Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Seatbelt IOD

Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.0

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Version Date: December 19, 2018

FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
December 19, 2018	1.0	Initial Release	

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1 Overview

This feature provides seatbelt status, belted, unbelted, error to the driver through HMI screen

2 Architectural Design

2.1 SBST-CLD-REQ-333366/A-Seatbelt Client

Seatbelt Client is the device which displays the seatbelts status to the user. The details of the seatbelts come from the server.

2.2 SBST-CLD-REQ-333367/A-Seatbelt Server

Seatbelt server provides seatbelts status to the client, so that the client may display that information to the user.

2.3 Logical Signal Mapping

The CAN signals mentioned throughout this document shall refer to the CAN signal's logical name. The logical names shall be mapped to their actual CAN signal names. Please use the table below to perform the mapping. The InfoCAN database file is the master file for the actual CAN signal names. Note: some CAN signals referenced throughout this document may use the logical name while some may use the actual CAN signal name.

Logical Signal Names	Physcial Can Names
L1Dr	FirstRowBuckleDriver
L1Mid	FirstRowBuckleMid
L1Ps	FirstRowBucklePsngr
L2Dr	SecondRow BuckleDriver
L2Mid	SecondRowBuckleMid
L2Ps	SecondRowBucklePsngr
L3Dr	ThirdRowBuckleDriver
L3Mid	ThirdRowBuckleMid
L3Ps	ThirdRowBucklePsngr

2.4 SBST-IIR-REQ-333368/A-Seatbelt Client Rx

2.4.1 MD-REQ-333370/A-L1Dr

L1Dr: This signal provides details for 1st row driver side seatbelt.

Literals	Signal parameter
Faulty	0x0
Belted	0x1
Unbelted	0x2
Unknown	0x3

2.4.2 MD-REQ-335301/A-L1Mid

L1Mid: This signal provides details for 1st row middle seat seatbelt .

Literals	Signal parameter
Faulty	0x0
Belted	0x1
Unbelted	0x2
Unknown	0x3

2.4.3 MD-REQ-333371/A-L1Ps

L1Ps: This signal provides details for 1st row passenger side seatbelt.

Literals	Signal parameter
Faulty	0x0
Belted	0x1
Unbelted	0x2
Unknown	0x3

2.4.4 MD-REQ-333372/A-L2Dr

L2Dr: This signal provides details for 2nd row driver side seatbelt .

Literals	Signal parameter
Faulty	0x0
Belted	0x1
Unbelted	0x2
Unknown	0x3

2.4.5 MD-REQ-333373/A-L2Mid

L2Mid: This signal provides details for 2nd row middle seat seatbelt .

Literals	Signal parameter
Faulty	0x0
Belted	0x1
Unbelted	0x2
Unknown	0x3

2.4.6 MD-REQ-333374/A-L2Ps

L2Ps: This signal provides details for 2nd row passenger side seatbelt.

Literals	Signal parameter
Faulty	0x0
Belted	0x1
Unbelted	0x2
Unknown	0x3

2.4.7 MD-REQ-333375/A-L3Dr

L3Dr: This signal provides details for 3rd row driver side seatbelt.

Literals	Signal parameter
Faulty	0x0
Belted	0x1
Unbelted	0x2
Unknown	0x3

2.4.8 MD-REQ-333376/A-L3Mid

L3Mid: This signal provides details for 3rd row middle seat seatbelt.

Literals	Signal parameter
Faulty	0x0
Belted	0x1
Unbelted	0x2
Unknown	0x3

2.4.9 MD-REQ-333377/A-L3Ps

L3Ps: This signal provides details for 3rd row passenger side seatbelt.

Literals	Signal parameter
Faulty	0x0
Belted	0x1
Unbelted	0x2
Unknown	0x3

3 Functional Definition

3.1 SBST-FUN-REQ-333369/A-SBST

3.1.1 Requirements

3.1.1.1 SBST-REQ-333383/A-Unbuckle State One

For 1st row Driver and 1st row passenger, the seatbelt state signals should be interpreted as they are received. An unbelted state means that the seatbelt is not yet buckled and HMI should display, whatever HMI displays in unbuckled seatbelts situations.

3.1.1.2 SBST-REQ-333384/A-Unbuckle State Two

For all the rest of the seatbelt signals (exception are for 1st row driver and 1st row passenger), for client to display unbelted state, the seatbelt signals have to be transition from a belted state to unbelted state, within same vehicle ignition cycle.

So, when vehicle starts up, the signals may come as Unknown state, until the data is processed properly by the server which will update it to the other states such as Faulty/Belted/Unbelted.
However, Client HMI should not process or display anything with the Unbelted information unless there is a transition from Belted Status state.

3.1.1.3 SBST-REQ-335305/A-L1Mid Signal Availability

Not all vehicles have this signal available, since car seats arrangement may not be setup in such a way that there is no middle seat in the 1st row.

When this signal is available, the client shall process the signal content like the buckle signals in the requirement 333384.

3.1.2 Use Cases

3.1.2.1 SBST-UC-REQ-333363/A-First Row Passenger Unbelted

Actors	User in driver car seat or passenger in 1st row.
Pre-conditions	
Scenario Description	User starts the vehicle. User doesn't buckle the seatbelt
Post-conditions	Server sends unbelted signal state for 1st row driver or 1st row passenger. Client displays notification to the user for being unbelted.
List of Exception Use Cases	All other car seat passengers, including middle seat 1st row passenger of such a seat is available.
Interfaces	Vehicle HMI.

3.1.2.2 SBST-UC-REQ-333364/A-Other Rows Passenger Unbelted

Actors	Users in other rows in the vehicle.
Pre-conditions	
Scenario Description	User starts the vehicle. Users don't buckle the seatbelts.
Post-conditions	Server sends unbelted signal state for all passengers however the client does not display anything related to this unbelted situation.

List of Exception Use Cases	1st row driver and 1st row passenger car seats.
Interfaces	Vehicle HMI

3.1.2.3 SBST-UC-REQ-333365/A-Other Rows Passenger Belt Unbuckled

Actors	Users in the vehicle car seats.
Pre-conditions	
Scenario Description	Vehicle is turned on. One or more passengers buckle then unbuckle their seatbelts.
Post-conditions	Server sends unbelted state to the client for one or more car seats. Client shall consider all unbelted state as correct and shall display relevant icon in the IOD.
List of Exception Use Cases	1st row driver and 1st row passenger.
Interfaces	Vehicle HMI.

4 Appendix: Reference Documents

Reference #	Document Title