

**Research & Vehicle Technology**

**“Infotainment Systems Product Development”**

**Feature – First Row Seats InterfaceClient1**

**Infotainment Subsystem Part Specific Specification (SPSS)**

Version 1.0

**UNCONTROLLED COPY IF PRINTED**

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**FORD CONFIDENTIALF**

**Revision History**

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| --- | --- | --- | --- |
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# Overview

The First Row Seats feature allows a user to make first row driver and passenger seat adjustment requests from the First Row HMI (FRSInterfaceClient1), as well as provide status information on those adjustments. This includes:

* Driver Seat Adjustments of the:
  + Upper Thoracic
  + Left Thigh Extension
  + Right Thigh Extension
  + Headrest
* Passenger Seat Adjustments of the:
  + Upper Thoracic
  + Left Thigh Extension
  + Right Thigh Extension
  + Calf Raise Extension
  + Headrest
* Chauffeur Switch, which allows Pan/Recline control of the First Row Passenger Seat
* Status update and Menu Synchronization between First Row HMI (FRSInterfaceClient1) and First Row Seat modules (FRSDriverPositionServer, FRSPassengerPositionServer)

## Terms and Definitions

|  |  |
| --- | --- |
| **Abbreviation** | **Description** |
| CAN | Controller Area Network |
| DID | Data Identifier |
| FNV3 | Fully Networked Vehicle 3rd Generation |
| FRS | First Row Seat |
| SPSS | Subsystem Part Specific Specification |
| SRS | Second Row Seat |

|  |  |
| --- | --- |
| **Term** | **Description** |
|  |  |
|  |  |
|  |  |
|  |  |

# Architectural Design

## FRS-CLD-REQ-464910/A-First Row Seats InterfaceClient1

The First Row Seats InterfaceClient1 (FRSInterfaceClient1) is responsible for the tasks listed below:

* Receive seat status information from FRSDriverPositionServer and FRSPassengerPositionServer
* Transmit seat adjustment requests to FRSDriverPositionServer and FRSPassengerPositionServer
* Transmit Chauffeur adjustment requests to FRSPassengerPositionServer
* Display seat status information for First Row Driver and Passenger Seats
* Synchronize screen menu changes with FRSDriverPositionServer and FRSPassengerPositionServer

Please review the implementation guide/ block diagram to locate the First Row Seats InterfaceClient1 class.

## FRS-CLD-REQ-464912/A-First Row Seats Driver Position Server

The First Row Seats Driver Position Server (FRSDriverPositionServer) is responsible for the tasks listed below:

* Transmit driver seat status information to FRSInterfaceClient1
* Receive driver seat adjustment requests from FRSInterfaceClient1
* Synchronize screen menu changes with FRSInterfaceClient1
* Perform/actuate driver seat adjustments

Please review the implementation guide/ block diagram to locate the First Row Seats Driver Position Server class.

## FRS-CLD-REQ-464913/A-First Row Seats Passenger Position Server

The First Row Seats Passenger Position Server (FRSPassengerPositionServer) is responsible for the tasks listed below:

* Transmit passenger seat status information to FRSInterfaceClient1
* Receive passenger seat adjustment requests from FRSInterfaceClient1
* Receive Chauffeur adjustment requests from FRSInterfaceClient1
* Synchronize screen menu changes with FRSInterfaceClient1
* Perform/actuate passenger seat adjustments
* Perform/actuate Chauffeur adjustments

Please review the implementation guide/ block diagram to locate the First Row Seats Passenger Position Server class.

## Physical Mapping of Classes

The table below shows an example of how the logical classes that make up the First Row Seats feature can be mapped into physical modules. This mapping is an example only and does not necessarily carryover to other carlines or vehicle architectures.

|  |  |
| --- | --- |
| **Logical Class** | **Physical Module (ECU)** |
| FRSInterfaceClient1 | Phoenix |
| FRSDriverPositionServer | DSM |
| FRSPassengerPositionServer | PSM/SCMB |

## FRSInterfaceClient1 Interface

### FRS-IIR-REQ-464840/A-FRSInterfaceClient1\_Rx

#### MD-REQ-027149/A-IgnitionStatus\_St (TcSE ROIN-225464-1)

Message Type: Status

Signal used to indicate ignition state.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates ignition state |
|  | Unknown | 0x0 |  |
|  | Off | 0x1 |  |
|  | Accessory | 0x2 |  |
|  | Run | 0x4 |  |
|  | Start | 0x8 |  |
|  | Invalid | 0xF |  |

#### MD-REQ-465313/A-~~SeatSetMenuDriver\_St~~ SeatSetMnuDrv\_D\_Stat

Message Type: Status

Signal used to identify the menu header highlighter in the Driver seat settings HMI screen from hardswitch input.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates menu header highlighter in the Driver seat settings HMI |
|  | Inactive | 0x0 |  |
|  | Massage\_Menu | 0x1 |  |
|  | Seat\_Back\_Menu | 0x2 |  |
|  | Seat\_Cushion\_Menu | 0x3 |  |
|  | Headrestraint\_Menu | 0x4 |  |
|  | Unused | 0x5-0x7 |  |

#### MD-REQ-465314/A-~~SeatSetMenuPassenger\_St~~ SeatSetMnuPsngr\_D\_Stat

Message Type: Status

Signal used to identify the menu header highlighter in the Passenger seat settings HMI screen from hardswitch input.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates menu header highlighter in the Passenger seat settings HMI |
|  | Inactive | 0x0 |  |
|  | Massage\_Menu | 0x1 |  |
|  | Seat\_Back\_Menu | 0x2 |  |
|  | Seat\_Cushion\_Menu | 0x3 |  |
|  | Headrestraint\_Menu | 0x4 |  |
|  | Unused | 0x5-0x7 |  |

#### MD-REQ-465315/A-~~SeatDeviceSetDriver\_St~~ SeatDevcSetDrv\_D\_Stat

Message Type: Status

Signal used to identity the submenu option highlighter in the Driver seat settings HMI screen from hardswitch input.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates the submenu option highlighter in the Driver seat settings HMI screen |
|  | Inactive | 0x00 |  |
|  | Upper\_Thoracic | 0x01 |  |
|  | Left\_Thigh\_Extension | 0x02 |  |
|  | Right\_Thigh\_Extension | 0x03 |  |
|  | Calf\_Raise\_Extension | 0x04 |  |
|  | Upper\_Lumbar | 0x05 |  |
|  | Mid\_Lumbar | 0x06 |  |
|  | Lower\_Lumbar | 0x07 |  |
|  | Back\_Bolsters | 0x08 |  |
|  | Cushion\_Bolsters | 0x09 |  |
|  | Headrest | 0x0A |  |
|  | Lumbar | 0x0B |  |
|  | Pattern\_1 | 0x0C |  |
|  | Pattern\_2 | 0x0D |  |
|  | Pattern\_3 | 0x0E |  |
|  | Pattern\_4 | 0x0F |  |
|  | Pattern\_5 | 0x10 |  |
|  | Pattern\_6 | 0x11 |  |
|  | Pattern\_7 | 0x12 |  |
|  | Pattern\_8 | 0x13 |  |
|  | Pattern\_9 | 0x14 |  |
|  | Pattern\_10 | 0x15 |  |
|  | Unused | 0x16-0x1F |  |

#### MD-REQ-465316/A-~~SeatDeviceSetPassenger\_St~~ SeatDevcSetPsngr\_D\_St

Message Type: Status

Signal used to identity the submenu option highlighter in the Passenger seat settings HMI screen from hardswitch input.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates the submenu option highlighter in the Passenger seat settings HMI screen |
|  | Inactive | 0x00 |  |
|  | Upper\_Thoracic | 0x01 |  |
|  | Left\_Thigh\_Extension | 0x02 |  |
|  | Right\_Thigh\_Extension | 0x03 |  |
|  | Calf\_Raise\_Extension | 0x04 |  |
|  | Upper\_Lumbar | 0x05 |  |
|  | Mid\_Lumbar | 0x06 |  |
|  | Lower\_Lumbar | 0x07 |  |
|  | Back\_Bolsters | 0x08 |  |
|  | Cushion\_Bolsters | 0x09 |  |
|  | Headrest | 0x0A |  |
|  | Lumbar | 0x0B |  |
|  | Pattern\_1 | 0x0C |  |
|  | Pattern\_2 | 0x0D |  |
|  | Pattern\_3 | 0x0E |  |
|  | Pattern\_4 | 0x0F |  |
|  | Pattern\_5 | 0x10 |  |
|  | Pattern\_6 | 0x11 |  |
|  | Pattern\_7 | 0x12 |  |
|  | Pattern\_8 | 0x13 |  |
|  | Pattern\_9 | 0x14 |  |
|  | Pattern\_10 | 0x15 |  |
|  | Unused | 0x16-0x1F |  |

#### MD-REQ-465317/A-~~SeatThoracicAdjustDriverPosition\_St~~ SeatThrcAdjDrv\_Pc\_Act

Message Type: Status

Signal used to identify thoracic adjustment position status from Driver seat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Units: percent |
|  | Min | 0x0 | Resolution: 10 |
|  | Max | 0xE | Range: (from 0 to 140) |
|  | Faulty | 0xF |  |

#### MD-REQ-465318/A-~~SeatThoracicAdjustPassengerPosition\_St~~ SeatThrcAdjPsng\_Pc\_Act

Message Type: Status

Signal used to identify thoracic adjustment position status from Passenger seat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Units: percent |
|  | Min | 0x0 | Resolution: 10 |
|  | Max | 0xE | Range: (from 0 to 140) |
|  | Faulty | 0xF |  |

#### MD-REQ-465319/A-~~SeatLeftThighExtensionDriverPosition\_St~~ SeatThghLExtnDrv\_Pc\_Act

Message Type: Status

Signal used to identify Left thigh extension adjustment position status from Driver seat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Units: percent |
|  | Min | 0x0 | Resolution: 10 |
|  | Max | 0xE | Range: (from 0 to 140) |
|  | Faulty | 0xF |  |

#### MD-REQ-465320/A-~~SeatLeftThighExtensionPassengerPosition\_St~~ SeatThghLExtnPsn\_Pc\_Act

Message Type: Status

Signal used to identify Left thigh extension adjustment position status from Passenger seat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Units: percent |
|  | Min | 0x0 | Resolution: 10 |
|  | Max | 0xE | Range: (from 0 to 140) |
|  | Faulty | 0xF |  |

#### MD-REQ-465321/A-~~SeatRightThighExtensionDriverPosition\_St~~ SeatThghRExtnDrv\_Pc\_Act

Message Type: Status

Signal used to identify Right thigh extension adjustment position status from Driver seat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Units: percent |
|  | Min | 0x0 | Resolution: 10 |
|  | Max | 0xE | Range: (from 0 to 140) |
|  | Faulty | 0xF |  |

#### MD-REQ-465322/A-~~SeatRightThighExtensionPassengerPosition\_St~~ SeatThghRExtnPsn\_Pc\_Act

Message Type: Status

Signal used to identify Right thigh extension adjustment position status from Passenger seat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Units: percent |
|  | Min | 0x0 | Resolution: 10 |
|  | Max | 0xE | Range: (from 0 to 140) |
|  | Faulty | 0xF |  |

#### MD-REQ-465323/A-~~SeatCalfRaisePassengerPosition\_St~~ SeatCalfRaisPsn\_Pc\_Actl

Message Type: Status

Signal used to identify Calf Raise adjustment position status from Passenger seat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Units: percent |
|  | Min | 0x00 | Resolution: 1 |
|  | Max | 0x7D | Range: (from 0 to 125) |
|  | No data exists | 0x7E |  |
|  | Faulty | 0x7F |  |

#### MD-REQ-465324/A-~~SeatLumbarPositionDriver\_St~~ SeatLmbrPosDrv\_Pc\_Actl

Message Type: Status

Signal used to identify Lumbar adjustment position status from Driver seat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Units: percent |
|  | Min | 0x00 | Resolution: 1 |
|  | Max | 0x7D | Range: (from 0 to 125) |
|  | No data exists | 0x7E |  |
|  | Faulty | 0x7F |  |

#### MD-REQ-465325/A-~~SeatLumbarPositionPassenger\_St~~ SeatLmbrPosPsng\_Pc\_Act

Message Type: Status

Signal used to identify Lumbar adjustment position status from Passenger seat.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Units: percent |
|  | Min | 0x00 | Resolution: 1 |
|  | Max | 0x7D | Range: (from 0 to 125) |
|  | No data exists | 0x7E |  |
|  | Faulty | 0x7F |  |

#### MD-REQ-465326/A-~~SeatMassageDriver\_St~~ StmsDrv\_D2\_Stat

Message Type: Status

Signal used to identify massage status from Driver seat module.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates massage status from Driver seat module. |
|  | Null | 0x0 |  |
|  | Low | 0x1 |  |
|  | Medium | 0x2 |  |
|  | High | 0x3 |  |
|  | Off | 0x4 |  |

#### MD-REQ-465327/A-~~SeatMassagePassenger\_St~~ StmsPsngr\_D2\_Stat

Message Type: Status

Signal used to identify massage status from Passenger seat module.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates massage status from Passenger seat module. |
|  | Null | 0x0 |  |
|  | Low | 0x1 |  |
|  | Medium | 0x2 |  |
|  | High | 0x3 |  |
|  | Off | 0x4 |  |

#### MD-REQ-465328/A-~~SeatSetNotificationDriver\_Rq~~ SeatSetNotfnDrv\_D\_Rq

Message Type: Request

Signal used to display more seat settings option in the screen for Driver side.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Display more seat settings option in the screen for Driver side. |
|  | Inactive | 0x0 |  |
|  | Pop\_1 | 0x1 |  |
|  | Pop\_2 | 0x2 |  |
|  | NotUsed | 0x3 |  |

#### MD-REQ-465329/A-~~SeatSetNotificationPassenger\_Rq~~ SeatSetNotfnPsngr\_D\_Rq

Message Type: Request

Signal used to display more seat settings option in the screen for Passenger side.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Display more seat settings option in the screen for Passenger side. |
|  | Inactive | 0x0 |  |
|  | Pop\_1 | 0x1 |  |
|  | Pop\_2 | 0x2 |  |
|  | NotUsed | 0x3 |  |

### FRS-IIR-REQ-464841/A-FRSInterfaceClient1\_Tx

#### MD-REQ-465330/A-~~SeatSetMenuDriver\_Rq~~ SeatSetMnuDrv\_D\_Rq

Message Type: Request

Signal used to identify the menu header highlighter in the Driver seat settings HMI screen from HMI input.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates menu header highlighter in the Driver seat settings HMI |
|  | Inactive | 0x0 |  |
|  | Massage\_Menu | 0x1 |  |
|  | Seat\_Back\_Menu | 0x2 |  |
|  | Seat\_Cushion\_Menu | 0x3 |  |
|  | Headrestraint\_Menu | 0x4 |  |
|  | Unused | 0x5-0x7 |  |

#### MD-REQ-465331/A-~~SeatSetMenuPassenger\_Rq~~ SeatSetMnuPsngr\_D\_Rq

Message Type: Request

Signal used to identify the menu header highlighter in the Passenger seat settings HMI screen from HMI input.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates menu header highlighter in the Passenger seat settings HMI |
|  | Inactive | 0x0 |  |
|  | Massage\_Menu | 0x1 |  |
|  | Seat\_Back\_Menu | 0x2 |  |
|  | Seat\_Cushion\_Menu | 0x3 |  |
|  | Headrestraint\_Menu | 0x4 |  |
|  | Unused | 0x5-0x7 |  |

#### MD-REQ-465332/A-~~SeatDeviceSetDriver\_Rq~~ SeatDevcSetDrv\_D\_Rq

Message Type: Request

Signal used to identity the submenu option highlighter in the Driver seat settings HMI screen from HMI input.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates the submenu option highlighter in the Driver seat settings HMI screen |
|  | Inactive | 0x00 |  |
|  | Upper\_Thoracic | 0x01 |  |
|  | Left\_Thigh\_Extension | 0x02 |  |
|  | Right\_Thigh\_Extension | 0x03 |  |
|  | Calf\_Raise\_Extension | 0x04 |  |
|  | Upper\_Lumbar | 0x05 |  |
|  | Mid\_Lumbar | 0x06 |  |
|  | Lower\_Lumbar | 0x07 |  |
|  | Back\_Bolsters | 0x08 |  |
|  | Cushion\_Bolsters | 0x09 |  |
|  | Headrest | 0x0A |  |
|  | Lumbar | 0x0B |  |
|  | Pattern\_1 | 0x0C |  |
|  | Pattern\_2 | 0x0D |  |
|  | Pattern\_3 | 0x0E |  |
|  | Pattern\_4 | 0x0F |  |
|  | Pattern\_5 | 0x10 |  |
|  | Pattern\_6 | 0x11 |  |
|  | Pattern\_7 | 0x12 |  |
|  | Pattern\_8 | 0x13 |  |
|  | Pattern\_9 | 0x14 |  |
|  | Pattern\_10 | 0x15 |  |
|  | Unused | 0x16-0x1F |  |

#### MD-REQ-465333/A-~~SeatDeviceSetPassenger\_Rq~~ SeatDevcSetPsngr\_D\_Rq

Message Type: Request

Signal used to identity the submenu option highlighter in the Passenger seat settings HMI screen from HMI input.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Indicates the submenu option highlighter in the Passenger seat settings HMI screen |
|  | Inactive | 0x00 |  |
|  | Upper\_Thoracic | 0x01 |  |
|  | Left\_Thigh\_Extension | 0x02 |  |
|  | Right\_Thigh\_Extension | 0x03 |  |
|  | Calf\_Raise\_Extension | 0x04 |  |
|  | Upper\_Lumbar | 0x05 |  |
|  | Mid\_Lumbar | 0x06 |  |
|  | Lower\_Lumbar | 0x07 |  |
|  | Back\_Bolsters | 0x08 |  |
|  | Cushion\_Bolsters | 0x09 |  |
|  | Headrest | 0x0A |  |
|  | Lumbar | 0x0B |  |
|  | Pattern\_1 | 0x0C |  |
|  | Pattern\_2 | 0x0D |  |
|  | Pattern\_3 | 0x0E |  |
|  | Pattern\_4 | 0x0F |  |
|  | Pattern\_5 | 0x10 |  |
|  | Pattern\_6 | 0x11 |  |
|  | Pattern\_7 | 0x12 |  |
|  | Pattern\_8 | 0x13 |  |
|  | Pattern\_9 | 0x14 |  |
|  | Pattern\_10 | 0x15 |  |
|  | Unused | 0x16-0x1F |  |

#### MD-REQ-465334/A-~~SeatHeadrestAdjustDriver\_Rq~~ SeatHeadrstAdjDrv\_D\_Rq

Message Type: Request

Signal used to adjust position of Head Restraint of Driver seat from HMI.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Adjust position of Head Restraint of Driver seat from HMI. |
|  | Inactive | 0x0 |  |
|  | Forward | 0x1 |  |
|  | Backward | 0x2 |  |
|  | Up | 0x3 |  |
|  | Down | 0x4 |  |
|  | Unused | 0x5-0x7 |  |

#### MD-REQ-465335/A-~~SeatHeadrestAdjustPassenger\_Rq~~ SeatHeadrstAdjPsn\_D\_Rq

Message Type: Request

Signal used to adjust position of Head Restraint of Passenger seat from HMI.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Adjust position of Head Restraint of Passenger seat from HMI. |
|  | Inactive | 0x0 |  |
|  | Forward | 0x1 |  |
|  | Backward | 0x2 |  |
|  | Up | 0x3 |  |
|  | Down | 0x4 |  |
|  | Unused | 0x5-0x7 |  |

#### MD-REQ-465336/A-~~SeatDeviceAdjustDriver\_Rq~~ SeatDevcAdjDrv\_D\_Rq

Message Type: Request

Signal used to control the Driver seat device adjustments. Increase/decrease seat command for power adjustments from HMI.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Adjust driver seat device from HMI. |
|  | Inactive | 0x0 |  |
|  | Increase | 0x1 |  |
|  | Decrease | 0x2 |  |
|  | Not Used | 0x3 |  |

#### MD-REQ-465337/A-~~SeatDeviceAdjustPassenger\_Rq~~ SeatDevcAdjPsngr\_D\_Rq

Message Type: Request

Signal used to control the Passenger seat device adjustments. Increase/decrease seat command for power adjustments from HMI.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Adjust passenger seat device from HMI. |
|  | Inactive | 0x0 |  |
|  | Increase | 0x1 |  |
|  | Decrease | 0x2 |  |
|  | Not Used | 0x3 |  |

#### ADDED REQUIREMENT: MD-REQ-XXXXXX/A- SeatDevcAdjDrv\_D\_Stat

Message Type: Request

Signal used to control the Driver seat massage intensity. Increase/decrease command for massage intensity from seat module.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Adjust driver seat massage intensity from seat control |
|  | Inactive | 0x0 |  |
|  | Increase | 0x1 |  |
|  | Decrease | 0x2 |  |
|  | Not Used | 0x3 |  |

#### ADDED REQUIREMENT: - SeatDevcAdjPsgr\_D\_Sta

Message Type: Request

Signal used to control the Passenger seat massage intensity. Increase/decrease command for massage intensity from seat module.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Adjust passenger seat massage intensity from seat control |
|  | Inactive | 0x0 |  |
|  | Increase | 0x1 |  |
|  | Decrease | 0x2 |  |
|  | Not Used | 0x3 |  |

#### MD-REQ-465338/A-~~SeatCushionReclinerPassenger\_Rq~~ SeatCshnRclPsn\_D\_RqMnu

Message Type: Request

Signal used to control the cushion/recliner of first row passenger seat from HMI.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Adjust driver cushion/recliner from HMI. |
|  | Inactive | 0x0 |  |
|  | Cushion Forward | 0x1 |  |
|  | Cushion Backward | 0x2 |  |
|  | Recliner Forward | 0x3 |  |
|  | Recliner Backward | 0x4 |  |
|  | Unused | 0x5-0x7 |  |

#### MD-REQ-465339/A-~~SeatMassageDriver\_Rq~~ StmsDrv\_D2\_RqMnu

Message Type: Request

Signal used to identify Driver seat massage request from HMI.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Driver seat massage request from HMI. |
|  | Null | 0x0 |  |
|  | Low | 0x1 |  |
|  | Medium | 0x2 |  |
|  | High | 0x3 |  |
|  | Off | 0x4 |  |

#### MD-REQ-465340/A-~~SeatMassagePassenger\_Rq~~ StmsPsngr\_D2\_RqMnu

Message Type: Request

Signal used to identify Passenger seat massage request from HMI.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Literals** | **Value** | **Description** |
| Type | - | - | Passenger seat massage request from HMI. |
|  | Null | 0x0 |  |
|  | Low | 0x1 |  |
|  | Medium | 0x2 |  |
|  | High | 0x3 |  |
|  | Off | 0x4 |  |

# General Requirements

## FRS-REQ-465058/A-First Row Seats - Adjustment Configuration

The FRSInterfaceClient1 shall have a configurable parameter/DID to allow the First Row Seats Adjustment to be enabled/disabled.

* When the parameter indicates that First Row Seats Adjustment is Present, all the functionality and signals defined in FUN-REQ-464902 shall be supported.
* When the parameter indicates that First Row Seats Adjustment is Not Present, none of the functionality defined in FUN-REQ-464902 shall be supported.
  + The default value for this parameter shall be Not Present.

## FRS-REQ-465059/A-Chauffeur Switch - Configuration

The FRSInterfaceClient1 shall have a configurable parameter/DID to allow the Chauffeur Switch to be enabled/disabled.

* When the parameter indicates that Chauffeur Switch is Present, all the functionality and signals defined in FUN-REQ-464903 shall be supported.
* When the parameter indicates that Chauffeur Switch is Not Present, none of the functionality defined in FUN-REQ-464903 shall not be supported.
  + The default value for this parameter shall be Not Present.

## FRS-REQ-465060/A-First Row Seats Adjustment - Powermode Conditions

The FRSInterfaceClient1 shall allow/perform the First Row Seats Adjustment functionality as long as the HMI display is available (irrespective of IgnitionStatus\_St).

## FRS-REQ-465061/A-Chauffeur Switch - Powermode Conditions

The FRSInterfaceClient1 shall only perform the Chauffeur Switch functionality as long as the HMI display is available (irrespective of IgnitionStatus\_St).

# Functional Definition

## FRS-FUN-REQ-464902/A-Seat Adjustment

### Use Cases

#### FRS-UC-REQ-464981/A-User makes First Row Driver Seat adjustments via FRSInterfaceClient1

|  |  |
| --- | --- |
| **Actors** | FRSInterfaceClient1, FRSDriverPositionServer |
| **Pre-conditions** | Powermode conditions are met |
| **Scenario Description** | User opens the Seat Comfort menu and makes a driver seat adjustment on the FRSInterfaceClient1 |
| **Post-conditions** | The FRSInterfaceClient1 sends active screen to the FRSDriverPositionServer  The FRSInterfaceClient1 sends the respective setting request to the FRSDriverPositionServer  The FRSDriverPositionServer makes the adjustment and sends status update to FRSInterfaceClient1  The FRSInterfaceClient1 displays the updated setting value |
| **List of Exception Use Cases** |  |
| **Interfaces** | CAN, HMI |

#### FRS-UC-REQ-464982/A-User makes First Row Driver Seat adjustments via FRSDriverPositionServer

|  |  |
| --- | --- |
| **Actors** | FRSInterfaceClient1, FRSDriverPositionServer |
| **Pre-conditions** | Powermode conditions are met |
| **Scenario Description** | User opens the Seat Comfort menu and makes a driver seat adjustment on the FRSDriverPositionServer |
| **Post-conditions** | The FRSDriverPositionServer makes the adjustment and sends status update to FRSInterfaceClient1  The FRSInterfaceClient1 displays the updated setting value |
| **List of Exception Use Cases** |  |
| **Interfaces** | CAN, HMI |

#### FRS-UC-REQ-464983/A-User makes First Row Passenger Seat adjustments via FRSInterfaceClient1

|  |  |
| --- | --- |
| **Actors** | FRSInterfaceClient1, FRSPassengerPositionServer |
| **Pre-conditions** | Powermode conditions are met |
| **Scenario Description** | User opens the Seat Comfort menu and makes a passenger seat adjustment on the FRSInterfaceClient1 |
| **Post-conditions** | The FRSInterfaceClient1 sends active screen to the FRSPassengerPositionServer  The FRSInterfaceClient1 sends the respective setting request to the FRSPassengerPositionServer  The FRSPassengerPositionServer makes the adjustment and sends status update to FRSInterfaceClient1  The FRSInterfaceClient1 displays the updated setting value |
| **List of Exception Use Cases** |  |
| **Interfaces** | CAN, HMI |

#### FRS-UC-REQ-464984/A-User makes First Row Passenger Seat adjustments via FRSPassengerPositionServer

|  |  |
| --- | --- |
| **Actors** | FRSInterfaceClient1, FRSPassengerPositionServer |
| **Pre-conditions** | Powermode conditions are met |
| **Scenario Description** | User opens the Seat Comfort menu and makes a passenger seat adjustment on the FRSPassengerPositionServer |
| **Post-conditions** | The FRSPassengerPositionServer makes the adjustment and sends status update to FRSInterfaceClient1  The FRSInterfaceClient1 displays the updated setting value |
| **List of Exception Use Cases** |  |
| **Interfaces** | CAN, HMI |

### Requirements

#### Driver

##### FRS-REQ-465062/A-First Row Driver Menu Not Active

When the seat comfort menu for the driver's side is not displayed on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatSetMenuDriver\_Rq = "Inactive" to the FRSDriverPositionServer.

##### FRS-REQ-465063/A-First Row Driver Header Select

While any header is selected on the FRSInterfaceClient1, the corresponding menu shall open and the FRSInterfaceClient1 shall:

* Make active the last active/selected menu item, and send SeatDeviceSetDriver\_Rq to the FRSDriverPositionServer accordingly (set to that last active value)
* If last active cannot be determined, or if this is the first time the user has entered the menu, make active the default menu item, and send SeatDeviceSetDriver\_Rq to the FRSDriverPositionServer accordingly (set to the default value)
  + The default values shall be TBD

##### FRS-REQ-465064/A-First Row Driver Massage Header Selection

While the "Massage" menu is displayed on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatSetMenuDriver\_Rq = "Massage\_Menu" to the FRSDriverPositionServer.

##### FRS-REQ-465065/A-First Row Driver Headrest Header Selection

While the "Headrest" menu is displayed on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatSetMenuDriver\_Rq = "Headrestraint\_Menu" to the FRSDriverPositionServer.

##### FRS-REQ-465067/A-First Row Driver Seat Cushion Header Selection

While the "Seats" menu is displayed on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatSetMenuDriver\_Rq = "Seat\_Cushion\_Menu" to the FRSDriverPositionServer.

Note: The header options have been reduced to one single Seats menu, of which “Seat\_Cushion\_Menu” shall be used to represent this header. “Seat\_Back\_Menu” shall no longer be used.

##### FRS-REQ-465068/A-First Row Driver Lower Lumbar Selection

When "Lower Lumbar" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Lower\_Lumbar" to the FRSDriverPositionServer.

##### FRS-REQ-465069/A-First Row Driver Middle Lumbar Selection

When "Middle Lumbar" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Middle\_Lumbar" to the FRSDriverPositionServer.

##### FRS-REQ-465070/A-First Row Driver Upper Lumbar Selection

When "Upper Lumbar" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Upper\_Lumbar" to the FRSDriverPositionServer.

##### FRS-REQ-465071/A-First Row Driver Lumbar Adjustment Request Increase

While the user presses the Right Arrow (requests to increase) with either the "Upper Lumbar", "Middle Lumbar", OR "Lower Lumbar" selected, the FRSInterfaceClient1 shall send SeatDeviceAdjustDriver\_Rq = "Increase" to the FRSDriverPositionServer.

##### FRS-REQ-465072/A-First Row Driver Lumbar Adjustment Request Decrease

While the user presses the Left Arrow (requests to decrease) with either the "Upper Lumbar", "Middle Lumbar", OR "Lower Lumbar" selected, the FRSInterfaceClient1 shall send SeatDeviceAdjustDriver\_Rq = "Decrease" to the FRSDriverPositionServer.

##### FRS-REQ-465073/A-First Row Driver Back Bolster Selection

When "Back Bolster" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Back\_Bolster" to the FRSDriverPositionServer.

##### FRS-REQ-465074/A-First Row Driver Cushion Bolster Selection

When "Cushion Bolster" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Cushion\_Bolster" to the FRSDriverPositionServer.

##### FRS-REQ-465075/A-First Row Driver Bolster Adjustment Request Increase

While the user presses the Right Arrow (requests to increase) with either the "Back Bolster" or "Cushion Bolster" selected, the FRSInterfaceClient1 shall send SeatDeviceAdjustDriver\_Rq = "Increase" to the FRSDriverPositionServer.

##### FRS-REQ-465076/A-First Row Driver Bolster Adjustment Request Decrease

While the user presses the Left Arrow (requests to decrease) with either the "Back Bolster" or "Cushion Bolster" selected, the FRSInterfaceClient1 shall send SeatDeviceAdjustDriver\_Rq = "Decrease" to the FRSDriverPositionServer.

##### FRS-REQ-465077/A-First Row Driver Thoracic Selection

While "Thoracic Adjustment" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Upper\_Thoracic" to the FRSDriverPositionServer.

##### FRS-REQ-465078/A-First Row Driver Left Thigh Extension Selection

When the "Left Thigh Extension Adjustment" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Left\_Thigh\_Extension" to the FRSDriverPositionServer.

##### FRS-REQ-465079/A-First Row Driver Right Thigh Extension Selection

While "Right Thigh Extension Adjustment" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Right\_Thigh\_Extension" to the FRSDriverPositionServer.

##### FRS-REQ-465080/A-First Row Driver Selected Adjustment Increase Req

While the user presses the right arrow (requests to increase) with either the "Right Thigh", "Left Thigh", or "Thoracic" support selected, the FRSInterfaceClient1 shall send:

* SeatDeviceAdjustDriver\_Rq = "Increase"
* SeatDeviceSetDriver\_Rq = “Right\_Thigh\_Extension”, “Left\_Thigh\_Extension”, or “Upper\_Thoracic”

##### FRS-REQ-465081/A-First Row Driver Selected Adjustment Decrease Req

While the user presses the left arrow (requests to decrease) with either the "Right Thigh", "Left Thigh", or "Thoracic" support selected, the FRSInterfaceClient1 shall send:

* SeatDeviceAdjustDriver\_Rq = "Decrease"
* SeatDeviceSetDriver\_Rq = “Right\_Thigh\_Extension”, “Left\_Thigh\_Extension”, or “Upper\_Thoracic”

##### FRS-REQ-465082/A-First Row Driver Headrest Selection

When "Headrest Adjustment" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Headrest" to the FRSDriverPositionServer.

##### FRS-REQ-465083/A-First Row Driver Headrest Adjustment Up

While the user presses the up arrow on the headrest menu, the FRSInterfaceClient1 shall send:

* SeatHeadrestAdjustDriver\_Rq = "Up"
* SeatDeviceSetDriver\_Rq = "Headrest"

##### FRS-REQ-465084/A-First Row Driver Headrest Adjustment Down

While the user presses the down arrow on the headrest menu, the FRSInterfaceClient1 shall send:

* SeatHeadrestAdjustDriver\_Rq = "Down"
* SeatDeviceSetDriver\_Rq = "Headrest"

##### FRS-REQ-465085/A-First Row Driver Headrest Adjustment Forward

While the user presses the right arrow on the headrest menu, the FRSInterfaceClient1 shall send:

* SeatHeadrestAdjustDriver\_Rq = "Forward"
* SeatDeviceSetDriver\_Rq = "Headrest"

##### FRS-REQ-465086/A-First Row Driver Headrest Adjustment Backward

While the user presses the left arrow on the headrest menu, the FRSInterfaceClient1 shall send:

* SeatHeadrestAdjustDriver\_Rq = "Backward"
* SeatDeviceSetDriver\_Rq = "Headrest"

##### FRS-REQ-465087/A-First Row Driver Massage Pattern (n) Selection

When "Massage Pattern (n)" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetDriver\_Rq = "Pattern\_n" to the FRSDriverPositionServer, where n is the selected Pattern Number.

##### FRS-REQ-465088/A-First Row Driver Massage Intensity Selection High

When "Massage Pattern (n)" is selected and the selected intensity is "High", the FRSInterfaceClient1 shall send SeatMassageDriver\_Rq = "High" to the FRSDriverPositionServer.

##### FRS-REQ-465089/A-First Row Driver Massage Intensity Selection Medium

When "Massage Pattern (n)" is selected and the selected intensity is "Medium", the FRSInterfaceClient1 shall send SeatMassageDriver\_Rq = "Medium" to the FRSDriverPositionServer.

##### FRS-REQ-465090/A-First Row Driver Massage Intensity Selection Low

When "Massage Pattern (n)" is selected and the selected intensity is "Low", the FRSInterfaceClient1 shall send SeatMassageDriver\_Rq = "Low" to the FRSDriverPositionServer.

##### FRS-REQ-465091/A-First Row Driver Massage Intensity Selection Off

When "Massage Pattern (n)" is selected and the selected intensity is "Off", the FRSInterfaceClient1 shall send SeatMassageDriver\_Rq = "Off" to the FRSDriverPositionServer.

##### FRS-REQ-465092/A-Display Prompt 1 from First Row Driver Side

The FRSInterfaceClient1 shall display driver prompt message 1 when it receives SeatSetNotificationDriver\_Rq = "Pop\_1".

##### FRS-REQ-465093/A-Display Prompt 2 from First Row Driver Side

The FRSInterfaceClient1 shall display driver prompt message 2 when it receives SeatSetNotificationDriver\_Rq = "Pop\_2".

##### FRS-REQ-465094/A-First Row Driver Lumbar Percentage Display

The FRSInterfaceClient1 shall update the driver side status/fill bar for the lumbar as indicated via SeatLumbarPositionDriver\_St.

* If SeatLumbarPositionDriver\_St = “No data exists”, the FRSInterfaceClient1 shall display a faulty state to the user.
* If SeatLumbarPositionDriver\_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user.

##### FRS-REQ-465095/A-First Row Driver Thoracic Percentage Display

The FRSInterfaceClient1 shall update the driver side status/fill bar for the thoracic as indicated via SeatThoracicAdjustDriverPosition\_St.

* If SeatThoracicAdjustDriverPosition\_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user

##### FRS-REQ-465096/A-First Row Driver Left Thigh Extension Percentage Display

The FRSInterfaceClient1 shall update the driver side status/fill bar for the Left Thigh Extension as indicated via SeatLeftThighExtensionDriverPosition\_St.

* If SeatLeftThighExtensionDriverPosition\_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user.

##### FRS-REQ-465097/A-First Row Driver Right Thigh Extension Percentage Display

The FRSInterfaceClient1 shall update the driver side status/fill bar for the Right Thigh Extension as indicated via SeatRightThighExtensionDriverPosition\_St.

* If SeatRightThighExtensionDriverPosition\_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user.

##### FRS-REQ-465098/A-First Row Driver Calf Rest Percentage Display

The FRSInterfaceClient1 shall update the driver side status/fill bar for the Calf Rest as indicated via SeatCalfRaiseDriverPosition\_St.

* If SeatCalfRaiseDriverPosition\_St = “No data exists”, the FRSInterfaceClient1 shall display a faulty state to the user.
* If SeatCalfRaiseDriverPosition\_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user.

##### FRS-REQ-474217/A-First Row Driver Menu Activation from FRSDriverPositionServer

Upon receiving SeatSetMenuDriver\_St from the FRSDriverPositionServer, the FRSInterfaceClient1 shall display the respective Menu:

* When SeatSetMenuDriver\_St = Massage\_Menu, the Massage Menu shall be displayed
* When SeatSetMenuDriver\_St = Seat\_Cushion\_Menu, the Seats Menu shall be displayed
* When SeatSetMenuDriver\_St = Headrestraint\_Menu, the Headrest Menu shall be displayed

Note: SeatSetMenuDriver\_St = Seat\_Back\_Menu shall not be used (this menu is no longer available).

##### FRS-REQ-474218/A-First Row Driver Device Activation from FRSDriverPositionServer

When displaying a Menu per REQ-474217, the FRSInterfaceClient1 shall highlight/activate the device/selection as indicated via SeatDeviceSetDriver\_St from the FRSDriverPositionServer:

|  |  |  |
| --- | --- | --- |
| **SeatDeviceSetDriver\_St** | **Device/Selection to Highlight** | **Menu/Header** |
| (0x01) - Upper\_Thoracic | Upper Thoracic | Seats |
| (0x02) - Left\_Thigh\_Extension | Left Thigh Extension | Seats |
| (0x03) - Right\_Thigh\_Extension | Right Thigh Extension | Seats |
| (0x04) - Calf\_Raise\_Extension | Calf Raise Extension | Seats |
| (0x05) - Upper\_Lumbar | Upper Lumbar | Seats |
| (0x06) - Mid\_Lumbar | Middle Lumbar | Seats |
| (0x07) - Lower\_Lumbar | Lower Lumbar | Seats |
| (0x08) - Back\_Bolsters | Back Bolsters | Seats |
| (0x09) - Cushion\_Bolsters | Cushion Bolsters | Seats |
| (0x0A) - Headrest | Headrest | Headrest |
| (0x0B) - Lumbar | Lumbar | Seats |
| (0x0C) - Pattern 1 | Massage Pattern 1 | Massage |
| (0x0D) - Pattern 2 | Massage Pattern 2 | Massage |
| (0x0E) - Pattern 3 | Massage Pattern 3 | Massage |
| (0x0F) - Pattern 4 | Massage Pattern 4 | Massage |
| (0x10) - Pattern 5 | Massage Pattern 5 | Massage |
| (0x11) - Pattern 6 | Massage Pattern 6 | Massage |
| (0x12) - Pattern 7 | Massage Pattern 7 | Massage |
| (0x13) - Pattern 8 | Massage Pattern 8 | Massage |
| (0x14) - Pattern 9 | Massage Pattern 9 | Massage |
| (0x15) - Pattern 10 | Massage Pattern 10 | Massage |

If the values for Menu and Device do not correspond to the table above per SeatSetMenuDriver\_St and SeatDeviceSetDriver\_St (i.e. an invalid combination), the FRSInterfaceClient1 shall act upon SeatDeviceSetDriver\_St and make the expected/corresponding Menu active for the indicated Device.

If the values for Menu and Device correspond to an adjustment/function that is configured Off, the FRSInterfaceClient1 shall ignore the request.

##### FRS-REQ-474219/A-First Row Driver Menu & Device - Conflicting Inputs

If the FRSInterfaceClient1 receives both user input via the touch display and FRSDriverPositionServer statuses via SeatSetMenuDriver\_St and SeatDeviceSetDriver\_St, the FRSInterfaceClient1 shall give the FRSDriverPositionServer statuses higher priority and act upon their values when updating the display.

#### Passenger

##### FRS-REQ-465099/A-First Row Passenger Menu Not Active

While the seat comfort menu for the passenger's side is not displayed on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatSetMenuPassenger\_Rq = "Inactive" to the FRSPassengerPositionServer.

##### FRS-REQ-465100/A-First Row Passenger Header Select

While any header is selected on the FRSInterfaceClient1, the corresponding menu shall open and the FRSInterfaceClient1 shall:

* Make active the last active/selected menu item, and send SeatDeviceSetPassenger\_Rq to the FRSPassengerPositionServer accordingly (set to that last active value)
* If last active cannot be determined, or if this is the first time the user has entered the menu, make active the default menu item, and send SeatDeviceSetPassenger\_Rq to the FRSPassengerPositionServer accordingly (set to the default value)
  + The default values shall be TBD

##### FRS-REQ-465101/A-First Row Passenger Massage Header Selection

While the "Massage" menu is displayed on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatSetMenuPassenger\_Rq = "Massage\_Menu" to the FRSPassengerPositionServer.

##### FRS-REQ-465102/A-First Row Passenger Headrest Header Selection

While the "Headrest" menu is displayed on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatSetMenuPassenger\_Rq = "Headrestraint\_Menu" to the FRSPassengerPositionServer.

##### FRS-REQ-465104/A-First Row Passenger Seat Cushion Header Selection

While the "Seats" menu is displayed on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatSetMenuPassenger\_Rq = "Seat\_Cushion\_Menu" to the FRSPassengerPositionServer.

Note: The header options have been reduced to one single Seats menu, of which “Seat\_Cushion\_Menu” shall be used to represent this header. “Seat\_Back\_Menu” shall no longer be used.

##### FRS-REQ-465105/A-First Row Passenger Lower Lumbar Selection

While "Lower Lumbar" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetPassenger\_Rq = "Lower\_Lumbar" to the FRSPassengerPositionServer.

##### FRS-REQ-465106/A-First Row Passenger Middle Lumbar Selection

While "Middle Lumbar" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetPassenger\_Rq = "Middle\_Lumbar" to the FRSPassengerPositionServer.

##### FRS-REQ-465107/A-First Row Passenger Upper Lumbar Selection

While "Upper Lumbar" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetPassenger\_Rq = "Upper\_Lumbar" to the FRSPassengerPositionServer.

##### FRS-REQ-465108/A-First Row Passenger Lumbar Adjustment Request Increase

While the user presses the Right Arrow (requests to increase) with either the "Upper Lumbar", "Middle Lumbar", OR "Lower Lumbar" selected, the FRSInterfaceClient1 shall send SeatDeviceAdjustPassenger\_Rq = "Increase" to the FRSPassengerPositionServer.

##### FRS-REQ-465109/A-First Row Passenger Lumbar Adjustment Request Decrease

While the user presses the Left Arrow (requests to decrease) with either the "Upper Lumbar", "Middle Lumbar", OR "Lower Lumbar" selected, the FRSInterfaceClient1 shall send SeatDeviceAdjustPassenger\_Rq = "Decrease" to the FRSPassengerPositionServer.

##### FRS-REQ-465110/A-First Row Passenger Back Bolster Selection

When "Back Bolster" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceAdjustPassenger\_Rq = "Back\_Bolster" to the FRSPassengerPositionServer.

##### FRS-REQ-465111/A-First Row Passenger Cushion Bolster Selection

When "Cushion Bolster" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceAdjustPassenger\_Rq = "Cushion\_Bolster" to the FRSPassengerPositionServer.

##### FRS-REQ-465112/A-First Row Passenger Bolster Adjustment Request Increase

While the user presses the Right Arrow (requests to increase) with either the "Back Bolster" or "Cushion Bolster" selected, the FRSInterfaceClient1 shall send SeatDeviceAdjustPassenger\_Rq = "Increase" to the FRSPassengerPositionServer.

##### FRS-REQ-465113/A-First Row Passenger Bolster Adjustment Request Decrease

While the user presses the Left Arrow (requests to decrease) with either the "Back Bolster" or "Cushion Bolster" selected, the FRSInterfaceClient1 shall send SeatDeviceAdjustPassenger\_Rq = "Decrease" to the FRSPassengerPositionServer.

##### FRS-REQ-465114/A-First Row Passenger Thoracic Selection

While "Thoracic Adjustment" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetPassenger\_Rq = "Upper\_Thoracic" to the FRSPassengerPositionServer.

##### FRS-REQ-465115/A-First Row Passenger Left Thigh Extension Selection

When the "Left Thigh Extension Adjustment" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetPassenger\_Rq = "Left\_Thigh\_Extension" to the FRSPassengerPositionServer.

##### FRS-REQ-465116/A-First Row Passenger Right Thigh Extension Selection

While "Right Thigh Extension Adjustment" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetPassenger\_Rq = "Right\_Thigh\_Extension" to the FRSPassengerPositionServer.

##### FRS-REQ-465117/A-First Row Passenger Calf Rest Selection

While "Calf Rest Adjustment" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetPassenger\_Rq = "Calf\_Raise\_Extension" to the FRSPassengerPositionServer.

##### FRS-REQ-465118/A-First Row Passenger Selected Adjustment Increase Req

While the user presses the right arrow (requests to increase) with either the "Thoracic", "Left Thigh Extension Adjustment", "Right Thigh Extension Adjustment" or "Calf Rest" selected, the FRSInterfaceClient1 shall send:

* SeatDeviceAdjustPassenger\_Rq = "Increase"
* SeatDeviceSetPassenger\_Rq = “Calf\_Raise\_Extension”, "Left\_Thigh\_Extension", "Right\_Thigh\_Extension", or “Upper\_Thoracic”

##### FRS-REQ-465119/A-First Row Passenger Selected Adjustment Decrease Req

While the user presses the left arrow (requests to decrease) with either the "Thoracic", "Left Thigh Extension Adjustment", "Right Thigh Extension Adjustment" or "Calf Rest" selected, the FRSInterfaceClient1 shall send:

* SeatDeviceAdjustPassenger\_Rq = "Decrease"
* SeatDeviceSetPassenger\_Rq = “Calf\_Raise\_Extension”, "Left\_Thigh\_Extension", "Right\_Thigh\_Extension", or “Upper\_Thoracic”

##### FRS-REQ-465120/A-First Row Passenger Headrest Selection

While "Headrest Adjustment" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetPassenger\_Rq = "Headrest" to the FRSPassengerPositionServer.

##### FRS-REQ-465121/A-First Row Passenger Headrest Adjustment Up

While the user presses the up arrow on the headrest menu, the FRSInterfaceClient1 shall send:

* SeatHeadrestAdjustPassenger\_Rq = "Up"
* SeatDeviceSetPassenger\_Rq = "Headrest"

##### FRS-REQ-465122/A-First Row Passenger Headrest Adjustment Down

While the user presses the down arrow on the headrest menu, the FRSInterfaceClient1 shall send:

* SeatHeadrestAdjustPassenger\_Rq = "Down"
* SeatDeviceSetPassenger\_Rq = "Headrest"

##### FRS-REQ-465123/A-First Row Passenger Headrest Adjustment Forward

While the user presses the right arrow on the headrest menu, the FRSInterfaceClient1 shall send:

* SeatHeadrestAdjustPassenger\_Rq = "Forward"
* SeatDeviceSetPassenger\_Rq = "Headrest"

##### FRS-REQ-465124/A-First Row Passenger Headrest Adjustment Backward

While the user presses the left arrow on the headrest menu, the FRSInterfaceClient1 shall send:

* SeatHeadrestAdjustPassenger\_Rq = "Backward"
* SeatDeviceSetPassenger\_Rq = "Headrest"

##### FRS-REQ-465125/A-First Row Passenger Massage Pattern (n) Selection

While "Massage Pattern (n)" is selected on the FRSInterfaceClient1, the FRSInterfaceClient1 shall send SeatDeviceSetPassenger\_Rq = "Pattern\_n" to the FRSPassengerPositionServer, where n is the selected Pattern Number.

##### FRS-REQ-465126/A-First Row Passenger Massage Intensity Selection High

While "Massage Pattern (n)" is selected and the selected intensity is "High", the FRSInterfaceClient1 shall send SeatMassagePassenger\_Rq = "High" to the FRSPassengerPositionServer.

##### FRS-REQ-465127/A-First Row Passenger Massage Intensity Selection Medium

While "Massage Pattern (n)" is selected and the selected intensity is "Medium", the FRSInterfaceClient1 shall send SeatMassagePassenger\_Rq = "Medium" to the FRSPassengerPositionServer.

##### FRS-REQ-465128/A-First Row Passenger Massage Intensity Selection Low

While "Massage Pattern (n)" is selected and the selected intensity is "Low", the FRSInterfaceClient1 shall send SeatMassagePassenger\_Rq = "Low" to the FRSPassengerPositionServer.

##### FRS-REQ-465129/A-First Row Passenger Massage Intensity Selection Off

While "Massage Pattern (n)" is selected and the selected intensity is "Off", the FRSInterfaceClient1 shall send SeatMassagePassenger\_Rq = "Off" to the FRSPassengerPositionServer.

##### FRS-REQ-465130/A-Display Prompt 1 from First Row Passenger Side

The FRSInterfaceClient1 shall display passenger prompt message 1 when it receives SeatSetNotificationPassenger\_Rq = "Pop\_1".

##### FRS-REQ-465131/A-Display Prompt 2 from First Row Passenger Side

The FRSInterfaceClient1 shall display passenger prompt message 2 when it receives SeatSetNotificationPassenger\_Rq = "Pop\_2".

##### FRS-REQ-465132/A-First Row Passenger Lumbar Percentage Display

The FRSInterfaceClient1 shall update the passenger side status/fill bar for the lumbar as indicated via SeatLumbarPositionPassenger\_St.

* If SeatLumbarPositionPassenger\_St = “No data exists”, the FRSInterfaceClient1 shall display a faulty state to the user.
* If SeatLumbarPositionPassenger\_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user.

##### FRS-REQ-465133/A-First Row Passenger Thoracic Percentage Display

The FRSInterfaceClient1 shall update the passenger side status/fill bar for the Thoracic as indicated via SeatThoracicAdjustPassengerPosition\_St.

* If SeatThoracicAdjustPassengerPosition\_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user.

##### FRS-REQ-465134/A-First Row Passenger Left Thigh Extension Percentage Display

The FRSInterfaceClient1 shall update the passenger side status/fill bar for the Left Thigh Extension as indicated via SeatLeftThighExtensionPassengerPosition\_St.

* If SeatLeftThighExtensionPassengerPosition\_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user.

##### FRS-REQ-465135/A-First Row Passenger Right Thigh Extension Percentage Display

The FRSInterfaceClient1 shall update the passenger side status/fill bar for the Right Thigh Extension as indicated via SeatRightThighExtensionPassengerPosition\_St.

* If SeatRightThighExtensionPassengerPosition\_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user.

##### FRS-REQ-465136/A-First Row Passenger Calf Rest Percentage Display

The FRSInterfaceClient1 shall update the passenger side status/fill bar for the Calf Rest as indicated via SeatCalfRaisePassengerPosition\_St.

* If SeatCalfRaisePassengerPosition \_St = “No data exists”, the FRSInterfaceClient1 shall display a faulty state to the user.
* If SeatCalfRaisePassengerPosition \_St = “Faulty”, the FRSInterfaceClient1 shall display a faulty state to the user.

##### FRS-REQ-474220/A-First Row Passenger Menu Activation from FRSPassengerPositionServer

Upon receiving SeatSetMenuPassenger\_St from the FRSPassengerPositionServer, the FRSInterfaceClient1 shall display the respective Menu:

* When SeatSetMenuPassenger\_St = Massage\_Menu, the Massage Menu shall be displayed
* When SeatSetMenuPassenger\_St = Seat\_Cushion\_Menu, the Seats Menu shall be displayed
* When SeatSetMenuPassenger\_St = Headrestraint\_Menu, the Headrest Menu shall be displayed

Note: SeatSetMenuPassenger\_St = Seat\_Back\_Menu shall not be used (this menu is no longer available).

##### FRS-REQ-474221/A-First Row Passenger Device Activation from FRSPassengerPositionServer

When displaying a Menu per REQ-474220, the FRSInterfaceClient1 shall highlight/activate the device/selection as indicated via SeatDeviceSetPassenger\_St from the FRSPassengerPositionServer:

|  |  |  |
| --- | --- | --- |
| **SeatDeviceSetPassenger\_St** | **Device/Selection to Highlight** | **Menu/Header** |
| (0x01) - Upper\_Thoracic | Upper Thoracic | Seats |
| (0x02) - Left\_Thigh\_Extension | Left Thigh Extension | Seats |
| (0x03) - Right\_Thigh\_Extension | Right Thigh Extension | Seats |
| (0x04) - Calf\_Raise\_Extension | Calf Raise Extension | Seats |
| (0x05) - Upper\_Lumbar | Upper Lumbar | Seats |
| (0x06) - Mid\_Lumbar | Middle Lumbar | Seats |
| (0x07) - Lower\_Lumbar | Lower Lumbar | Seats |
| (0x08) - Back\_Bolsters | Back Bolsters | Seats |
| (0x09) - Cushion\_Bolsters | Cushion Bolsters | Seats |
| (0x0A) - Headrest | Headrest | Headrest |
| (0x0B) - Lumbar | Lumbar | Seats |
| (0x0C) - Pattern 1 | Massage Pattern 1 | Massage |
| (0x0D) - Pattern 2 | Massage Pattern 2 | Massage |
| (0x0E) - Pattern 3 | Massage Pattern 3 | Massage |
| (0x0F) - Pattern 4 | Massage Pattern 4 | Massage |
| (0x10) - Pattern 5 | Massage Pattern 5 | Massage |
| (0x11) - Pattern 6 | Massage Pattern 6 | Massage |
| (0x12) - Pattern 7 | Massage Pattern 7 | Massage |
| (0x13) - Pattern 8 | Massage Pattern 8 | Massage |
| (0x14) - Pattern 9 | Massage Pattern 9 | Massage |
| (0x15) - Pattern 10 | Massage Pattern 10 | Massage |

If the values for Menu and Device do not correspond to the table above per SeatDeviceSetPassenger\_St and SeatSetMenuPassenger\_St (i.e. an invalid combination), the FRSInterfaceClient1 shall act upon SeatDeviceSetPassenger\_St and make the expected/corresponding Menu active for the indicated Device.

If the values for Menu and Device correspond to an adjustment/function that is configured Off, the FRSInterfaceClient1 shall ignore the request.

##### FRS-REQ-474222/A-First Row Passenger Menu & Device - Conflicting Inputs

If the FRSInterfaceClient1 receives both user input via the touch display and FRSPassengerPositionServer statuses via SeatSetMenuPassenger\_St and SeatDeviceSetPassenger\_St, the FRSInterfaceClient1 shall give the FRSPassengerPositionServer statuses higher priority and act upon their values when updating the display.

### White Box View

#### Activity Diagrams

#### Sequence Diagrams

## FRS-FUN-REQ-464903/A-Chauffeur Switch

### Use Cases

#### FRS-UC-REQ-464985/A-User selects Chauffeur Switch via FRSInterfaceClient1

|  |  |
| --- | --- |
| **Actors** | FRSInterfaceClient1, FRSPassengerPositionServer |
| **Pre-conditions** | Powermode conditions are met |
| **Scenario Description** | User opens the Chauffeur Switch and makes an adjustment on the FRSInterfaceClient1 (Pan, Recline) |
| **Post-conditions** | The FRSInterfaceClient1 sends the respective setting request to the FRSPassengerPositionServer  The FRSPassengerPositionServer makes the adjustment and sends status update to FRSInterfaceClient1  The FRSInterfaceClient1 displays the updated setting value |
| **List of Exception Use Cases** |  |
| **Interfaces** | CAN, HMI |

### Requirements

#### FRS-REQ-465137/A-First Row Chauffeur No Selection

While no button is pressed on the chauffeur menu, the FRSInterfaceClient1 shall send SeatCushionReclinerPassenger\_Rq = "Inactive" to the FRSPassengerPositionServer.

#### FRS-REQ-465138/A-First Row Chauffeur Pan Backward Selection

While the user presses the "Pan Backward" button on the chauffeur menu, the FRSInterfaceClient1 shall send SeatCushionReclinerPassenger\_Rq = "Cushion Backward" to the FRSPassengerPositionServer.

#### FRS-REQ-465139/A-First Row Chauffeur Pan Forward Selection

While the user presses the "Pan Forward" button on the chauffeur menu, the FRSInterfaceClient1 shall send SeatCushionReclinerPassenger\_Rq = "Cushion Forward" to the FRSPassengerPositionServer.

#### FRS-REQ-465140/A-First Row Chauffeur Recline Backward Selection

While the user presses the "Recline Backward" button on the chauffeur menu, the FRSInterfaceClient1 shall send SeatCushionReclinerPassenger\_Rq = "Recliner Backward" to the FRSPassengerPositionServer.

#### FRS-REQ-465141/A-First Row Chauffeur Recline Forward Selection

While the user presses the "Recline Forward" button on the chauffeur menu, the FRSInterfaceClient1 shall send SeatCushionReclinerPassenger\_Rq = "Recliner Forward" to the FRSPassengerPositionServer.

### White Box View

#### Activity Diagrams

#### Sequence Diagrams

# Appendix: Reference Documents

|  |  |
| --- | --- |
| Reference # | Document Title |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |
| 8 |  |
| 9 |  |
| 10 |  |
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