Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Digital RVC

Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.4

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Version Date: April 26, 2019

FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
May 26, 2017	**1.0**	**Initial Release**	
January 19, 2018	**1.1**		
	RVC-REQ-292387/A-GearPos_D_Trg		tmertiri: Added new signal name
	RVC-REQ-292389/A-GearRvrse_D_Actl		tmertiri: Added new signal name
	RVC-REQ-292388/A-Veh_V_ActlEng		tmertiri: Added new signal name
	RVC-FUR-REQ-014090/D-Display RVC Video (TcSE ROIN-194462-2)		tmertiri: updated with new signal names
February 1, 2018	**1.2**		
	RVC-FUR-REQ-014090/E-Display RVC Video (TcSE ROIN-194462-2)		tmertiri: Update wording
July 23, 2018	**1.3**		
	RVC-FUR-REQ-014090/F-Display RVC Video (TcSE ROIN-194462-2)		tm: Remove DE values details.
April 26, 2019	**1.4**		
	RVC-MD-REQ-292389/B-GearRvrse_D_Actl		tmertiri: clarified what to consider as reverse
	RVC-FUR-REQ-014090/G-Display RVC Video (TcSE ROIN-194462-2)		tmertiri: update the GeaRvrse_D_Actl New Strategy

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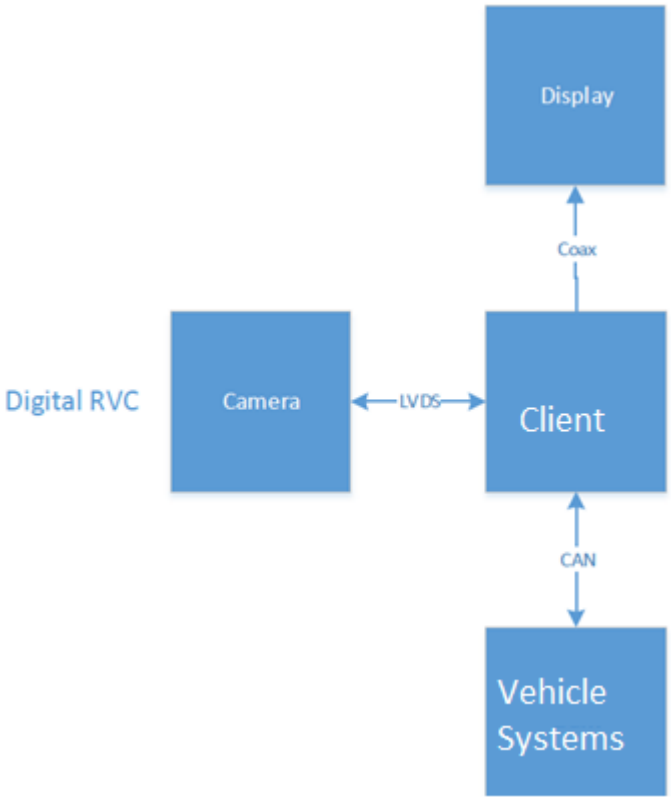
1 Architectural Design

1.1 Overview

Digital RVC (DRVC) is RVC system with LVDS communication between Camera and Client. Any needed CAN communication with any external module is done through an intermediator, Client in this case.



This figure shows the connection architecture in DRVC.

The main difference as mentioned above is communication between camera and client. The use cases of RVC are to remain the same with those of DRVC and other requirements as well, such as various speed limits to activate deactivate Rear View image streaming etc.

1.2 DRVC-REQ-260282/A-Server 2

Server 2 are the various systems that send various CAN signals to the bus to be used by Client or DRVC Server.

1.3 DRVC-REQ-260268/A-DRVC Server

Digital Rear View Camera Server is the camera module that sends video stream to the client. It can be used throughout this SPSS as Server or Server 1.

1.4 DRVC-REQ-260267/A-DRVC Client

Responsibility: The DRVC Client is the interface of the Digital Rear View Camera function. It acts with other system parts that control the Digital Rear View Camera or need data from it. In addition to that, the client serves as the gateway between the camera and the rest of the system parts, converting the CAN signals from other systems to LVDS, the type that DRVC can make use.

1.5 DRVC-REQ-261261/A-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. This is done to protect specs from being modified in case a signal name changes without any new functionality.

Logical Name	CAN Signal Name
DecklidAjar	DrStatTgate_B_Actl
LiftgateAjar	DrSTatInnrTgate_B_Actl
TrlrCnnct	TrlrLampCnnct_B_Actl
SteWhlAng	SteWhlComp_An_Est
StePinAng	StePinComp_An_Est

Table: Logical name/CAN signal mapping

I2C signals also have their own logical name. Unlike CAN protocol in I2C the connection between modules is known as Master-Slave, where only Master can initialize data request. As such the signals below are all initialized by the Client, which has a master relationship in the I2C bus.

Logical Name	I2C Signal Name
DrvcOvrlsRq	OvrlsRq
DrvcSteAng	SteAngle
DrvcViewRq	ViewRq
DrvcCurDispView	CurDispView

The table below is a list of I2C signals used for mainly diagnostics purposes. Refer DRVC Diagnostics SPSS and to I2C over LVDS Communication Protocol for Camera SPSS for further details.

I2C Signal Name
Core Assembly FPN
Delivery Assembly FPN
Software FPN
Serial Number
Main Calibration Data FPN
Camera Status
Configuration Data

1.6 DRVC-REQ-261254/A-Server 2 Tx

1.6.1 DRVC-REQ-260270/A-DecklidAjar

DecklidAjar message is sent by the Server 2 to the Client.

Logical Value	Encoded Value	Usage/Meaning
Closed	0	Declid is closed
Ajar	1	Decklid is ajar

1.6.2 DRVC-REQ-260271/A-LiftgateAjar

LiftgateAjar message is sent by Server 2 to the Client.

Logical Value	Encoded Value	Usage/Meaning
Closed	0	Liftgate is closed
Ajar	1	Liftgate is ajar

1.6.3 DRVC-REQ-260272/A-TrlrCnnct

TrlrCnnct is a CAN message sent by Server 2 to the Client to inform if any trailer has been connected to the vehicle or not.

Logical Value	Encoded Value	Usage/Meaning
Off	0	Trailer Not Connected
Active	1	Trailer Connected

1.6.4 DRVC-REQ-260273/A-SteWhlAng

SteWhlAng is sent by Server2 to Client to indicate steering wheel angle position.

Logical Value	Encoded Value	Usage/Meaning
Angle	[0 – 32767]	0.1*value – 1600 to yield angle

1.6.5 DRVC-REQ-260274/A-StePinAng

StePinAng is sent by Server 2. It is used for dynamic guidelines.

Logical Value	Encoded Value	Usage/Meaning
Angle	[0 – 32767]	0.1*value – 1600 to yield angle

1.7 DRVC-REQ-261461/B-Client Rx

1.7.1 DRVC-REQ-260270/A-DecklidAjar

DecklidAjar message is sent by the Server 2 to the Client.

Logical Value	Encoded Value	Usage/Meaning
Closed	0	Declid is closed
Ajar	1	Decklid is ajar

1.7.2 DRVC-REQ-260271/A-LiftgateAjar

LiftgateAjar message is sent by Server 2 to the Client.

Logical Value	Encoded Value	Usage/Meaning
Closed	0	Liftgate is closed
Ajar	1	Liftgate is ajar

1.7.3 DRVC-REQ-260272/A-TrlrCnnct

TrlrCnnct is a CAN message sent by Server 2 to the Client to inform if any trailer has been connected to the vehicle or not.

Logical Value	Encoded Value	Usage/Meaning
Off	0	Trailer Not Connected
Active	1	Trailer Connected

1.7.4 DRVC-REQ-260273/A-SteWhlAng

SteWhlAng is sent by Server2 to Client to indicate steering wheel angle position.

Logical Value	Encoded Value	Usage/Meaning
Angle	[0 – 32767]	0.1*value – 1600 to yield angle

1.7.5 DRVC-REQ-260274/A-StePinAng

StePinAng is sent by Server 2. It is used for dynamic guidelines.

Logical Value	Encoded Value	Usage/Meaning
Angle	[0 – 32767]	0.1*value – 1600 to yield angle

1.7.6 RVC-REQ-292387/A-GearPos_D_Trg

GearPos_D_Trg
This signal is used to indicate Gear direction. Used with other gear signals to determine whether or not RVC is to be turned On or Off.

Name	Literals	Value	Description
Type	-	-	-
	Neutral	0x0	
	First	0x1	
	Second	0x2	
	Third	0x3	
	Fourth	0x4	
	Fifth	0x5	
	Sixth	0x6	
	Seventh	0x7	
	Eighth	0x8	
	Ninth	0x9	
	Tenth	0xA	
	Undefined_3	0xB	
	Undefined_4	0xC	
	Undefined_5	0xD	
	Reverse	0xE	
	Unknown	0xF	

1.7.7 MD-REQ-014023/A-GearLvrPos_D_Actl (TcSE ROIN-266648-1)

Message Type: Status

Vehicle status signal for the Gear Lever Position on an automatic transmission vehicle.

Name	Literals	Value	Description
Type	-	-	-
	Park	0x0	
	Reverse	0x1	
	Neutral	0x2	
	Drive	0x3	
	Sport_DriveSport	0x4	
	Low	0x5	
	First	0x6	
	Second	0x7	
	Third	0x8	
	Fourth	0x9	
	Fifth	0xA	
	Sixth	0xB	
	Undefined_Treat_as_Fault	0xC	
	Undefined_Treat_as_Fault1	0xD	
	Unknown_Position	0xE	
	Fault	0xF	

1.7.8 MD-REQ-014024/A-GearRvrseActv_D_Actl (TcSE ROIN-266649-1)

Message Type: Status

Vehicle status signal for notifying that Reverse Gear is engaged on a manual transmission vehicle.

Name	Literals	Value	Description
Type	-	-	-
	Inactive	0x0	
	Active	0x1	
	Unknown	0x2	
	Fault	0x3	

1.7.9 RVC-MD-REQ-292389/B-GearRvrse_D_Actl

GearRvrse_D_Actl

The purpose of this signal is to notify that Reverse Gear is engaged on a manual transmission vehicle.

$0: Inactive_not_confirmed
$1: Inactive_confirmed
$2: Active_not_confirmed
$3: Active_confirmed
$4: NotUsed_1
$5: NotUsed_2
$6: NotUsed_3
$7: Fault

Reverse status is indicated by both $2 (Active_not_confirmed) and $3 (Active_confirmed)

1.7.10 RVC-REQ-292388/A-Veh_V_ActlEng

Veh_V_ActlEng
This signal is used to indicate vehicle speed. Refer to database for proper signal values.

1.8 DRVC-REQ-261462/A-Client I2C Write

1.8.1 DRVC-REQ-260269/A-DrvcViewRq

DrvcViewRq: This signal is sent by the client to tell the server to change the camera view.

Logical Value	Encoded Value	Usage/Meaning
Off	0x00	Turn off
Normal	0x01	Put in Normal view
Zoom	0x02	Put in Zoom View
Split	0x03	Put in Split View

1.8.2 DRVC-REQ-260276/A-DrvcSteAng

DrvcVehSteAng signal is sent by the client to the server to indicate the steering wheel angle. This data is used by the server to calculate the dynamic overlays.

Encoded Value	Logical Value	Usage/Meaning
[0x00 – 0x7FFF]	Angle	0.1*value – 1600 to yield angle

1.8.3 DRVC-REQ-260278/A-DrvcOvrlsRq

DrvcOvRq signal is used by the client to tell the server what type of overlays to use. The data in this signal is generated according to instructions in requirement number 261288.

Encoded Value	Logical Value	Usage/Meaning
0x00	Inactive	Overlays inactive
0x01	Static	Static Overlays Active
0x02	Dynamic	Static and dynamic Overlays are Active
0x03	Not Used	Unused Value

1.9 DRVC-REQ-261463/A-Clent I2C Read

1.9.1 DRVC-REQ-260275/A-DrvcCurDispView

DrvcDispView : This signal is used to synchronize the displayed view.

Logical Value	Encoded Value	Usage/Meaning
Off	0x00	Image Off
Normal	0x01	Normal View
Zoom	0x02	Zoom View
Split	0x03	Split View

2 General Requirements

2.1 DRVC-REQ-261288/A-DrvcOvRq Data Generation

DrvcOvRq makes use of several CAN signals data in order to be produced.

DecklidAjar and LiftgateAjar data are OR-ed together. Both need to be Closed (0) for the Ajar value in the table below to be Closed.

Reverse_Gear	TrlrCnnct	Ajar	Overlay Request	Encode value
True	Off	Closed	Dynamic	0x02
False	Off	Closed	Static	0x01
All other values			Inactive	0x00
			Not Used	0x03

This table describes the various encoded values of DrvcOvRq gets in relation to other signals.

2.2 DRVC-REQ-261289/A-DrvcVehSteAng Data Generation

StePinAng and SteWhlAng are the two CAN signals that provide steering angle data to the Client. These two signals do not coexist in the same vehicle. It can be either one of them being transmitted in the bus, but not both.

The client should remove CAN protocol details from the signal and send the raw data of the incoming signal to Camera through I2C protocol.

2.3 DRVC-REQ-261469/A-I2C Signals

The mentioning of I2C signals here is done for convenience and ease of understand this SPSS. If there is any discrepancy between this SPSS and I2C over LVDS Communication Protocol for Camera the user should notify the team for the discrepancy.

2.4 RVC-FUR-REQ-014087/B-RVC Malfunction (TcSE ROIN-146656-2)

When the RVC Client (RearViewCameraClient) does not detect video present in the signal from the camera it shall set a DTC and the RVC Client shall display camera overlays for T_cameraMalfunctionDelay before displaying an error message allowing the user to acknowledge the video error and revert to the previous screen. At any time the video signal is detected RVC client should check for Gear position and show the camera.

2.5 RVC-TMR-REQ-166649/A-T_cameraMalfunctionDelay

Name	Description	Units	Range	Resolution	Default
T_cameraMalfunctionDelay	Time DAFVC or RVC Client should wait before displaying an error message to the user according to RVC-REQ-014087-RVC Malfunction or DAFVC-REQ-166649 DAFVC Malfunction.	sec	0-30	1	10

2.6 RVC-FUR-REQ-014088/E-Deactivate RVC (TcSE ROIN-293328)

The RVC Client (RearViewCameraClient) shall stop displaying RVC video when one of the following conditions is met:

1. Vehicle is shifted out of reverse (Camera Delay = OFF)
2. Vehicle is shifted out of reverse (GearLvrPos_D_Actl does not equal Reverse in automatic Transmission vehicle or GearRvrse_D_Actl or GearRvrseActv_D_Actl does not equal active in Manual Transmission vehicle) and vehicle speed > limit per CAMERA-REQ-014077-Feature Maximum Speed~~feature maximum~~ (Camera Delay = ON)
3. CGEA 1.2:

Power Mode does not equal IgnitionOn_2 or Running_2 or Crank_3
CGEA 1.3:
Ignition_Status does not equal Run

4. Vehicle is shifted into Park
    a) Automatic Transmission vehicle GearLvrPos_D_Actl == 0x0
    b) Manual Transmission Vehicle with Mechanical Park Brake
    GearRvrse_D_Actl == Inactive or GearRvrseActv_D_Actl == Inactive AND PrkBrkActv_B_Actl == Active
    c) Manual Transmission Vehicle with Electronic Park Brake
    GearRvrse_D_Actl == Inactive or GearRvrseActv_D_Actl == Inactive AND PrkBrkStatus == Active

2.7 CAMERA-REQ-014077/C-Feature Maximum Speed (TcSE ROIN-290556)

The feature maximum speed when displaying a camera image in forward gear shall be as described for each operational scenario below:

Scenario 1: Any camera feature activation attempted by User

a. *Rear Camera*

Feature maximum speed = 10 kph

b. Off Road Front Camera configured: *Not Available*

Feature maximum speed = 10 kph

c. Off Road Front Camera configured: *Available and does NOT meet conditions for Off Road Mode per Determine Off Road Mode requirement*

Feature maximum speed = 10 kph

d. Off Road Front Camera configured: *Available and meets conditions for Off Road Mode per Determine Off Road Mode requirement*

Feature maximum speed = 20 kph

Scenario 2: Rear Camera Active

Feature maximum speed = 10 kph

Scenario 3: Front Camera Active

a. Off Road Front Camera configured: *Not Available*

Feature maximum speed = 10 kph

b. Off Road Front Camera configured: *Available and does NOT meet conditions for Off Road Mode per Determine Off Road Mode requirement*

Feature maximum speed = 10 kph

c. Off Road Front Camera configured: *Available and meets conditions for Off Road Mode per Determine Off Road Mode requirement*

Feature maximum speed = 24 kph

2.8 RVC-FUR-REQ-014090/G-Display RVC Video (TcSE ROIN-194462-2)

There are two ways for Reverse Detection. What way to use is decided on configuration values.

Reverse Detection NEW:

Reverse_Gear is determined as mentioned in below table. Once GearLvrPos_D_Actl is reverse, System need to loop through signal GearPos_D_Trg to determine reverse gear until either GearLvrPos_D_Actl is not reverse OR Camera turn ON.

GearLvrPos_D_Actl = 0x1 (Reverse) (automatic transmission)	GearPos_D_Trg	Gear position and Camera Status
Reverse	0xE (Reverse)	Gear is Reverse, Turn Camera On

Upon detecting the conditions for RVC to be ON, the RVC Client (RearViewCameraClient) shall start a timer (T_minImageDisp) and shall not display the RVC image until the expiration of this timer. Upon expiration of the timer, the RVC Client shall start another timer (T_maxImageDisp). The RVC Client must display the RVC image prior to the expiration of T_maxImageDisp.

Once the conditions for displaying RVC are no longer applicable the RVC client shall:
1. Cancel the timer
2. Not display the RVC image

Reverse Detection LEGACY:

Reverse Detection is determined as mentioned in below table.

GearLvrPos_D_Actl = 0x1 (Reverse) (automatic transmission) or GearRvrseActv_D_Actl = 0x1 (Active)(manual transmission vehicle and Legacy Message Set) or GearRvrse_D_Actl = 0x3 or 0x2 (Active Confirmed or Active_not_confirmed) (manual transmission vehicle and New Message Set)	Gear position and Camera Status
Reverse	Gear is Reverse, Turn Camera On

Upon detecting the conditions for RVC to be ON, the RVC Client (RearViewCameraClient) shall start a timer (T_minImageDisp) and shall not display the RVC image until the expiration of this timer. Upon expiration of the timer, the RVC Client shall start another timer (T_maxImageDisp). The RVC Client must display the RVC image prior to the expiration of T_maxImageDisp.

Once the conditions for displaying RVC are no longer applicable the RVC client shall:
1. Cancel the timer
2. Not display the RVC image

2.9 RVC-TMR-REQ-014091/A-T_minImageDisp (TcSE ROIN-264661-1)

Name	Description	Units	Range	Resolution	Default
T_minImageDisp	Minimum time RVC Client should wait before displaying the RVC video image to the user according to RVC-GREQ-194462-2-Display RVC Video.	msec	225-275	5	250

2.10 RVC-TMR-REQ-014092/A-T_maxImageDisp (TcSE ROIN-264662-1)

Name	Description	Units	Range	Resolution	Default
T_maxImageDisp	Maximum time RVC Client should wait before displaying the RVC video image to the user according to RVC-GREQ-194462-2-Display RVC Video.	msec	450-550	5	500

2.11 CAMERA-FUR-REQ-014093/B-Camera Image Priority (TcSE ROIN-264652-1)

Once the camera image has been displayed to user, the image shall be maintained as long as the conditions required to be in the particular camera view are present and shall have highest priority:

- No pop-up screens shall interrupt the video image.
- Media functions (source change, volume control, etc.) shall be available, but shall not interrupt the image view to the user.

3 Functional Requirements

3.1 DRVC-REQ-261464/A-Use Cases

3.1.1 RVC-UC-REQ-014095/A-Activate Rear View Camera (TcSE ROIN-289794)

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start.
Scenario Description	The driver activates the Rear View Camera (RVC) by placing the vehicle in Reverse Gear.
Post-conditions	The vehicle display shows the RVC image.
List of Exception Use Cases	E1 – Rear View Camera Malfunction E2 – Decklid/Liftgate is Ajar while Rear View Camera is ON
Interfaces	G-HMI Vehicle System Interface

3.1.2 RVC-UC-REQ-014096/A-Rear View Camera Malfunction (TcSE ROIN-289795)

Linked Elements
RVC-UC-REQ-014095/A-Activate Rear View Camera (TcSE ROIN-289794)

Actors	Vehicle Occupant
Pre-conditions	Same as Normal Usage Use Case.
Scenario Description	The HMI interface indicates that the Rear View Camera (RVC) image cannot be shown because of a malfunction.
Post-conditions	The vehicle display is NOT showing RVC image.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.1.3 RVC-UC-REQ-014097/A-Decklid/Liftgate is Ajar while Rear View Camera is ON (TcSE ROIN-289796)

Linked Elements
RVC-UC-REQ-128278/A-Activate Rear View Camera
RVC-UC-REQ-014095/A-Activate Rear View Camera (TcSE ROIN-289794)

Actors	Vehicle Occupant
Pre-conditions	Same as Normal Usage Use Case.
Scenario Description	The HMI interface indicates that the Decklid/Liftgate is Ajar.
Post-conditions	The vehicle display shows the Rear View Camera image. The video feed from the Rear View Camera contains an image without guideline overlays.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.1.4 RVC-UC-REQ-014098/A-Deactivate Rear View Camera (TcSE ROIN-289797)

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start.

Scenario Description	The driver deactivates the Rear View Camera (RVC) by shifting the vehicle out of Reverse Gear.
Post-conditions	The vehicle display is NOT showing RVC image.
List of Exception Use Cases	E1 – Rear Camera Delay Mode is On E2 – Active Park Assist is Active E3 – Trailer Backup Assist is Active (N/A for stand-alone RVC)
Interfaces	G-HMI Vehicle System Interface

3.1.5 RVC-UC-REQ-014099/B-Rear Camera Delay Mode is On (TcSE ROIN-289798)

Linked Elements
RVC-UC-REQ-128280/A-Deactivate Rear View Camera
RVC-UC-REQ-014098/A-Deactivate Rear View Camera (TcSE ROIN-289797)

Actors	Vehicle Occupant
Pre-conditions	Same as Normal Usage Use Case.
Scenario Description	The driver shifts out of Reverse Gear and into any gear other than Park. The RVC image remains displayed to the driver until the vehicle reaches limit per CAMERA-REQ-014077-Feature Maximum Speed~~feature maximum speed~~.
Post-conditions	The vehicle display stops showing Rear View Camera image when vehicle speed reaches limit per CAMERA-REQ-014077-Feature Maximum Speed~~feature maximum speed~~.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.1.6 RVC-UC-REQ-014100/B-Active Park Assist is Active (TcSE ROIN-290554)

Linked Elements
RVC-UC-REQ-014098/A-Deactivate Rear View Camera (TcSE ROIN-289797)
RVC-UC-REQ-128280/A-Deactivate Rear View Camera
DAFVCv1-UC-REQ-128313/A-Deactivate Driver Assist Front View Camera
DAFVCv1-UC-REQ-014049/B-Deactivate Driver Assist Front View Camera (TcSE ROIN-290146)

Actors	Vehicle Occupant
Pre-conditions	Same as Normal Usage Use Case.
Scenario Description	The driver shifts out of Reverse Gear and into any other gear while Active Park Assist (APA) is active. The camera image feed remains displayed to the driver as long as APA is active and vehicle speed does not exceed limit per CAMERA-REQ-014077-Feature Maximum Speed~~feature maximum~~.
Post-conditions	The vehicle display stops showing Rear View Camera image when APA is no longer active or vehicle speed exceeds limit per CAMERA-REQ-014077-Feature Maximum Speed~~feature maximum~~.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.1.7 RVC-UC-REQ-014107/A-Select Manual Zoom Level X (TcSE ROIN-289799)

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start. The vehicle display is showing the Rear View Camera image.

Scenario Description	The driver activates Manual Zoom Mode Level X via the HMI interface.
Post-conditions	The vehicle display continues to show the Rear View Camera image. The vehicle display indicates that a zoom level is selected. The video feed from the Rear View Camera contains a zoomed-in image.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface
Notes	*There are three defined zoom levels and "Level X" is used to generically designate that one of the three is selected as described in this use case. Refer to HMI documentation (requirements and/or screen-flow) for which level(s) of zoom will be utilized.*

3.1.8 RVC-UC-REQ-014108/A-Deactivate Manual Zoom (TcSE ROIN-289802)

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start. The vehicle display is showing the Rear View Camera image with Zoom Level X selected.
Scenario Description	The user deactivates Manual Zoom Mode via HMI interface.
Post-conditions	The vehicle display continues to show the Rear View Camera image. The vehicle display indicates that no zoom level is selected. The video feed from the Rear View Camera contains a normal (no zoom applied) image.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface
Notes	*There are three defined zoom levels and "Level X" is used to generically designate that one of the three is selected as described in this use case. Refer to HMI documentation (requirements and/or screen-flow) for which level(s) of zoom will be utilized.*

3.1.9 RVC-UC-REQ-014112/A-Activate/Deactivate Rear Camera Delay (TcSE ROIN-289803)

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start.
Scenario Description	The driver activates/deactivates the Rear View Camera (RVC) Delay Mode via the HMI interface.
Post-conditions	The RVC Delay Mode is activated/deactivated.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.1.10 RVC-UC-REQ-014121/A-Activate/Deactivate Enhanced Park Aids (TcSE ROIN-289804)

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The ignition status is Run/Start.

Scenario Description	The driver activates/deactivates the Enhanced Park Aids via the HMI interface.
Post-conditions	The Enhance Park Aids are activated/deactivated. The HMI indicates the setting change determined by vehicle system interface signal.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.1.11 RVC-UC-REQ-196086/A-Rear Split View Exit

Actors	Rear Split View Exit
Pre-conditions	Vehicle Occupant
Scenario Description	• Vehicle in Run/Start • Rear Camera is showing • Rear Split View is showing on camera (rear split view stat = on) • Display and Camera are configured for Rear Split View (display also configured for without front camera, TBA, CHMSL camera, or Aux camera)
Post-conditions	• Customer presses Rear Normal View button OR • Rear Camera is sending Rear Normal View (Rear split view stat = off)
List of Exception Use Cases	Sync highlights Rear Normal View, populates the zoom button, and sends rear split request signal as on. Camera switches to rear normal view (if not already at rear normal view).
Interfaces	E1 – Vehicle is not RUN/START E2 – valid camera video signal not present E3 – Loss of communication with RVC
	G-HMI Vehicle System Interface

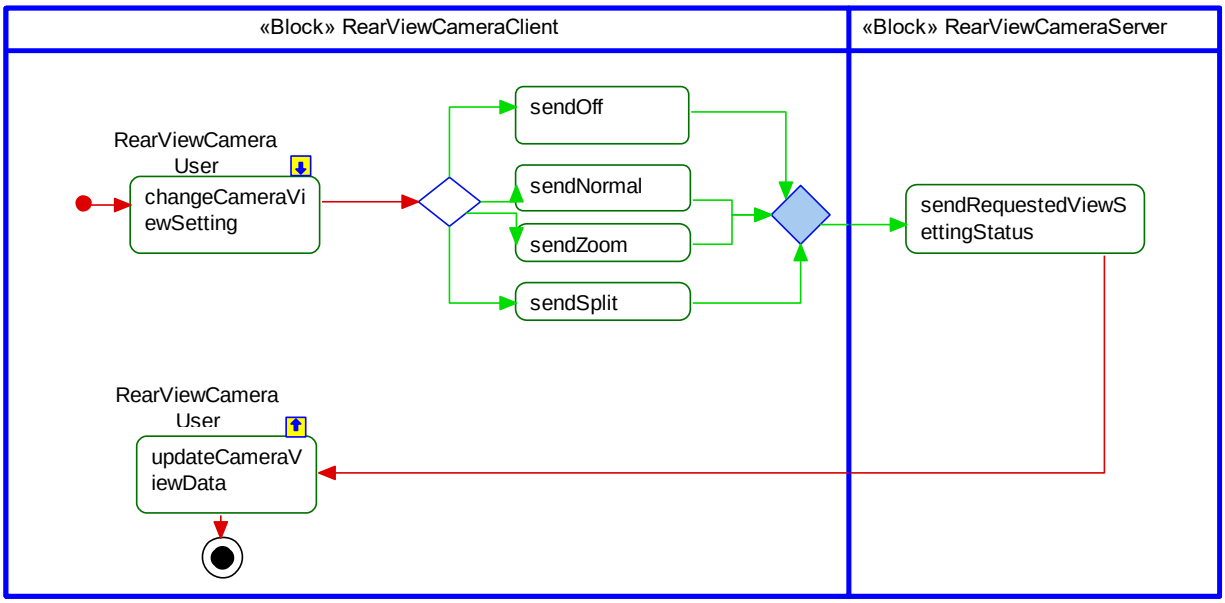
3.1.12 RVC-UC-REQ-196085/A-Enable Split View

Actors	Vehicle Occupant
Pre-conditions	• Vehicle in Run/Start • RVC is display • RVC is not showing Split View • Display and Camera are configured for Rear Split View (display also configured for without front camera, TBA, CHMSL camera, or Aux camera)
Scenario Description	Customer presses the view button to go to Rear Split View
Post-conditions	Sync highlights Rear Split View button, stops showing the zoom button, and sends Rear Split View request signal as Rear Split View On. Camera then shows Rear Split View
List of Exception Use Cases	E1 – Vehicle is not ON E2 – valid camera video signal not present E3 – Loss of communication with RVC
Interfaces	G-HMI Vehicle System Interface

3.2 DRVC-REQ-261465/A-White Box Views

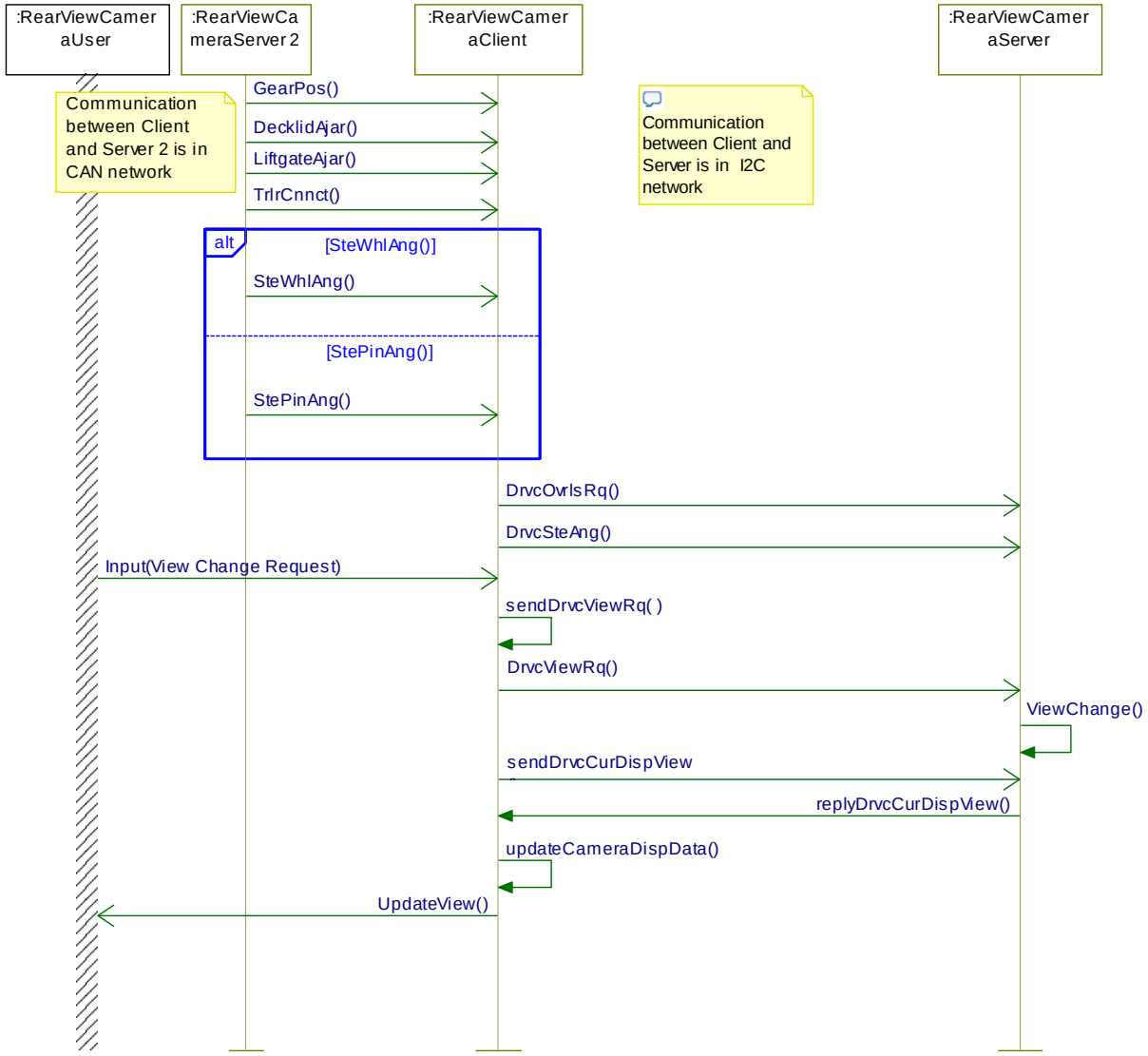
3.2.1 DRVC-REQ-261466/A-Activity Diagram

3.2.1.1 DRVC-REQ-258517/A-Digital RVC Operation



3.2.2 DRVC-REQ-261467/A-Sequence Diagram

3.2.2.1 DRVC-REQ-261300/A-DRVC SD



4 Appendix

Feature- I2C over LVDS Communication Protocol for camera