

Document Title	Standardization of Central Locking Application Interfaces
Document Owner	AUTOSAR GbR
Document Responsibility	AUTOSAR GbR
Document Version	1.0.1
Document Status	Final
Part of Release	2.1
Revision	0014

Document Change History			
Date	Version	Changed by	Change Description
24.01.2007	1.0.1	AUTOSAR Administration	<ul style="list-style-type: none">• “Advice for users” revised• “Revision Information” added• Legal disclaimer revised
05.12.2006	1.0.0	AUTOSAR Administration	Initial Release

Page left intentionally blank

Disclaimer

Any use of these specifications requires membership within the AUTOSAR Development Partnership or an agreement with the AUTOSAR Development Partnership. The AUTOSAR Development Partnership will not be liable for any use of these specifications.

Following the completion of the development of the AUTOSAR specifications commercial exploitation licenses will be made available to end users by way of written License Agreement only.

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

The word AUTOSAR and the AUTOSAR logo are registered trademarks.

Copyright © 2004-2006 AUTOSAR Development Partnership. All rights reserved.

Advice to users of AUTOSAR Specification Documents:

AUTOSAR Specification Documents may contain exemplary items (exemplary reference models, "use cases", and/or references to exemplary technical solutions, devices, processes or software).

Any such exemplary items are contained in the Specification Documents for illustration purposes only, and they themselves are not part of the AUTOSAR Standard. Neither their presence in such Specification Documents, nor any later documentation of AUTOSAR conformance of products actually implementing such exemplary items, imply that intellectual property rights covering such exemplary items are licensed under the same rules as applicable to the AUTOSAR Standard.

Table of Content

1	Purpose of this Document	7
2	Prerequisites	8
2.1	Naming Convention	8
2.2	Related Documents	9
3	Central locking – Decomposition Overview	10
3.1	Central Locking Decomposition	10
3.1.1	CentralLockingMaster	10
3.1.2	HMI	10
3.1.3	RemoteKey / Keyless Access	11
3.1.4	Doorlocks	11
3.1.5	GloveBox / Tankflap	12
3.1.6	Intra-Domain-Interfaces	12
3.1.7	Inter-Domain-Interfaces	12
3.1.8	ProfileManager	12
3.2	Personalization Issues	12
3.3	Design Rationale	13
3.4	Known Defects	13
4	Interface Descriptions	14
4.1	Overview on Inter Domain Ports	14
4.1.1	Ports referencing StaOperationMode	14
4.1.2	Ports referencing StaCrash	14
4.1.3	Ports referencing VehicleSpeed	14
4.1.4	Ports referencing StaEnergyMgnt	14
4.1.5	Ports referencing BatteryVoltage	14
4.2	Overview on Intra Domain Ports	15
4.2.1	Ports referencing ReqAccessMechanicalKey	15
4.2.2	Ports referencing ReqAccessRemoteKey	15
4.2.3	Ports referencing ReqAccessKeyless	15
4.2.4	Ports referencing StaProfilePerson	15
4.2.5	Ports referencing ReqReleaseLatch	16
4.2.6	Ports referencing ReqToggle	16
4.2.7	Ports referencing ReqHotelMode	16
4.2.8	Ports referencing StaHotelMode	16
4.2.9	Ports referencing StaCentralLocking	16
4.2.10	Ports referencing ReqLockingFeedback	17
4.2.11	Ports referencing ReqOpenClose	17
4.2.12	Ports referencing ReqLockUnlock	17
4.2.13	Ports referencing StaDoor	17
4.2.14	Ports referencing StaOpenClosed	17
4.2.15	Ports referencing StaLock	18
4.2.16	Ports referencing CmdLock	18
4.2.17	Ports referencing CmdChildProt	18
4.2.18	Ports referencing StaChildProt	18

4.2.19	Ports referencing CmdPullAid	18
4.2.20	Ports referencing DiagLock	19
4.2.21	Ports referencing DiagChildProt	19
4.2.22	Ports referencing DiagPullAid	19
4.2.23	Ports referencing HMI Diagnostic-Interfaces	19
4.2.24	Ports referencing DiagnosticMonitor	19
4.3	Referenced Intra Domain Interfaces	20
4.3.1	ReqAccessMechanicalKey	20
4.3.2	ReqAccessRemoteKey	20
4.3.3	ReqAccessKeyless	21
4.3.4	StaProfilePerson	22
4.3.5	ReqReleaseLatch	22
4.3.6	ReqToggle	22
4.3.7	ReqHotelMode	23
4.3.8	StaHotelMode	23
4.3.9	StaCentralLocking	24
4.3.10	ReqLockingFeedback	24
4.3.11	ReqOpenClose	25
4.3.12	ReqLockUnlock	25
4.3.13	StaDoor	25
4.3.14	StaOpenClosed	26
4.3.15	StaLock	26
4.3.16	CmdLock	26
4.3.17	CmdChildProt	27
4.3.18	StaChildProt	27
4.3.19	CmdPullAid	27
4.3.20	DiagLock	28
4.3.21	DiagChildProt	28
4.3.22	DiagPullAid	29
4.3.23	DiagHotelMode	29
4.3.24	DiagReleaseLatch	29
4.3.25	DiagToggle	30
4.4	Type Declarations	31
4.4.1	t_onoff	31
4.4.2	t_openclosed	31
5	Specification of Components	32
5.1	Central Locking Master	32
5.2	HMI	36
5.3	Doors	38
5.4	TankFlap	42
5.5	Glovebox	43
5.6	Further Interfaces	44
6	APPENDIX	46
6.1	Inter Domain Interfaces	46
6.1.1	StaOperationMode	46
6.1.2	StaCrash	48
6.1.3	StaEnergyMgmt	48

6.1.4	VehicleSpeed.....	50
6.1.5	BatteryVoltage.....	50
6.2	Mechanical decomposition door	51
6.3	Mechanical actions vs. standardized interfaces (door only).....	52

1 Purpose of this Document

This document describes a basic architecture of the central locking functionality.

It decomposes the central locking functionality into several sensor and actuator software components of the central locking functionality, the central locking master component and their related interfaces.

Section 3 provides the hierarchical decomposition of the central locking functionality divided in central locking manager, sensor and actuator components.

Section 4 deals with interfaces from and to the outside world of the central locking functionality. It is split up into Inter- and Intra- domain interfaces.

Section 5 describes require & provide ports.

This document is not intended to provide a full description of the interfaces mentioned, it is rather an overview and a guide where to find the interfaces.

The following topics are intentionally not covered in this document as they are out of scope at this time:

- personalization parameters and interfaces (consider remarks of 3.2 Personalization Issues)
- variant coding
- diagnostic coding
- Provided ports referencing Inter-Domain Interfaces

2 Prerequisites

This section gives reference to related AUTOSAR documents as well as an introduction to the templates used in this document to describe ports, types and interfaces.

Other Work-Packages are – at the time of writing this document – busily crafting a formal approach to describe an AUTOSAR Software Component, therefore a rather informative approach is chosen in this document. Once the above mentioned formal Software Component template is available, the content of this document has to be transferred to the formal description. Nevertheless, we expect that we generally also need a design description similar to this document for all further software component groups in order to provide a basis for discussion with company experts.

2.1 Naming Convention

Guidelines for the naming convention:

- Type safety, i.e. interface definitions reflect usage/classification. Implausible connections are more difficult to make unintentionally.
- Easy finding of names (e.g. data element name is just one of “status“, “command“, “request“, “display“)
- Keep names simple whenever possible. Extend names only if required (e.g. multiple data elements).

	Port	Interface	Data element
Single occurrence	Content	Operation + Content	Operation
Example	LowBeamInd ParkingLightsInd	DisExtLight DisParkingLights	display display

	Port	Interface	Data element
Multiple occurrence	Content + (ExtendedContent)	Operation + Content	Operation + Content
Example for multiple ports	[IntLight] Activation	CmdBrightness	command

Semantic of keywords (e.g. “operation”) in the interface/ data element names:

- **Cmd**_(command) do/activate something (e. g. from Master to Actuator)
- **Req**_(request) demand to do/activate something (e. g. from Sensor to Master)
- **Sta**_(status) get functional status information
- **Hmi** user request (e.g. from driver via switch, touch screen,...)
- **Dis**_(display) feedback status for driver information display
- **Err**_(failure) operative/defective failure feedback (from actuator to master)

The “content” consists of one or more self-explaining catchwords.

2.2 Related Documents

[1] Technical Overview

[https://svn.autosar.org/repos/10Releases/
AUTOSAR_TechnicalOverview.pdf](https://svn.autosar.org/repos/10Releases/AUTOSAR_TechnicalOverview.pdf)

[2] Methodology

[https://svn.autosar.org/repos/10Releases/
AUTOSAR_Methodology.ppt](https://svn.autosar.org/repos/10Releases/AUTOSAR_Methodology.ppt)

[3] Specification of the Virtual Functional Bus

[https://svn.autosar.org/repos/10Releases/
AUTOSAR_VirtualFunctionBus.pdf](https://svn.autosar.org/repos/10Releases/AUTOSAR_VirtualFunctionBus.pdf)

3 Central locking – Decomposition Overview

The CentralLocking software component group controls the central locking functionality of a car. CentralLocking receives driver wishes, senses the environment and controls the behavior of the central locking sources of a car.

3.1 Central Locking Decomposition

Components related to CentralLocking are bundled in several blocks.

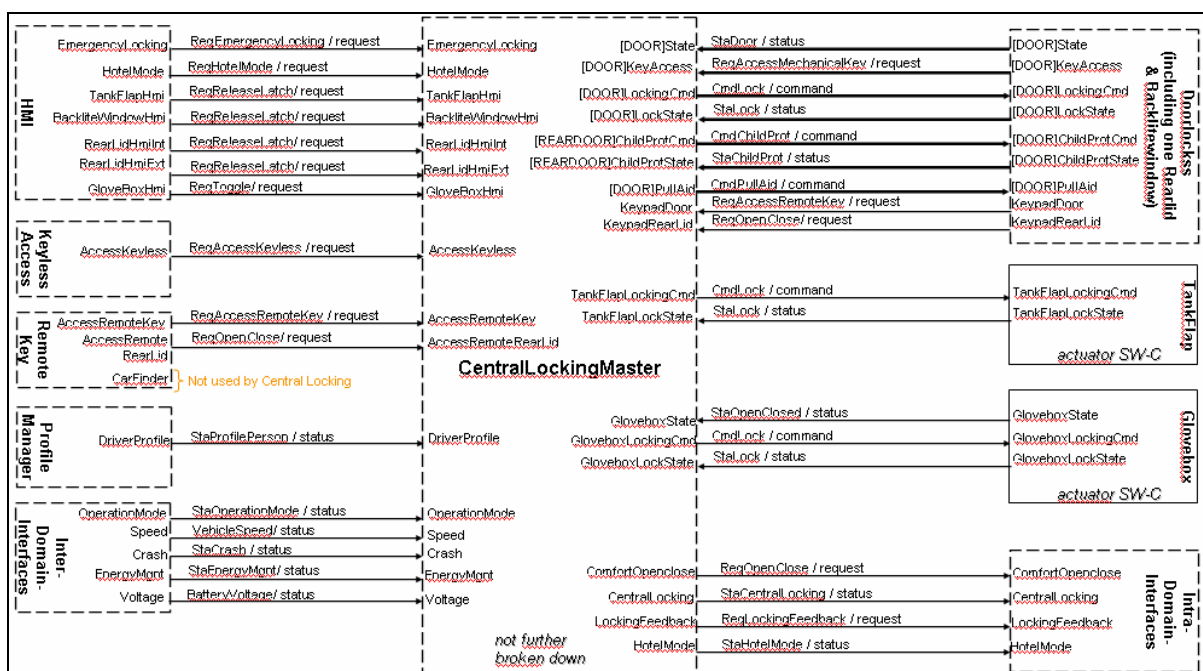


Fig 3.1-1 shows the decomposition of central locking architecture. Arrows indicate data flows

Remark: This decomposition is used for explanation of standardized interfaces

3.1.1 CentralLockingMaster

Inside CentralLockingMaster the core functionality is implemented (not further broken down).

3.1.2 HMI

HMI contains all other sensor components that detect the drivers demands related to central locking. Please note that “HMI” is used only as non-normative description.

3.1.3 RemoteKey / Keyless Access

Driver requests to access the car might be provided by RemoteKey or Keyless Access System (including profile information for personalization) or mechanical door locks (not further broken down).

3.1.4 Doorlocks

Out of the doorlocks the information is generated whether the corresponding door is open or closed, locked or unlocked as well as information on mechanical door lock(s) and key position.

Lock-commands as well as commands for pull aids and setting the child-protection-mechanism are also sent to the doors. Same applies for RearLid and BackliteWindow. See also “mechanical decomposition door” and “mechanical events vs. standardized interfaces” (see Glossary).

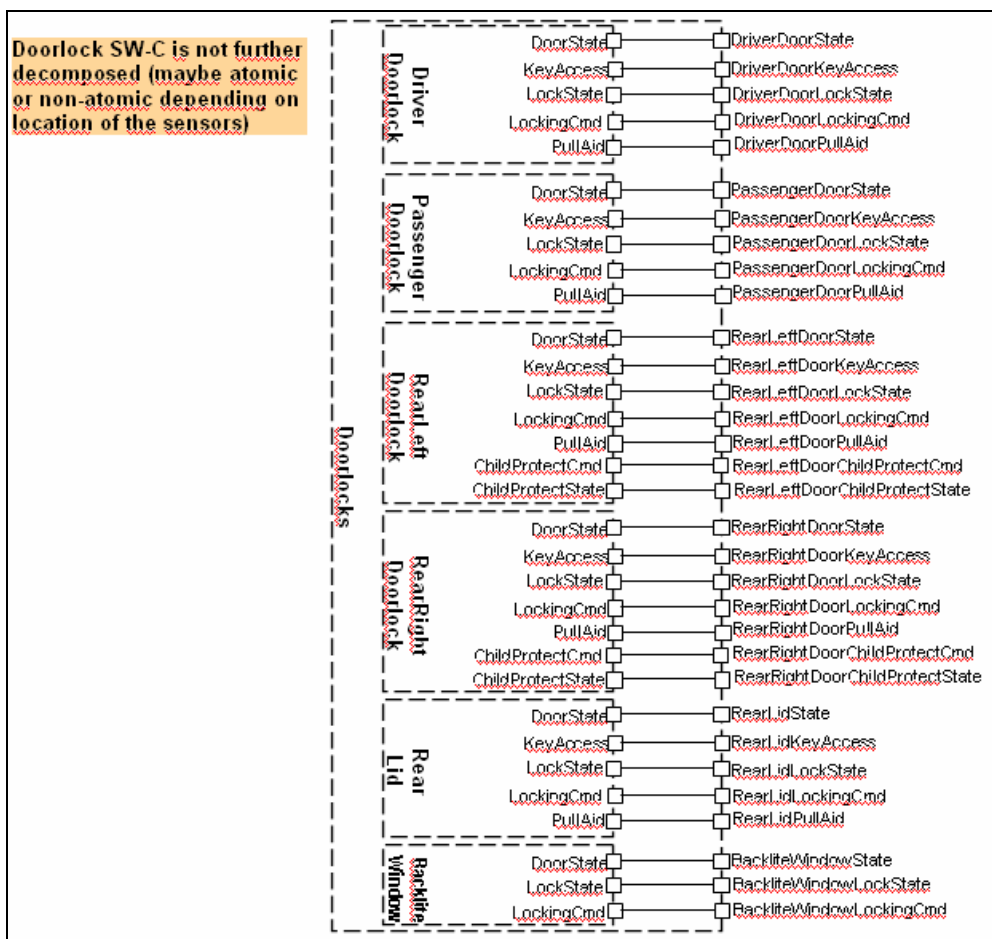


Fig 3.1-2 shows the further Decomposition of Doors.

3.1.5 GloveBox / Tankflap

Other blocks like `Glovebox` and `TankFlap` provide status information and (partially) receive locking commands. There is no use case for engine-hood.

3.1.6 Intra-Domain-Interfaces

Through `Intra-Domain-Interfaces` intra-domain information is provided to other body and comfort systems (please note that scope of this document is only central locking).

Examples:

- Comfort open/close functionality is requested from windows as well as sunroof (see for example separate documentation for `WindowControl`).
- Visual feedback is requested from Blink Master (see separate documentation for `ExteriorLight`).

3.1.7 Inter-Domain-Interfaces

Through `Inter-Domain-Interfaces` inter-domain status information is exchanged.

3.1.8 ProfileManager

It is supposed only a single source coordinates profile Ids from certain personalization sources (remote key, keyless etc.). The `ProfileManager` is NOT in scope of this document.

3.2 Personalization Issues

It is supposed that the Central Locking Master usually is personalizable.

Known use cases for personalization of central locking functionality are for example:

- “Speedlock”: lock all doors at (or above) a certain vehicle speed.
- Selective door opening: open only driver door or open all doors.
- Enable/disable certain central locking functionality (e.g. visual feedback).

3.3 Design Rationale

This design standard is the AUTOSAR-architecture (VFB-view) for Central Locking. It provides a decomposition into SW-Cs and a list of standardized interfaces related to Central Locking.

This decomposition is limited in granularity to sensor components, adapter components, the core functionality and actuator components. It is not intended to focus only on event driven implementations e.g. the standardization should be also open for “cyclic implementations” sending out periodically its information (therefore some interfaces are supposed to contain as a value e.g. “idle”).

The intent is for the decomposition to get not to atomic SWCs but to “purchasable” SW-Cs (as long as these are not sensor/actuator SW-Cs they are realized as AUTOSAR compositions for formal reasons). These SW-Cs will be obtained as a unit so that all the internal (and hence not AUTOSAR standardized) interfaces are controlled by a single vendor, even if there are SW-Cs within the bought unit that reside on different ECUs. All interfaces between SW-Cs from different vendors should be standardized.

In addition, all ports are described, showing their AUTOSAR data qualities. Invalidation (where needed) is defined as in-band invalidation. Init values are specified where appropriate e.g. “off”, “idle”, “undefined”, “unknown” ... Where standardization is inappropriate, recommendations may be provided.

There might be different approaches on providing the information available inside the locking system (door access, keyless access, remote access, ...) to other functionalities (not covered by this document).

A centralized architecture would imply routing this information through the central locking system which takes the advantages:

- central locking directly coordinates behavior of other functionalities (like interior light, mirror adjustment, ...) as simultaneous reaction on lock/unlock events.
- redundant logic (e.g. in order to provide same “reaction” on pressing a certain remote key) is avoided.

A more distributed architecture might avoid that ...

- a fault inside central locking system may “disable” behavior of other functionalities
- some (future) use cases might be cut in other functionality (or would demand adaptation inside central locking system for customization inside other functionalities).

3.4 Known Defects

Data type definitions that are only used for one data element are currently not defined as a type but inserted directly into the data element description table. In future releases, these types will be declared explicitly.

4 Interface Descriptions

This chapter gives an overview on ports and referenced interfaces. The intention for the subsequent description is to document common use cases for a better understanding of the standardized interfaces.

4.1 Overview on Inter Domain Ports

Please note that the referenced Inter Domain Interfaces are subject to change (for details see chapter 6.1)

4.1.1 Ports referencing StaOperationMode

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster OperationMode	some functions of central locking may depend on the status of a certain operational mode. (example use case: safe lock only possible when ignition off)

4.1.2 Ports referencing StaCrash

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster Crash	use case: unlock all doors in case of an accident

4.1.3 Ports referencing VehicleSpeed

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster Speed	use case: lock all doors at (or above) a certain vehicle speed

4.1.4 Ports referencing StaEnergyMgnt

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster EnergyMgnt	Restricted lock/unlock activity in case of low battery capacity

4.1.5 Ports referencing BatteryVoltage

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster Voltage	use case: crash unlock has to be done regardless of the battery voltage (therefore directly connected to CentralLockingMaster)

4.2 Overview on Intra Domain Ports

4.2.1 Ports referencing ReqAccessMechanicalKey

Used By	Reason, comment
CentralLockingMaster [Door]KeyAccess (*)	information about the current key position or cylinder state (mechanical cylinder) used for (un)lock request by mechanical door lock (including lock of rear lid). Example use case: Mechanical key can also request comfort close and comfort open. The request for comfort open may not always be allowed, depending on the security status of the vehicle.
Doors [Door]KeyAccess (*)	

(*) whereas [Door] is one out of: DriverDoor, PassengerDoor, RearLeftDoor, Rear-RightDoor, RearLid. Please note that cars with sliding door(s) instead of rear door(s) may also provide this information!

4.2.2 Ports referencing ReqAccessRemoteKey

Used By	Reason, comment
CentralLockingMaster AccessRemoteKey	user access request by remote key resulting in car is locked or unlocked by remote key.
RemoteKey AccessRemoteKey	
CentralLockingMaster KeypadDoor	Use case for keypad: US cars (a car may have both keypad and mechanical key access); known actions: idle, unlock, selected unlock, lock, safe
Doors KeypadDoor	

HINT: There is a separate rear lid request generated by remote key (see ReqOpen-Close)

4.2.3 Ports referencing ReqAccessKeyless

Used By	Reason, comment
CentralLockingMaster AccessKeyless	user access request from a keyless entry system. car is locked or unlocked by keyless-entry system.
KeylessAccess AccessKeyless	

4.2.4 Ports referencing StaProfilePerson

Used By	Reason, comment
CentralLockingMaster DriverProfile	personalization profile detected by profile manager (including personalization profile derived from HMI; example use case: finger print sensor).

HINT: There is no personalization out of transponder of mechanical key

4.2.5 Ports referencing ReqReleaseLatch

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster RearLidHmiInt/ Rear- LidHmiExt	user request to release the latch of rear lid from inside/outside the car. Depending on mechanical design this request might result in either unlocking or opening of the rear lid or opening the backlite window.
CentralLockingMaster TankFlapHmi/ BackliteWindowHMI	user request to unlock the tank flap (or open backlite window). Depending on mechanical design this request might result in either unlocking or opening of the tank flap. Currently there is no known use case for a separate user request to lock the tank flap.

4.2.6 Ports referencing ReqToggle

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster GloveboxHmi	user request to lock / unlock the glove box

4.2.7 Ports referencing ReqHotelMode

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster HotelMode	user request to activate hotel mode of the central locking system. If hotel mode is activated certain functionality are disabled e.g. unlock of glove box/trunk is not possible.

4.2.8 Ports referencing StaHotelMode

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster	status feedback if hotel mode is activated or not by central locking system

4.2.9 Ports referencing StaCentralLocking

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster	information which status the central door locking currently has. Example use cases: This information may be used by power management or for activation of fuel pump (when the car is opened).

HINT: By means of the interface StaCentralLocking the basic behaviour of other functionalities on lock/unlocking activities might be coordinated simultaneously. To some extend interfaces like ReqAccessKeyLess, AccessRemoteKey, ... might not be necessarily used by other functionalities. On the other hand not all (maybe future) use cases can be covered by only referring to StaCentralLocking. Thus other functionalities may also directly access ReqAccessKeyLess, AccessRemoteKey, ... in order to not inhibit certain special features (e.g. direct folding of mirrors only as long as a certain remote key is pressed).

4.2.10 Ports referencing ReqLockingFeedback

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster	central locking system requests special blinking for visual feedback according to the most recent lock command. This feature might be personalizable.
ExteriorLight(Blink Master)	

4.2.11 Ports referencing ReqOpenClose

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster ComfortOpenClose	Request from the locking system to windows / convertible roofs / sun-roofs to execute the comfort open/close feature. Generated by the Central locking Master from for example the evaluation of the mechanical key cylinders.
CentralLockingMaster AccessRemoteRearLid	Rear lid request generated e.g. by remote key receiver unit. The content is derived from the user request by remote key.
RemoteKey AccessRemoteRearLid	
CentralLockingMaster KeypadRearLid	Use case for keypad: US cars - triggering the rear lid opening and closing (see also ReqAccessRemoteKey)
Doors KeypadRearLid	

Hint: This interface is supposed to be a request (not a command) because for example the sunroof might decide not execute the comfort open/close feature due to contradictory requests.

4.2.12 Ports referencing ReqLockUnlock

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster EmergencyLocking	user request for (un)locking the car from inside switch

4.2.13 Ports referencing StaDoor

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster [Door]State (*)	example use case: "mechanical override" (e.g. CentralLockingMaster detects manual opening by a internal door handle). CentralLockingMaster has also to detect manual opening of rear lid or backlite_window. Might be also used by pull aid application (see status "ajar").

(*) whereas [Door] is one out of: DriverDoor, PassengerDoor, RearLeftDoor, Rear-RightDoor, RearLid, BackliteWindow

4.2.14 Ports referencing StaOpenClosed

<i>Used By</i>	<i>Reason, comment</i>
CentralLockingMaster GloveboxState	status information whether glove box is open or closed. Example use case: Switch on glove box illumination when glove box is opened.

Glovebox GloveboxState	
---------------------------	--

4.2.15 Ports referencing StaLock

Used By	Reason, comment
CentralLockingMaster [DOOR]LockState (*) TankFlapLockState GloveboxLockState	This status is provided to the central locking in order to unlock/lock/save the other latches of the vehicle. It does not distinguish between the source through which it was operated (mechanical key, the internal motor or the door knob). According to the status information of the rear lid latch the CentralLockingMaster may unlock/lock/save the other latches of the vehicle.

(*) whereas [Door] is one out of: DriverDoor, PassengerDoor, RearLeftDoor, RearRightDoor, RearLid, BackliteWindow

4.2.16 Ports referencing CmdLock

Used By	Reason, comment
CentralLockingMaster [DOOR]LockingCmd (*)	command to the actuator component of a door or the rear lid to execute the command unlock, lock or safe at the latch

(*) whereas [Door] is one out of: DriverDoor, PassengerDoor, RearLeftDoor, RearRightDoor, RearLid

4.2.17 Ports referencing CmdChildProt

Used By	Reason, comment
CentralLockingMaster [Reardoor]ChildProtCmd (*)	command to the actuator component to execute activation or deactivation of child lock (disable opening of the rear door from inside)

(*) whereas [Reardoor] is one out of: RearLeftDoor, RearRightDoor.

4.2.18 Ports referencing StaChildProt

Used By	Reason, comment
CentralLockingMaster [Reardoor]ChildProtState (*)	status if child protection is activated or not

(*) whereas [Reardoor] is one out of: RearLeftDoor, RearRightDoor.

4.2.19 Ports referencing CmdPullAid

Used By	Reason, comment
CentralLockingMaster [DOOR]PullAid (*)	Command to the actuator component to execute activation of the pull aid. May also be used for push aid application. The actuator is supposed to be intelligent e.g. receives only commands open/close/off (=no action) and handles all internal actions independently (like for example return to

	idle position).
--	-----------------

(*) whereas [Door] is one out of: DriverDoor, PassengerDoor, RearLeftDoor, RearRightDoor, RearLid.

4.2.20 Ports referencing DiagLock

<i>Used By</i>	<i>Reason, comment</i>
[LOCK]DiagnosticRequest (*)	Diagnostic request to manipulate an actuator component of a door or the rear lid to unconditionally unlock, lock or safe at the latch

(*) whereas [LOCK] is one out of: DriverDoorLock, PassengerDoorLock, RearLeftDoorLock, RearRightDoorLock, RearLidLock, TankflapLock, GloveboxLock

4.2.21 Ports referencing DiagChildProt

<i>Used By</i>	<i>Reason, comment</i>
[Reardoor] ChildProtDiagReq (*)	Diagnostic request to the actuator component to unconditional activation or deactivation of child lock (disable opening of the rear door from inside)

(*) whereas [Reardoor] is one out of: RearLeftDoor, RearRightDoor.

4.2.22 Ports referencing DiagPullAid

<i>Used By</i>	<i>Reason, comment</i>
[DOOR] PullAidDiagReq (*)	Diagnostic request to the actuator component to to unconditional activation or deactivation of the pull aid.

(*) whereas [Door] is one out of: DriverDoor, PassengerDoor, RearLeftDoor, RearRightDoor, RearLid.

4.2.23 Ports referencing HMI Diagnostic-Interfaces

Due to the according “regular” interfaces the diagnostic-interfaces below are used:

- DiagHotelMode
- DiagReleaseLatch
- DiagToggle

4.2.24 Ports referencing DiagnosticMonitor

Due to it’s diagnostic capabilities each actuator (doorlock, childprot, pullaid) provides one or several of the following (client-)ports to be connected to one port of DEM (corresponding to a certain local diagnostic ID). Same applies for each “sensor” of HMI.
HINT - Reference to interface DiagnosticMonitor: see AUTOSAR_Services.doc

<i>Used By</i>	<i>Reason, comment</i>
----------------	------------------------

GenericFault	Generic fault condition (sensor, actuator) which can't be further detailed
ActuatorFault or SensorFault	Diagnostic event for defective actuator or sensor
OpenLoad	Actuator doesn't consume power although it's activated or Sensor's Diagnostic event for open circuit/ broken line
OverLoad	Actuator consumes too much power when activated
ShortToGnd	Actuator consumes excessive power (connected to batt.voltage) or Diagnostic event for input permanently connected to ground
ShortToBatt	Actuator unexpectedly consumes power (not connected to battery voltage) or Diagnostic event for input permanently connected to battery voltage

Port names are derived from the actuator SW-C for example: TankFlapGenericFault, TankFlapActuatorFault, TankFlapOpenLoad, TankFlapOverLoad, TankFlapShortToGnd, TankFlapShortToBatt, TankFlapOpenLoadShortToGnd, TankFlapOpenLoadShortToBatt

4.3 Referenced Intra Domain Interfaces

This chapter gives an overview on the referenced intra domain interfaces. For inter domain interfaces see APPENDIX.

4.3.1 ReqAccessMechanicalKey

Interface			
Name (of Interface)	ReqAccessMechanicalKey		
Communcation Method	SenderReceiver		
Description	This interface requests unlock, lock, comfort close/ open from the mechanical key in the key cylinder. The values for comfort_open and for comfort_close are included intentionally, these states could be reached e.g. when the key is turned into the open position (or, vice versa the close position) for a longer period of time.		
isService	No (e.g. no BSW service)		
1 Data Element Name	request		
Data Type	t_ReqAccessMechanicalKey of type enum		
Symbolic Constants	Label	Value	Comment
	idle	0	no access request
	unlock	1	--
	lock	2	--
	comfort_open	3	--
	comfort_close	4	--
Data/Event	Data		
Remarks	Length (bit) = 3 Recommendations: Init value=idle, can invalidate=No		

4.3.2 ReqAccessRemoteKey

Interface	
Name (of Interface)	ReqAccessRemoteKey
Communcation Method	SenderReceiver

Description	Access request generated e.g. by remote key receiver unit. The content is derived from the user request by remote key.		
isService	No (e.g. no BSW service)		
1 Data Element Name	request		
Data Type	t_ReqAccessRemoteKey of type enum		
Symbolic Constants	Label	Value	Comment
	idle	0	no user request
	unlock	1	--
	selected_unlock	2	e. g. one door unlock
	lock	3	--
	safe	4	double_lock
	comfort_open	5	e. g. open all windows
	comfort_close	6	--
Data/Event	Data		
Remarks	Length (bit) = 3 Recommendations: Init value=idle, can invalidate=No There is no request for "unsafe" included here because "unsafe" is not considered as an exclusive / individual state.		

4.3.3 ReqAccessKeyless

Interface								
Name (of Interface)	ReqAccessKeyless							
Communication Method	SenderReceiver							
Description	Access request (from detected source) to lock / unlock the latch from keyless entry system.							
isService	No (e.g. no BSW service)							
1 Data Element Name	request							
Data Type	record							
Record elements	Element	Label	Value	Comment				
					detection	undefined	0	Provides information about the location of the person (with valid key) approaching the vehicle
					_source	driver_door	1	
						passenger_door	2	
					(of type enum)	right_rear_door	3	
						left_rear_door	4	
		rear_lid	5					
	requested_action	Idle			Provides information about the requested action from the corresponding position (detection source)			
						unlock	1	
						lock	3	
						safe	4	
						comfort_open	5	
comfort_close						6		
Data/Event	Data							
Remarks	Length (bit) = 3+3 Recommendations: Init value={undefined; idle}, can invalidate=No There is no request for "selected_unlock" possible because this feature is implemented by means of detection source and system configuration (e.g. personalization). The requested action comfort_open, comfort_close, ... might also be derived out of "timing criteria".							

4.3.4 StaProfilePerson

<i>Interface</i>			
Name (of Interface)	StaProfilePerson		
Communcation Method	SenderReceiver		
Description	Status of current selected personalization profile from profile manager. It is a common profile selectable from transponder, remote key, keyless access, hmi,...)		
isService	No (e.g. no BSW service)		
1 Data Element Name	id		
Data Type	t_StaProfilePerson of type enum		
Symbolic Constants	Label	Value	Comment
	no_profile	0	no defined profile
	profile1	1	--
	profile2	2	--
	profile3	3	--
	--
	--
	profile14	14	--
profile15	15	--	
Data/Event	Data		
Remarks	Length (bit) = 4 Recommendations: Init value=no_profile, can invalidate=No		

4.3.5 ReqReleaseLatch

<i>Interface</i>			
Name (of Interface)	ReqReleaseLatch		
Communcation Method	SenderReceiver		
Description	User request to release/unlock the latch of rear lid or tankflap or backlite window; "on" means latch release to unlock or open a lid or backlite window		
isService	No (e.g. no BSW service)		
1 Data Element Name	request		
Data Type	t_onoff		
Data/Event	Data		
Remarks	Length (bit) = 1 Recommendations: Init value= off, can invalidate =No		

4.3.6 ReqToggle

<i>Interface</i>			
Name (of Interface)	ReqToggle		
Communcation Method	SenderReceiver		
Description	User request to lock / unlock e.g. the glovebox ("Toggle-Function"); "on" means toggle.		
isService	No (e.g. no BSW service)		
1 Data Element Name	request		
Data Type	t_onoff		
Data/Event	Data		
Remarks	Length (bit) = 1 Recommendations: Init value= off, can invalidate =No		

4.3.7 ReqHotelMode

<i>Interface</i>	
Name (of Interface)	ReqHotelMode
Communcation Method	SenderReceiver
Description	User request to activate hotel mode of the central door locking system. This feature allows to keep just the driver door open, while the rest (includes glove box to secure private goods) of the car is locked; "on" means hotel mode.
isService	No (e.g. no BSW service)
1 Data Element Name	request
Data Type	t_onoff
Data/Event	Data
Remarks	Length (bit) = 1 Recommendations: Init value= off, can invalidate =No

4.3.8 StaHotelMode

<i>Interface</i>	
Name (of Interface)	StaHotelMode
Communcation Method	SenderReceiver
Description	Status if hotel mode is activated or not.; "on" means hotel mode activated.
isService	No (e.g. no BSW service)
1 Data Element Name	status
Data Type	t_onoff
Data/Event	Data
Remarks	Length (bit) = 1 Recommendations: Init value= off, can invalidate =No

Remarks	Length (bit) = 2 (see data type) Recommendations: Init value= off , can invalidate=No
----------------	--

4.3.11 ReqOpenClose

Interface			
Name (of Interface)	ReqOpenClose		
Communication Method	SenderReceiver		
Description	Request for open/close		
isService	No (e.g. no BSW service)		
1 Data Element Name	request		
Data Type	t_ReqOpenClose of type enum		
Symbolic Constants	Label	Value	Comment
	idle	0	no user request
	open	1	(comfort) open request
	close	2	(comfort) close request
Data/Event	Data		
Remarks	Length (bit) = 2 (see data type) Recommendations: Init value= idle, can invalidate=No		

4.3.12 ReqLockUnlock

Interface			
Name (of Interface)	ReqLockUnlock		
Communication Method	SenderReceiver		
Description	User request for emergency locking in case of danger.		
isService	No (e.g. no BSW service)		
1 Data Element Name	request		
Data Type	t_ReqLockUnlock of type enum		
Symbolic Constants	Label	Value	Comment
	idle	0	no user request
	unlock	1	--
	lock	2	--
Data/Event	Data		
Remarks	Length (bit) = 2 (see data type) Recommendations: Init value= idle, can invalidate=No		

4.3.13 StaDoor

Interface			
Name (of Interface)	StaDoor		
Communication Method	SenderReceiver		
Description	Provides information whether a door or a lid is open or closed. As long as the status is valid, the value should be provided.		
isService	No (e.g. no BSW service)		
1 Data Element Name	status		
Data Type	t_StaDoor of type enum		
Symbolic Constants	Label	Value	Comment
	unknown	0	Initialisation phase
	open	1	--
	closed	2	--

	ajar	3	nearly closed
	invalid	4	implausible
Data/Event	Data		
Remarks	Length (bit) = 3 Recommendations: Init value=unknown, can invalidate =Yes		

4.3.14 StaOpenClosed

Interface	
Name (of Interface)	StaOpenClosed
Communication Method	SenderReceiver
Description	Provides information whether glovebox is open or closed. As long as the status is valid the corresponding value should be provided.
isService	No (e.g. no BSW service)
1 Data Element Name	status
Data Type	t_openclosed
Data/Event	Data
Remarks	Length (bit) = 1 Recommendations: Init value=open, can invalidate =No

4.3.15 StaLock

Interface																
Name (of Interface)	StaLock															
Communication Method	SenderReceiver															
Description	Status of the latch. This interface provides the information about the current locking state of the latch. It does not distinguish between the source through which it was operated (mech. key, the internal motor or the internal knob). This Status is provided to the central locking in order to unlock/lock/save the other latches of the vehicle.															
isService	No (e.g. no BSW service)															
1 Data Element Name	status															
Data Type	t_StaLock of type enum															
Symbolic Constants	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Label</th> <th style="text-align: left;">Value</th> <th style="text-align: left;">Comment</th> </tr> </thead> <tbody> <tr> <td>implausible</td> <td>0</td> <td>no plausible locking state</td> </tr> <tr> <td>unlocked</td> <td>1</td> <td>Latch unlocked</td> </tr> <tr> <td>locked</td> <td>2</td> <td>Latch locked</td> </tr> <tr> <td>safed</td> <td>3</td> <td>Latch safed</td> </tr> </tbody> </table>	Label	Value	Comment	implausible	0	no plausible locking state	unlocked	1	Latch unlocked	locked	2	Latch locked	safed	3	Latch safed
Label	Value	Comment														
implausible	0	no plausible locking state														
unlocked	1	Latch unlocked														
locked	2	Latch locked														
safed	3	Latch safed														
Data/Event	Data															
Remarks	Length (bit) = 2 Recommendations: Init value= implausible, can invalidate =No															

4.3.16 CmdLock

Interface	
Name (of Interface)	CmdLock
Communication Method	SenderReceiver
Description	This is the functional command to the actuator component to execute the command unlock, lock or safe (double lock) at the latch.
isService	No (e.g. no BSW service)
1 Data Element Name	command

Data Type	t_CmdLock of type enum		
Symbolic Constants	Label	Value	Comment
	off	0	No action
	unlock	1	--
	lock	2	--
	safe	3	--
Data/Event	Data		
Remarks	Length (bit) = 2 Recommendations: Init value= off, can invalidate =No It is supposed that the actuator handles by itself the transition from safe to unlock due to mechanical restrictions. For the Central locking Master there is no explicit state "unsafe".		

4.3.17 CmdChildProt

Interface			
Name (of Interface)	CmdChildProt		
Communication Method	SenderReceiver		
Description	This is the functional command to the actuator component to execute activation or deactivation of child lock.		
isService	No (e.g. no BSW service)		
1 Data Element Name	command		
Data Type	t_CmdChildProt of type enum		
Symbolic Constants	Label	Value	Comment
	off	0	--
	activate	1	--
	deactivate	2	--
Data/Event	Data		
Remarks	Length (bit) = 2 Recommendations: Init value= off, can invalidate =No		

4.3.18 StaChildProt

Interface			
Name (of Interface)	StaChildProt		
Communication Method	SenderReceiver		
Description	Status if child protection is activated or not.		
isService	No (e.g. no BSW service)		
1 Data Element Name	command		
Data Type	t_onoff		
Data/Event	Data		
Remarks	Length (bit) = 1 Recommendations: Init value= off, can invalidate =No		

4.3.19 CmdPullAid

Interface			
Name (of Interface)	CmdPullAid		
Communication Method	SenderReceiver		
Description	This is the functional command to the actuator component to execute activation of pull/ push aid.		

isService		No (e.g. no BSW service)		
1	Data Element Name	command		
	Data Type	t_CmdPullAid of type enum		
	Symbolic Constants	Label	Value	Comment
		off	0	--
		open	1	--
	close	2	--	
Data/Event	Data			
Remarks	Length (bit) = 2 Recommendations: Init value= off, can invalidate =No Hint: Pull aid is considered to be a system that closes the door or rear lid (e.g. moves it from "ajar" to "closed") rather than a complete door/rear lid moving system.			

4.3.20 DiagLock

Interface					
Name (of Interface)		DiagLock			
Communication Method		SenderReceiver			
Description		Diagnostic request to manipulate an actuator component of a door or the rear lid to unconditionally unlock, lock or safe at the latch			
isService		No (e.g. no BSW service)			
1	Data Element Name	command			
	Data Type	record			
	Symbolic Constants	Element	Label	Value	Comment
		lock	off	0	No action
		(of type enum)	unlock	1	--
			lock	2	--
		Safe	3	--	
		Element	Type	Label	comment
	diagnostic	t_onoff	off	diagnostic inactive	
			on	diagnostic active	
Data/Event	Data				
Remarks	Length (bit) = 3 Recommendations: Init value= {off;off}, can invalidate =No				

4.3.21 DiagChildProt

Interface					
Name (of Interface)		DiagChildProt			
Communication Method		SenderReceiver			
Description		Diagnostic request to the actuator component to unconditional activation or deactivation of child lock (disable opening of the rear door from inside)			
isService		No (e.g. no BSW service)			
1	Data Element Name	command			
	Data Type	record			
	Symbolic Constants	Element	Label	Value	Comment
		Childprot	off	0	--
		(of type enum)	activate	1	--
	deactivate		2	--	
	Element	Type	Label	comment	

	diagnostic	t_onoff	off	diagnostic inactive
			on	diagnostic active
Data/Event	Data			
Remarks	Length (bit) = 3 Recommendations: Init value= {off;off}, can invalidate =No			

4.3.22 DiagPullAid

Interface				
Name (of Interface)	DiagPullAid			
Communication Method	SenderReceiver			
Description	Diagnostic request to the actuator component to unconditional activation or deactivation of the pull aid.			
isService	No (e.g. no BSW service)			
1 Data Element Name	command			
Data Type	record			
Symbolic Constants	Element	Label	Value	Comment
	PullAid (of type enum)	off open close	0 1 2	-- -- --
	Element	Type	Label	comment
	diagnostic	t_onoff	off on	diagnostic inactive diagnostic active
Data/Event	Data			
Remarks	Length (bit) = 3 Recommendations: Init value= {off;off}, can invalidate =No			

4.3.23 DiagHotelMode

Interface				
Name (of Interface)	DiagHotelMode			
Communication Method	SenderReceiver			
Description	Diagnostic request to the sensor component to activate hotel mode of the central door locking system (according to ReqHotelMode)			
isService	No (e.g. no BSW service)			
1 Data Element Name	command			
Data Type	record			
Symbolic Constants	Element	Type	Label	comment
	request	t_onoff	off on	-- means hotel mode
	Element	Type	Label	comment
	diagnostic	t_onoff	off on	diagnostic inactive diagnostic active
Data/Event	Data			
Remarks	Length (bit) = 3 Recommendations: Init value= {off;off}, can invalidate =No			

4.3.24 DiagReleaseLatch

Interface	
Name (of Interface)	DiagReleaseLatch

Communcation Method		SenderReceiver			
Description		Diagnostic request to the sensor component to release/unlock the latch of rear lid or tankflap or backlite window (according to ReqReleaseLatch)			
isService		No (e.g. no BSW service)			
1	Data Element Name	command			
	Data Type	record			
	Symbolic Constants	Element	Type	Label	comment
		request	t_onoff	off	--
				on	latch release to unlock or open a lid or backlite window
		Element	Type	Label	comment
	diagnostic	t_onoff	off	diagnostic inactive	
on			diagnostic active		
Data/Event	Data				
Remarks	Length (bit) = 3 Recommendations: Init value= {off;off}, can invalidate =No				

4.3.25 DiagToggle

Interface					
Name (of Interface)		DiagToggle			
Communcation Method		SenderReceiver			
Description		Diagnostic request to the sensor component to request a "Toggle-Function" (according to ReqToggle)			
isService		No (e.g. no BSW service)			
1	Data Element Name	command			
	Data Type	record			
	Symbolic Constants	Element	Label	Value	Comment
		request	t_onoff	off	--
				on	means toggle
		Element	Type	Label	comment
	diagnostic	t_onoff	off	diagnostic inactive	
on			diagnostic active		
Data/Event	Data				
Remarks	Length (bit) = 3 Recommendations: Init value= {off;off}, can invalidate =No				

4.4 Type Declarations

4.4.1 t_onoff

Name	t_onoff		
Lower-Limit	0		
Upper-Limit	1		
Description	The type t_onoff is considered as a status signal, which carries continuously a certain value as long as its semantic condition is present.		
Symbolic Constants	Element Name	Value	Description
	off	0	--
	on	1	--

4.4.2 t_openclosed

Name	t_openclosed		
Lower-Limit	0		
Upper-Limit	1		
Description	The type t_openclosed is considered as a status signal, which carries continuously a certain value as long as its semantic condition is present.		
Symbolic Constants	Element Name	Value	Description
	closed	0	--
	open	1	--

5 Specification of Components

Please see templates below as used in subsequent chapters:

CompositionType	
Name	--
Description	Template as used below
PPortPrototypes	<port>: <referenced interface>
RPortPrototypes	<port>: <referenced interface>
Components	--
AssemblyConnectors	--
DelegationConnectors	--

ComponentPrototype					
Name		--			
Description		Template as used below			
Type		v			
<i>PComSpec</i>	<port>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		<name of data element>	--	yes/no	--

HINT: The interface referenced by port can be extracted out of table “**CompositionType**”.

5.1 Central Locking Master

CompositionType	
Name	CentralLockingMasterType
Description	Composition for Central Locking Master
PPortPrototypes	DriverDoorLockingCmd: CmdLock PassengerDoorLockingCmd: CmdLock RearLeftDoorLockingCmd: CmdLock RearRightDoorLockingCmd: CmdLock RearLidLockingCmd: CmdLock BackliteWindowLockingCmd: CmdLock RearLeftDoorChildProtectCmd: CmdChildProtect RearRightDoorChildProtectCmd: CmdChildProtect DriverDoorPullAid: CmdPullAid PassengerDoorPullAid: CmdPullAid RearLeftDoorPullAid: CmdPullAid RearRightDoorPullAid: CmdPullAid RearLidPullAid: CmdPullAid TankFlapLockingCmd: CmdLock GloveboxLockingCmd: CmdLock ComfortOpenClose: ReqOpenClose CentralLocking: StaCentralLocking

	LockingFeedback: ReqLockingFeedback HotelMode: StaHotelMode
RPortPrototypes	EmergencyLocking: ReqLockUnlock HotelMode: ReqHotelMode TankFlapHmi: ReqReleaseLatch BackliteWindowHMI: ReqReleaseLatch RearLidHmiInt: ReqReleaseLatch RearLidHmiExt: ReqReleaseLatch GloveBoxHmi: ReqToggle AccessKeyless: ReqAccessKeyless AccessRemoteKey: ReqAccessRemoteKey AccessRemoteRearLid: ReqOpenClose DriverProfile: StaProfilePerson OperationMode: StaOperationMode Speed: VehicleSpeed Crash: StaCrash EnergyMgmt: StaEnergyMgmt Voltage: BatteryVoltage DriverDoorState: StaDoor PassengerDoorState: StaDoor RearLeftDoorState: StaDoor RearRightDoorState: StaDoor RearLidState: StaDoor BackliteWindowState: StaDoor DriverDoorKeyAccess: ReqAccessMechanicalKey PassengerDoorKeyAccess: ReqAccessMechanicalKey RearLeftDoorKeyAccess: ReqAccessMechanicalKey RearRightDoorKeyAccess: ReqAccessMechanicalKey RearLidKeyAccess: ReqAccessMechanicalKey DriverDoorLockState: StaLock PassengerDoorLockState: StaLock RearLeftDoorLockState: StaLock RearRightDoorLockState: StaLock RearLidLockState: StaLock BackliteWindowLockState: StaLock RearLeftDoorChildProtectState: StaChildProtect RearRightDoorChildProtectState: StaChildProtect KeypadDoor: ReqAccessRemoteKey KeypadRearLid: ReqOpenClose TankFlapLockState: StaLock GloveboxState: StaOpenClosed GloveboxLockState: StaLock
Components	<Not further broken down>
AssemblyConnectors	n.A.
DelegationConnectors	n.A.

ComponentPrototype	
Name	CentralLockingMasterPrototype
Description	SW-C for CentralLockingMaster
Type	CentralLockingMasterType

<i>PComSpec</i>	<i>DriverDoorLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>PassengerDoorLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>RearLeftDoorLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>RearRightDoorLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>RearLidLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>BackliteWindowLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>RearLeftDoorChildProtectCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>RearRightDoorChildProtectCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>DriverDoorPullAid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>PassengerDoorPullAid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>RearLeftDoorPullAid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>RearRightDoorPullAid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>RearLidPullAid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>TankFlapLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>GloveboxLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		command	off	no	--
<i>PComSpec</i>	<i>ComfortOpenClose</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	idle	no	--
<i>PComSpec</i>	<i>CentralLocking</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	{undefined, no_trigger_source}	no	--
<i>PComSpec</i>	<i>LockingFeedback</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	off	no	--
<i>PComSpec</i>	<i>HotelMode</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	off	no	--
<i>RComSpec</i>	<i>EmergencyLocking</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		request	off	--	
<i>RComSpec</i>	<i>HotelMode</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		request	off	--	

<i>RComSpec</i>	<i>TankFlapHmi</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	off	--
<i>RComSpec</i>	<i>BackliteWin- dowHMI</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	off	--
<i>RComSpec</i>	<i>RearLidHmiInt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	off	--
<i>RComSpec</i>	<i>RearLidHmiExt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	off	--
<i>RComSpec</i>	<i>GloveBoxHmi</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	off	--
<i>RComSpec</i>	<i>AccessKeyless</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	{undefined; idle}	---
<i>RComSpec</i>	<i>AccessRemote- Key</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	idle	--
<i>RComSpec</i>	<i>AccessRe- moteRearLid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	idle	--
<i>RComSpec</i>	<i>DriverProfile</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	no_profile	--
<i>RComSpec</i>	<i>OperationMode</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	off	--
<i>RComSpec</i>	<i>Speed</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	0	--
<i>RComSpec</i>	<i>Crash</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	NoEvent	--
<i>RComSpec</i>	<i>EnergyMgnt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	full_funct	--
<i>RComSpec</i>	<i>Voltage</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	25,5V	--
<i>RComSpec</i>	<i>DriverDoorState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	unknown	---
<i>RComSpec</i>	<i>PassengerDoor- State</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	unknown	--
<i>RComSpec</i>	<i>RearLeftDoor- State</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	unknown	--
<i>RComSpec</i>	<i>RearRightDoor- State</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	unknown	--
<i>RComSpec</i>	<i>RearLidState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	unknown	--
<i>RComSpec</i>	<i>BackliteWindow- State</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	unknown	--
<i>RComSpec</i>	<i>DriverDoorKe- yAccess</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	idle	--
<i>RComSpec</i>	<i>Passenger-</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>

	<i>DoorKeyAccess</i>	request	idle	---
<i>RComSpec</i>	<i>RearLeftDoorKeyAccess</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	idle	--
<i>RComSpec</i>	<i>RearRightDoorKeyAccess</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	idle	--
<i>RComSpec</i>	<i>RearLidKeyAccess</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	idle	---
<i>RComSpec</i>	<i>DriverDoorLockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	implausible	--
<i>RComSpec</i>	<i>PassengerDoorLockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	implausible	--
<i>RComSpec</i>	<i>RearLeftDoorLockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	implausible	--
<i>RComSpec</i>	<i>RearRightDoorLockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	implausible	--
<i>RComSpec</i>	<i>RearLidLockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	implausible	--
<i>RComSpec</i>	<i>BackliteWindowLockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	implausible	--
<i>RComSpec</i>	<i>RearLeftDoorChildProtectState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	off	--
<i>RComSpec</i>	<i>RearRightDoorChildProtectState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	off	--
<i>RComSpec</i>	<i>KeypadDoor</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	idle	--
<i>RComSpec</i>	<i>KeypadRearLid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		request	idle	--
<i>RComSpec</i>	<i>TankFlapLockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	implausible	--
<i>RComSpec</i>	<i>GloveboxState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	open	--
<i>RComSpec</i>	<i>GloveboxLockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>
		status	implausible	--

5.2 HMI

CompositionType	
Name	HMIType
Description	Composition for HMI
PPortPrototypes	EmergencyLocking: ReqLockUnlock HotelMode: ReqHotelMode TankFlapHmi: ReqReleaseLatch BackliteWindowHMI: ReqReleaseLatch RearLidHmiInt: ReqReleaseLatch RearLidHmiExt: ReqReleaseLatch

	GloveBoxHmi: ReqToggle [HMI_Fault]EmergencyLocking: DiagnosticMonitor [HMI_Fault]HotelMode: DiagnosticMonitor [HMI_Fault]TankFlapHmi: DiagnosticMonitor [HMI_Fault]BackliteWindowHMI: DiagnosticMonitor [HMI_Fault]RearLidHmiInt: DiagnosticMonitor [HMI_Fault]RearLidHmiExt: DiagnosticMonitor [HMI_Fault]GloveBoxHmi: DiagnosticMonitor
RPortPrototypes	DiagEmergencyLocking: DiagEmergencyLocking DiagHotelMode: DiagHotelMode DiagTankFlapHmi: DiagReleaseLatch DiagBackliteWindowHMI: DiagReleaseLatch DiagRearLidHmiInt: DiagReleaseLatch DiagGloveBoxHmi: DiagToggle
Components	<Not further broken down>
AssemblyConnectors	n.A.
DelegationConnectors	n.A.

ComponentPrototype					
Name		HMIPrototype			
Description		SW-C for HMI			
Type		HMISype			
<i>PComSpec</i>	<i>EmergencyLocking</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	off	no	--
<i>PComSpec</i>	<i>HotelMode</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	off	no	--
<i>PComSpec</i>	<i>TankFlapHmi</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	off	no	--
<i>PComSpec</i>	<i>BackliteWindowHMI</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	off	no	--
<i>PComSpec</i>	<i>RearLidHmiInt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	off	no	--
<i>PComSpec</i>	<i>RearLidHmiExt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	off	no	--
<i>PComSpec</i>	<i>GloveBoxHmi</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	off	no	--
<i>RComSpec</i>	<i>DiagEmergencyLocking</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	{0;off}	no	--
<i>RComSpec</i>	<i>DiagHotelMode</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	{0;off}	no	--
<i>RComSpec</i>	<i>DiagTankFlapHmi</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	{0;off}	no	--
<i>RComSpec</i>	<i>DiagBackliteWindowHMI</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	{0;off}	no	--
<i>RComSpec</i>	<i>DiagRearLidHmiInt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	{0;off}	no	--
<i>RComSpec</i>	<i>DiagGloveBox-</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>

	<i>Hmi</i>	request	{0;off}	no	--
<i>PComSpec</i>	<i>[HMI_Fault]EmergencyLocking</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>[HMI_Fault]HottelMode</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>[HMI_Fault]TankFlapHmi</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>[HMI_Fault]BackliteWindowHMI</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>[HMI_Fault]RearLidHmiInt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>[HMI_Fault]RearLidHmiExt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>[HMI_Fault]GloveBoxHmi</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--

Please note that above [HMI_Fault] means multiple ports, e.g. each [HMI_Fault] might represent all of {GenericFault, SensorFault, OpenLoad, ShortToGnd, ShortToBatt, OpenLoadShortToGnd, OpenLoadShortToBatt}; for example: [HMI_Fault]GloveBoxHmi could represent up to seven ports: GenericFaultGloveBoxHmi, SensorFaultGloveBoxHmi, OpenLoadGloveBoxHmi, ShortToGndGloveBoxHmi, ShortToBattGloveBoxHmi, OpenLoadShortToGndGloveBoxHmi, OpenLoadShortToBattGloveBoxHmi

For further details see also Chapter “Interior Light Sensor(s)” within document “Interior Lights Application Interfaces”.

5.3 Doors

CompositionType	
Name	DoorlocksType
Description	Composition for all Doors (including one Rearlid & Backlitewindow)
PPortPrototypes	DriverDoorState: StaDoor PassengerDoorState: StaDoor RearLeftDoorState: StaDoor RearRightDoorState: StaDoor RearLidState: StaDoor BackliteWindowState: StaDoor DriverDoorKeyAccess: ReqAccessMechanicalKey PassengerDoorKeyAccess: ReqAccessMechanicalKey RearLeftDoorKeyAccess: ReqAccessMechanicalKey RearRightDoorKeyAccess: ReqAccessMechanicalKey RearLidKeyAccess: ReqAccessMechanicalKey DriverDoorLockState: StaLock PassengerDoorLockState: StaLock RearLeftDoorLockState: StaLock RearRightDoorLockState: StaLock

	<p>RearLidLockState: StaLock BackliteWindowLockState: StaLock</p> <p>RearLeftDoorChildProtectState: StaChildProtect RearRightDoorChildProtectState: StaChildProtect</p> <p>KeypadDoor: ReqAccessRemoteKey KeypadRearLid: ReqOpenClose</p>
RPortPrototypes	<p>DriverDoorLockingCmd: CmdLock PassengerDoorLockingCmd: CmdLock RearLeftDoorLockingCmd: CmdLock RearRightDoorLockingCmd: CmdLock RearLidLockingCmd: CmdLock BackliteWindowLockingCmd: CmdLock</p> <p>RearLeftDoorChildProtectCmd: CmdChildProtect RearRightDoorChildProtectCmd: CmdChildProtect</p> <p>DriverDoorPullAid: CmdPullAid PassengerDoorPullAid: CmdPullAid RearLeftDoorPullAid: CmdPullAid RearRightDoorPullAid: CmdPullAid RearLidPullAid: CmdPullAid</p>
Components	<p>DriverDoor: DoorType PassengerDoor: DoorType RearLeftDoor: DoorType RearRightDoor: DoorType RearLid: DoorType BackliteWindow: DoorType</p>
AssemblyConnectors	--
DelegationConnectors	<p>[DOOR]State - DoorState [DOOR]KeyAccess - KeyAccess [DOOR]LockingCmd - LockingCmd [DOOR]LockState - LockState [DOOR]ChildProtCmd - ChildProtCmd [DOOR]ChildProtState - ChildProtState [DOOR]PullAid - PullAid</p> <p>Remark: [DOOR] shall be replaced by according doors (see PPortPrototypes/RPortPrototypes)</p>

CompositionType	
Name	Doorlock Type
Description	Composition for ONE individual Frontdoor (or Rearlid or Backlitewindow).
PPortPrototypes	<p>DoorState: StaDoor KeyAccess: ReqAccessMechanicalKey LockState: StaLock KeypadDoor: ReqAccessRemoteKey KeypadRearLid: ReqOpenClose</p> <p>DoorlockGenericFault: DiagnosticMonitor DoorlockActuatorFault: DiagnosticMonitor DoorlockOpenLoad: DiagnosticMonitor DoorlockOverLoad: DiagnosticMonitor DoorlockShortToGnd: DiagnosticMonitor DoorlockShortToBatt: DiagnosticMonitor DoorlockOpenLoadShortToGnd: DiagnosticMonitor</p>

	DoorlockOpenLoadShortToBatt: DiagnosticMonitor Note: same Fault Ports apply to PullAid
RPortPrototypes	LockingCmd: CmdLock PullAid: CmdPullAid DiagLocking: DiagLock Diag PullAid: DiagPullAid
Components	<Not further broken down>
AssemblyConnectors	n.A.
DelegationConnectors	n.A.

CompositionType	
Name	DoorlockWithChildProtection Type
Description	Composition for ONE individual Reardoor
PPortPrototypes	DoorState: StaDoor KeyAccess: ReqAccessMechanicalKey LockState: StaLock ChildProtectState: StaChildProtect KeypadDoor: ReqAccessRemoteKey KeypadRearLid: ReqOpenClose DoorlockGenericFault: DiagnosticMonitor DoorlockActuatorFault: DiagnosticMonitor DoorlockOpenLoad: DiagnosticMonitor DoorlockOverLoad: DiagnosticMonitor DoorlockShortToGnd: DiagnosticMonitor DoorlockShortToBatt: DiagnosticMonitor DoorlockOpenLoadShortToGnd: DiagnosticMonitor DoorlockOpenLoadShortToBatt: DiagnosticMonitor Note: same Fault Ports apply to ChildProtect & PullAid
RPortPrototypes	LockingCmd: CmdLock ChildProtectCmd: CmdChildProtect PullAid: CmdPullAid DiagLocking: DiagLock DiagChildProtect: DiagChildProt Diag PullAid: DiagPullAid
Components	<Not further broken down>
AssemblyConnectors	n.A.
DelegationConnectors	n.A.

ComponentPrototype					
Name		Doorlock Prototype			
Description		SW-C for individual frontdoor			
Type		DoorType			
<i>PComSpec</i>	<i>DoorState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	unknown	yes	--
<i>PComSpec</i>	<i>KeyAccess</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	idle	no	--
<i>PComSpec</i>	<i>LockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	implausible	no	--
<i>PComSpec</i>	<i>KeypadDoor</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>

		request	idle	no	--
<i>PComSpec</i>	<i>KeypadRearLid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	idle	no	--
<i>PComSpec</i>	<i>Doorlock- GenericFault</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockActua- torFault</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockO- penLoad</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockOver- Load</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockShort- ToGnd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockShort- ToBatt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockO- penLoadShort- ToGnd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockO- penLoadShort- ToBatt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>RComSpec</i>	<i>LockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	off	--	
<i>RComSpec</i>	<i>PullAid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	off	--	
<i>RComSpec</i>	<i>DiagLocking</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	{off;off},	--	
<i>RComSpec</i>	<i>DiagPullAid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	{off;off},	--	

ComponentPrototype					
Name		Doorlock Prototype			
Description		SW-C for individual reardoor			
Type		DoorType			
<i>PComSpec</i>	<i>DoorState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	unknown	yes	--
<i>PComSpec</i>	<i>KeyAccess</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	idle	no	--
<i>PComSpec</i>	<i>LockState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	implausible	no	--
<i>PComSpec</i>	<i>ChildProtectState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	off	no	--
<i>PComSpec</i>	<i>KeypadDoor</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		request	idle	no	--
<i>PComSpec</i>	<i>KeypadRearLid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>

		request	idle	no	--
<i>PComSpec</i>	<i>DoorlockGenericFault</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockActuatorFault</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	---
<i>PComSpec</i>	<i>DoorlockOpenLoad</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockOverLoad</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockShortToGnd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockShortToBatt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockOpenLoadShortToGnd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>DoorlockOpenLoadShortToBatt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>RComSpec</i>	<i>LockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	off	--	
<i>RComSpec</i>	<i>ChildProtectCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	off	--	
<i>RComSpec</i>	<i>PullAid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	off	--	
<i>RComSpec</i>	<i>DiagLocking</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	{off;off},	--	
<i>RComSpec</i>	<i>DiagChildProt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	{off;off},	--	
<i>RComSpec</i>	<i>DiagPullAid</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	{off;off},	--	

For further details see also Chapter “Interior Light Actuator(s)” within document “Interior Lights Application Interfaces”.

5.4 TankFlap

AtomicSoftwareComponentType	
Name	TankFlapType
Description	Atomic Software Component for TankFlap
PPortPrototypes	TankFlapLockState: StaLock TankFlapGenericFault: DiagnosticMonitor TankFlapActuatorFault: DiagnosticMonitor TankFlapOpenLoad: DiagnosticMonitor TankFlapOverLoad: DiagnosticMonitor TankFlapShortToGnd: DiagnosticMonitor TankFlapShortToBatt: DiagnosticMonitor

	TankFlapOpenLoadShortToGnd: DiagnosticMonitor TankFlapOpenLoadShortToBatt: DiagnosticMonitor
RPortPrototypes	TankFlapLockingCmd: CmdLock TankflapLockDiagnosticRequest: DiagLock

ComponentPrototype					
Name		TankFlapPrototype			
Description		Actuator SW-C of TankFlap latch			
Type		TankFlapType			
<i>PComSpec</i>	<i>TankFlapLock-State</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	implausible	no	--
<i>PComSpec</i>	<i>TankFlap-GenericFault</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>TankFlapActuatorFault</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>TankFlapOpenLoad</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>TankFlapOverLoad</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>TankFlapShortToGnd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>TankFlapShortToBatt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>TankFlapOpenLoadShortToGnd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>TankFlapOpenLoadShortToBatt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>RComSpec</i>	<i>TankFlapLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	off	--	
<i>RComSpec</i>	<i>TankflapLockDiagnosticReques</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	{off;off}	--	

For further details see also Chapter “Interior Light Actuator(s)” within document “Interior Lights Application Interfaces”.

5.5 Glovebox

AtomicSoftwareComponentType	
Name	GloveboxType
Description	Atomic Software Component for Glovebox
PPortPrototypes	GloveboxState: StaOpenClosed GloveboxLockState: StaLock GloveboxGenericFault: DiagnosticMonitor GloveboxActuatorFault: DiagnosticMonitor GloveboxOpenLoad: DiagnosticMonitor

	GloveboxOverLoad: DiagnosticMonitor GloveboxShortToGnd: DiagnosticMonitor GloveboxShortToBatt: DiagnosticMonitor GloveboxOpenLoadShortToGnd: DiagnosticMonitor GloveboxOpenLoadShortToBatt: DiagnosticMonitor
RPortPrototypes	GloveboxLockingCmd: CmdLock GloveboxDiagnosticRequest: DiagLock

ComponentPrototype					
Name		GloveboxPrototype			
Description		Actuator SW-C of Glovebox latch			
Type		GloveboxType			
<i>PComSpec</i>	<i>GloveboxState</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	open	no	--
<i>PComSpec</i>	<i>GloveboxLock-State</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	implausible	no	--
<i>PComSpec</i>	<i>Glovebox-GenericFault</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>GloveboxActuatorFault</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>GloveboxOpenLoad</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>GloveboxOverLoad</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>GloveboxShortToGnd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>GloveboxShortToBatt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>GloveboxOpenLoadShortToGnd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>PComSpec</i>	<i>GloveboxOpenLoadShortToBatt</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Can Invalidate</i>	<i>Further attrib.</i>
		status	--	no	--
<i>RComSpec</i>	<i>GloveboxLockingCmd</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	off	--	
<i>RComSpec</i>	<i>GloveboxDiagnosticReques</i>	<i>Data element</i>	<i>Initial Value</i>	<i>Further attributes</i>	
		command	{off;off}	--	

For further details see also Chapter “Interior Light Actuator(s)” within document “Interior Lights Application Interfaces”.

5.6 Further Interfaces

Please note that only for better understandability there are further interfaces grouped by InterDomainInterfaces & IntraDomainInterfaces. Same applies for Keyless Access, Remote Key, ProfileManager.

These interfaces are to be directly connected to the according functionalities (not scope of this document).

6 APPENDIX

6.1 Inter Domain Interfaces

Please note that Inter Domain Interfaces are listed for visualisation purpose and subject to be harmonized in later revisions.

6.1.1 StaOperationMode

<i>Interface</i>			
Name (of Interface)	StaOperationMode		
Communication Method	SenderReceiver		
Description	<p>This interface provides the car operation states. It can be seen as an abstraction and extension of the normal ignition switch position (also called "clamp position") which is traditionally used to guide functional operation of the vehicle. It also includes information about what state the engine is in, i.e. running or not.</p> <p>This interface should be used to control which functionalities / components are active in the vehicle.</p> <p>All states have to be implemented in all cars, but not necessarily used.</p>		
isService	No (e.g. no BSW service)		
1 Data Element Name	status		
Data Type	enum		
Symbolic Constants	Label	Value	Comment
	prepare_idle	10	Transient state: might be used to prepare for going to idle state.
	idle	0	No valid user identification detected; car is waiting for valid identification. Most systems should be in power-save mode. Only functionalities that do not require a valid identification may be active / operational (e.g. hazard warning, burglar alarm, Id detection mechanisms, parking light).
	prepare_identification	6	Transient state: components / functionalities involved in identification should be operational (may include overall system consistency checks to ensure that the system was not tampered during idle state etc.). State might be used to prepare for id_approved if start-up time is needed.

	id_approved	1	Valid user identification detected in or around the car. Certain body functionalities may be active / operational (e.g. locking / unlocking of doors, (de-)activation of burglar alarm).
	post_accessory	9	Transient state: might be used to prepare for going to idle state (e.g. by storing persistent data to persistent storage).
	accessory	2	Valid user identification detected in or around the car. Certain accessory functionalities in the car may be active / operational (e.g. radio).
	post_ignition_on	8	Transient state: might be used to prepare for going to idle state (e.g. by storing persistent data to persistent storage).
	ignition_on	3	Ignition is on. Most power consumers may be at least temporarily active / operational; engine is not running.
	engine_running	5	Ignition is on and combustion engine is running.
	pre_crank	7	Transient state: cranking is about to begin. State might be used to prepare for cranking (high power consumers might be switched off) and possible low power situation (e.g. by storing persistent data to persistent storage).
	crank	4	Start of engine. Power consumers might be switched off.
	reserved_1	11	--
	reserved_2	12	--
	reserved_3	13	--
	reserved_4	14	--
	invalid	15	--
Data/Event	Data		

Remarks	<p>Length (bit) = 4; Recommendations: Init value= idle</p> <p>Hierarchy: Super-state: idle State: prepare_idle State: idle Super-state: identification State: prepare_identification State: id_approved State: post_accessory Super-state: accessory State: accessory State: post_ignition_on Super-state: ignition State: ignition_on State: engine_running Super-state: crank State: pre_crank State: crank</p> <p>Base modes (idle, id_approved, accessory, ignition_on, crank, engine_running):</p> <ul style="list-style-type: none"> • Elements are fixed, no additional elements are possible • It must be implemented. <p>Special modes (prepare_identification, pre_crank, post_ignition_on, post_accessory, prepare_idle, ...):</p> <ul style="list-style-type: none"> • Additional elements are possible. <p>The implementation is voluntary.</p>
----------------	---

6.1.2 StaCrash

Interface			
Name (of Interface)	StaCrash		
Communication Method	SenderReceiver		
Description	This interface provides the current crash status (values as pre-crash, post-crash, ...)..		
isService	No (e.g. no BSW service)		
1 Data Element Name	status		
Data Type	enum		
Symbolic Constants	Label	Value	Comment
		0	--
	pre_crash	1	--
	post_crash	2	--
	...	3	--
		4	--
Data/Event	Data		
Remarks	--		

6.1.3 StaEnergyMgmt

Interface	
Name (of Interface)	StaEnergyMgmt
Communication Method	SenderReceiver

Description		This interface provides the information whether all, basic or only keep-alive components/functionalities are allowed to run. As long as the status is valid, the corresponding value as defined by the table below should be provided.			
isService		No (e.g. no BSW service)			
1	Data Element Name	status			
	Data Type	enum			
	Symbolic Constants	Label	Value	Comment	
		no_funct_possible	0	only for completeness	
		safety_funct_only	1	only safety functionalities / components active (functionalities considered as relevant for passenger safety)	
		hibernate_level_1	2	level 1 for deactivation of functionalities / components during long-term parking (to save battery capacity)	
		hibernate_level_2	3	level 2 for deactivation of functionalities / components during long-term parking (to save battery capacity)	
		hibernate_level_3	4	level 3 for deactivation of functionalities / components during long-term parking (to save battery capacity)	
		lim_comf_level_1	5	level 1 for deactivation of functionalities / components in case of improper load-balance of battery / generator during normal use of the vehicle	
		lim_comf_level_2	6	level 2 for deactivation of functionalities / components in case of improper load-balance of battery / generator during normal use of the vehicle	
		lim_comf_level_3	7	level 3 for deactivation of functionalities / components in case of improper load-balance of battery / generator during normal use of the vehicle	
		lim_comf_level_4	8	level 4 for deactivation of functionalities / components in case of improper load-balance of battery / generator during normal use of the vehicle	
		full_funct	9	default (no functionalities / components deactivated due to energy management reasons)	
		consume_energy	10	valid when battery is unbalanced or when more load has to be applied onto generator	
reserved_1	11	--			
reserved_2	12	--			
reserved_3	13	--			
reserved_4	14	--			
Data/Event		Data			

Remarks	Length (bit) = 4; Recommendations: Init value= full_funct NOTE: this interface is to reflect the "load dump" stages in case of improper battery/generator balance. The handling of over- or under-voltage is not covered within this interface.
----------------	--

6.1.4 VehicleSpeed

Interface		
Name (of Interface)	VehicleSpeed	
Communcation Method	SenderReceiver	
Description	This interface provides the information about the current speed of the car. Note, that this is an absolute value, i.e. a negative physical speed shall appear as a positive value.	
isService	No (e.g. no BSW service)	
1 Data Element Name	value	
Data Type	numeric	
Physical Interpretation	Offset	0
	Unit	km/h
Physical Values	Min Value	0
	Max Value	409,4
	Resolution	0.1
Data/Event	Data	
Remarks	Length (bit) = 12; Recommendations: Init value= 0	

6.1.5 BatteryVoltage

Interface		
Name (of Interface)	BatteryVoltage	
Communcation Method	SenderReceiver	
Description	This interface provides the actual voltage level as measured at the battery.	
isService	No (e.g. no BSW service)	
1 Data Element Name	value	
Data Type	numeric	
Physical Interpretation	Offset	0
	Unit	V
Physical Values	Min Value	0
	Max Value	25.2
	Resolution	0.1
Data/Event	Data	
Remarks	Length (bit) = 8; Recommendations: Init value= UNKNOWN Proposal for "special values": "voltage measured is 25.3V or bigger" (253). "invalid" (254) a defect in the measuring system is detected "unknown" (255) for initialisation before the first available measurement.	

6.2 Mechanical decomposition door

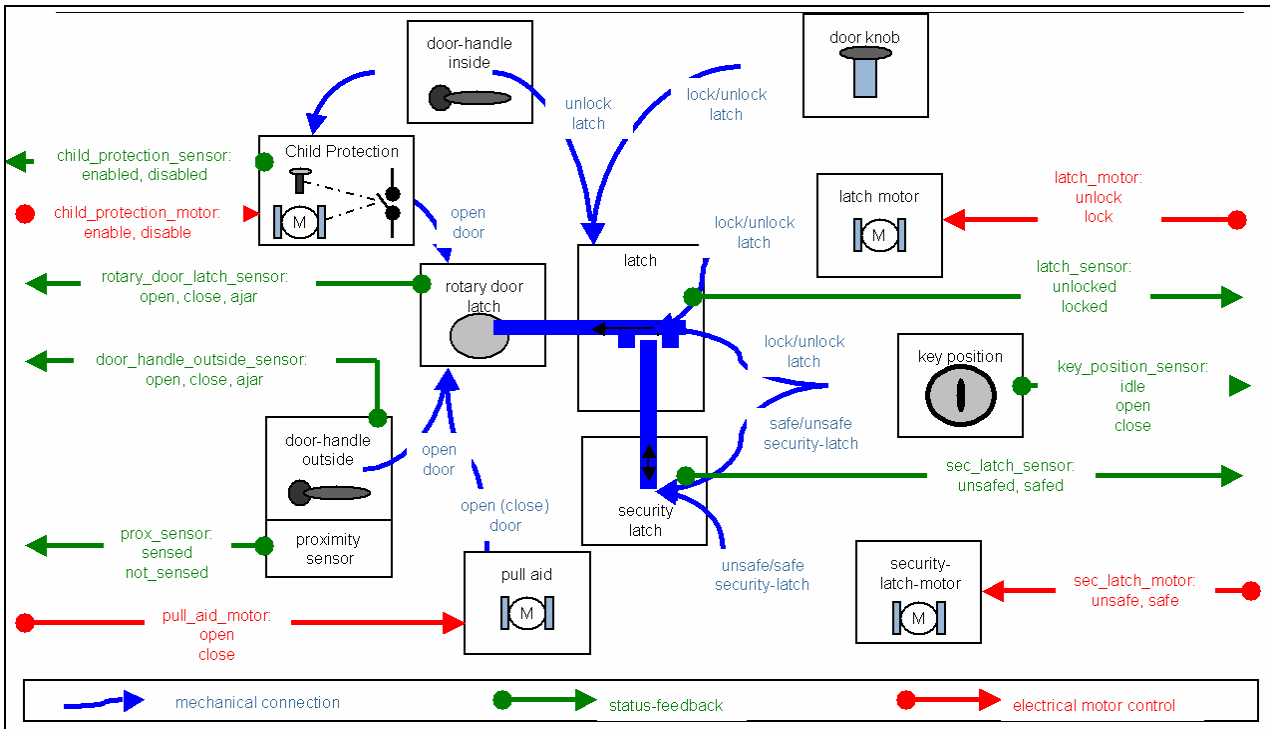


Fig 6.1-1 shows mechanical block diagram of a door

The figure above is intended for clarification of further mechanical relations.

6.3 Mechanical actions vs. standardized interfaces (door only)

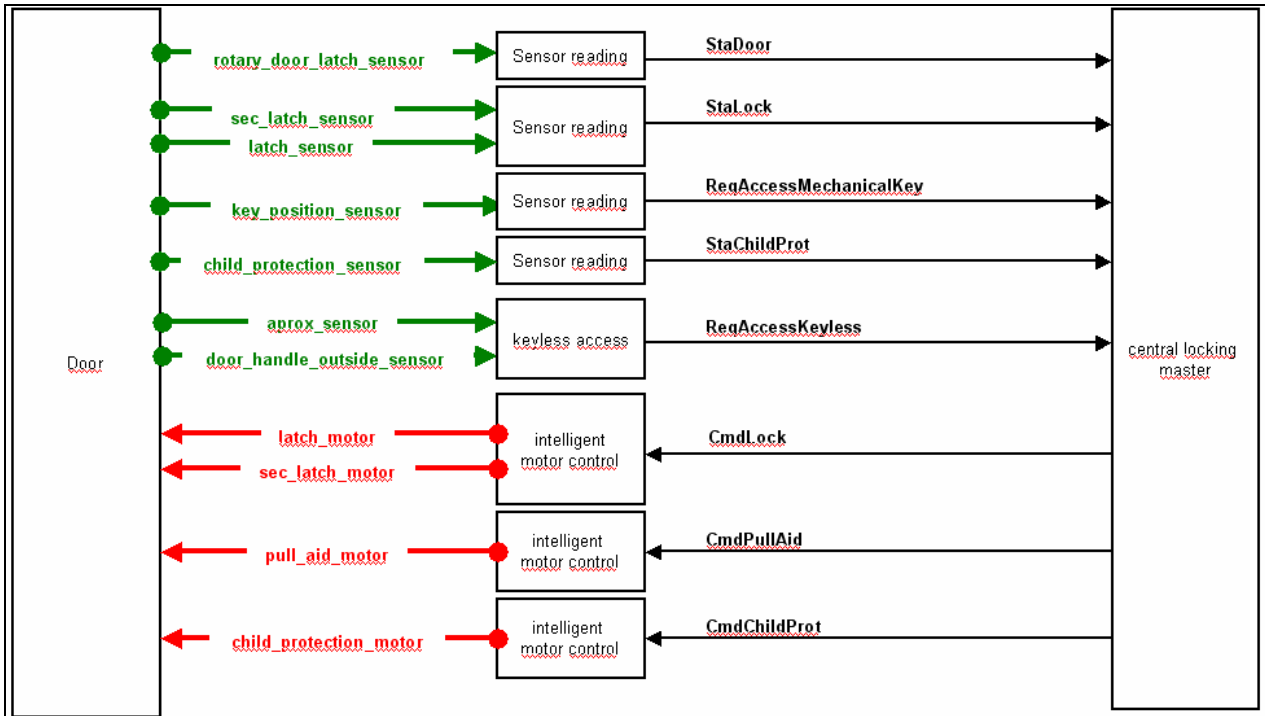


Fig 6.1-2 demonstrates the relation of mechanical actions at the door with standardized interfaces

The figure above is intended for clarification of further mechanical relations.