,
SRS_Eep_00091, SRS_Eep_00092, SRS_Eep_00094, SRS_Eep_00095,
SRS_Eep_00096, SRS_Eep_12047, SRS_Eep_12050

Change from:

Supporting Material: BMW Specification MCAL V1.0a

to:

Supporting Material: –

===

CP_SRS_PWMDriver

SRS_Pwm_12293:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.1.4. The idle level configuration covers the active phase requirement from Hella.

Change to:

Supporting Material: –

SRS_Pwm_12295:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.x

Change to:

Supporting Material: –

SRS_Pwm_12297:

Change from:

Supporting Material: BMW Specification MCAL V1.0a, MAL13.8.0. Kojak movies (in case you do not know Kojak)

Change to:

Supporting Material: –

===

CP_SRS_SPALGeneral

SRS_SPAL_12056, SRS_SPAL_12057, SRS_SPAL_12063, SRS_SPAL_12064,
SRS_SPAL_12067

Change from:

Supporting Material: BMW Specification MCAL V1.0a, ...

to:

Supporting Material: –

–Last change on issue 78035 comment 14–

BW-C-Level:

Application	Specification	Bus
1	1	1