Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Active Park Assist V2

Subsystem Part Specific Specification (SPSS)

Version 1.1

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Version Date: June 13, 2016

FORD CONFIDENTIAL

Revision History

Date	Ver	Notes	
April 8, 2016	**1.0**	**Draft Release**	
June 13, 2016	**1.1**	**Initial Release**	**First Formal Release**
	CAMERA-FUR-REQ-166820/C-HMI Screen Logical Arbitration - Camera		schapeki: update for fault handling bugfixes
	CAMERA-FUR-REQ-166823/D-HMI Screen Logical Arbitration - APA Dedicated Display		schapeki: update for fault handling bugfixes
	CAMERA-FUR-REQ-131023/E-HMI Screen Logical Arbitration - PDC Dedicated Display		schapeki: update for fault handling bugfixes
	CAMERA-FUR-REQ-130496/G-Active Park Assist (APA) Signal Processing - Positional Symbol1		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-130498/G-Active Park Assist (APA) Signal Processing - Positional Text1		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-130500/G-Active Park Assist (APA) Signal Processing - Positional Text2		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-130503/G-Active Park Assist (APA) Signal Processing - Positional ParkPilot		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-130504/F-Active Park Assist (APA) Signal Processing - Positional ParkScenarioLeft		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-130505/F-Active Park Assist (APA) Signal Processing - Positional ParkScenarioRight		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-165427/D-Active Park Assist (APA) Signal Processing - Positional CarNonRVCSac		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-165442/E-Active Park Assist (APA) Signal Processing - Positional SAPFeatureMenuBarVisibility		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-161355/F-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional Symbol3		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-161356/F-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional Symbol4		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-161357/F-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional Text3		schapeki: bug fixes, table updates.
	CAMERA-FUR-REQ-161358/F-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional Text4		schapeki: bug fixes, table updates.

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1 Architectural Design

1.1 APA-CLD-REQ-013903/A-Active Park Assist Manager Client (TcSE ROIN-205558-1)

Responsibility: The ActiveParkAssistManagerClient is the interface of the Active Park Assist Manager (APAM) feature. The ActiveParkAssistManagerClient is responsible for displaying the available Active Park Assist (APA) modes to the user. Additionally the ActiveParkAssistManagerClient accepts input from the driver for selection of the desired APA mode, and transmits the selection via CAN signal to the ActiveParkAssistManagerServer.

Review the implementation guide/static view/block diagram to locate the ActiveParkAssistManagerClient object.

1.2 APA-CLD-REQ-013965/A-Active Park Assist Client (TcSE ROIN-204023-1)

Responsibility: The ActiveParkAssistClient is the interface of the Active Park Assist (APA) feature. The ActiveParkAssistClient is responsible for displaying the APA maneuver messages and/or graphics to driver during an APA session.

Review the implementation guide/static view/block diagram to locate the ActiveParkAssistClient object.

1.3 ActiveParkAssistManagerClient Interface

1.3.1 APAM-IIR-REQ-013917/A-ActiveParkAssistManagerClient_Tx (TcSE ROIN-265660-1)

1.3.1.1 MD-REQ-013905/A-ApaMdeStat_D_RqDrv (TcSE ROIN-202254-2)

Message Type: Request

Represents a request from the Active Park Assist Manager Client to the Active Park Assist Manager Server to change the selected Active Park Assist mode .

Name	Literals	Value	Description
Type	-	-	Request for Active Park Assist mode change.
	Inactive	0x0	
	SappRequested	0x1	
	PpaRequested	0x2	
	PoaRequested	0x3	
	NotUsed1	0x4	
	NotUsed2	0x5	
	Off	0x6	
	Faulty	0x7	

1.3.2 APAMv2-IIR-REQ-128772/A-ActiveParkAssistManagerClient_Rx

1.3.2.1 MD-REQ-128765/A-ApaSys_D_Stat

Message Type: Status

This signal communicates the system's operational state to the driver.

Name	Literals	Value	Description
Type	-	-	This signal communicates the system's operational state to the driver
	Null	0x0	
	Off	0x1	
	On	0x2	

Overspeed	0x3	
ApaCancelled	0x4	
NotAccessible	0x5	
Finished	0x6	
Faulty	0x7	

1.3.2.2 MD-REQ-128770/B-ApaSteScanMde_D_Stat

Message Type: Status

This signal is sent to the Active Park Assist Manager Client from the Active Park Assist Manager Server to communicate the APA system's operational state.

Name	Literals	Value	Description
Type	-	-	Communicates the system's operational state. It is independent from the system's HMI.
	Null	0x0	
	NotScanning	0x1	
	Scanning	0x2	
	Steering	0x3	

1.3.2.3 MD-REQ-013908/A-ApaMde_D_Stat (TcSE ROIN-202256-1)

Message Type: Status

Represents the status of the Active Park Assist Manager function.

Name	Literals	Value	Description
Type	-	-	Status of the currently selected Active Park Assist Mode
	Null	0x0	
	Off	0x1	
	SappActive	0x2	
	PpaActive	0x3	
	PoaActive	0x4	

1.3.2.4 MD-REQ-128767/A-ApaSelSapp_D_Stat

Message Type: Status

This signal communicates Active Park Assist sub-feature selectability for Semi Automatic Parallel Parking (SAPP).

Name	Literals	Value	Description
Type	-	-	Communicates if the SAPP feature is selectable.
	Null	0x0	
	Selectable	0x1	
	NotSelectable	0x2	
	NotConfigured	0x3	

1.3.2.5 MD-REQ-128768/A-ApaSelPpa_D_Stat

Message Type: Status

This signal communicates Active Park Assist sub-feature selectability for Perpendicular Park Assist (PPA).

Name	Literals	Value	Description
Type	-	-	Communicates if the PPA feature is selectable.
	Null	0x0	
	Selectable	0x1	
	NotSelectable	0x2	
	NotConfigured	0x3	

1.3.2.6 MD-REQ-128769/A-ApaSelPoa_D_Stat

Message Type: Status

This signal communicates Active Park Assist sub-feature selectability for Pull Out Assist (POA)
.

Name	Literals	Value	Description
Type	-	-	Communicates if the POA feature is selectable.
	Null	0x0	
	Selectable	0x1	
	NotSelectable	0x2	
	NotConfigured	0x3	

1.4 ActiveParkAssistClient Interface

1.4.1 APAv2-IIR-REQ-128529/A-ActiveParkAssistClient_Rx

1.4.1.1 MD-REQ-128765/A-ApaSys_D_Stat

Message Type: Status

This signal communicates the system's operational state to the driver.

Name	Literals	Value	Description
Type	-	-	This signal communicates the system's operational state to the driver
	Null	0x0	
	Off	0x1	
	On	0x2	
	Overspeed	0x3	
	ApaCancelled	0x4	
	NotAccessible	0x5	
	Finished	0x6	
	Faulty	0x7	

1.4.1.2 MD-REQ-128770/B-ApaSteScanMde_D_Stat

Message Type: Status

This signal is sent to the Active Park Assist Manager Client from the Active Park Assist Manager Server to communicate the APA system’s operational state.

Name	Literals	Value	Description
Type	-	-	Communicates the system's operational state. It is independent from the system's HMI.
	Null	0x0	

	NotScanning	0x1
	Scanning	0x2
	Steering	0x3

1.4.1.3 MD-REQ-128767/A-ApaSelSapp_D_Stat

Message Type: Status

This signal communicates Active Park Assist sub-feature selectability for Semi Automatic Parallel Parking (SAPP).

Name	Literals	Value	Description
Type	-	-	Communicates if the SAPP feature is selectable.
	Null	0x0	
	Selectable	0x1	
	NotSelectable	0x2	
	NotConfigured	0x3	

1.4.1.4 MD-REQ-128768/A-ApaSelPpa_D_Stat

Message Type: Status

This signal communicates Active Park Assist sub-feature selectability for Perpendicular Park Assist (PPA).

Name	Literals	Value	Description
Type	-	-	Communicates if the PPA feature is selectable.
	Null	0x0	
	Selectable	0x1	
	NotSelectable	0x2	
	NotConfigured	0x3	

1.4.1.5 MD-REQ-128769/A-ApaSelPoa_D_Stat

Message Type: Status

This signal communicates Active Park Assist sub-feature selectability for Pull Out Assist (POA)
.

Name	Literals	Value	Description
Type	-	-	Communicates if the POA feature is selectable.
	Null	0x0	
	Selectable	0x1	
	NotSelectable	0x2	
	NotConfigured	0x3	

1.4.1.6 MD-REQ-013908/A-ApaMde_D_Stat (TcSE ROIN-202256-1)

Message Type: Status

Represents the status of the Active Park Assist Manager function.

Name	Literals	Value	Description
Type	-	-	Status of the currently selected Active Park Assist Mode

	Null	0x0	
	Off	0x1	
	SappActive	0x2	
	PpaActive	0x3	
	PoaActive	0x4	

1.4.1.7 MD-REQ-128709/A-ApaActvSide2_D_Stat

Message Type: Status

This method is sent to the Active Park Assist Client from the Active Park Assist Server to communicate the APA system's operational state. The status represents side of the vehicle for which the APA feature is offering slots when the system is activated.

Name	Literals	Value	Description
Type	-	-	Communicates the side of vehicle offering for APA scanning/parking function
	Null	0x0	
	Left	0x1	
	Right	0x2	
	Reserved	0x3	

1.4.1.8 MD-REQ-128766/A-ApaScan_D_Stat

Message Type: Status

This method is sent to the Active Park Assist Client from the Active Park Assist Server to communicate the APA system's park slot scanning status.

Name	Literals	Value	Description
Type	-	-	Communicates if parking slot is found / ready
	Null	0x0	
	NoParkSlot	0x1	
	ParkSlotFound	0x2	
	ParkSlotReady	0x3	

1.4.1.9 MD-REQ-128764/B-ApaLongCtl_D_RqDrv

Message Type: Request

This signal is used to tell the driver if the APA system expects them to stop the vehicle or drive forward or backward.

Name	Literals	Value	Description
Type	-	-	Stop , front, and back Maneuver commands to the driver
	Null	0x0	
	NoRequest	0x1	
	Stop	0x2	
	DriveForward	0x3	
	DriveBackward	0x4	
	ReleaseBrake	0x5	
	Reserved	0x6	
	Reserved	0x7	

1.4.1.10 MD-REQ-128763/A-ApaGearShif_D_RqDrv

Message Type: Request

This signal is used to tell the driver what gear the APA system expects them to shift to.

Name	Literals	Value	Description
Type	-	-	APA system gear shift request to the driver.
	Null	0x0	
	NoRequest	0x1	
	ShiftToR	0x2	
	ShiftToD	0x3	
	ShiftToN	0x4	
	ShiftToP	0x5	
	Reserved	0x6	
	Reserved	0x7	

1.4.1.11 MD-REQ-128771/A-ApaSteWhl_D_RqDrv

Message Type: Request

This signal is sent to the Active Park Assist Client from the Active Park Assist Server as an APA system request to the driver for control of the steering wheel.

Name	Literals	Value	Description
Type	-	-	Used to tell the driver if the APA system expects them to let go of the steering wheel or take control.
	Null	0x0	
	NoRequest	0x1	
	RemoveHands	0x2	
	TakeControl	0x3	

1.4.1.12 MD-REQ-128712/C-ApaAcsy_D_RqDrv

Message Type: Request

This signal is used to communicates various APA system requests to the driver..

Name	Literals	Value	Description
Type	-	-	Signal is used to inform the driver of "accessory" APA system requests
	Null	0x0	
	NoRequest	0x1	
	SelectSide	0x2	
	PressApaButton	0x3	
	CheckForObject	0x4	
	CloseDoor	0x5	
	SelectSideLeft	0x6	
	SelectSideRight	0x7	

2 General Requirements

2.1 Graphical Position Definition

2.1.1 CAMERA-FUR-REQ-130574/B-Infotainment Graphical Position Definition 1

The HMI system shall provide graphics with fixed assignments for each dedicated display area per HMI program-specific graphical specifications.

2.1.2 CAMERA-FUR-REQ-130575/B-Infotainment Graphical Position Definition 2

The infotainment system shall only show sectors/ execute the below requirements if a screen has been requested as per the HMI arbitration defined in this specification.

2.1.3 CAMERA-FUR-REQ-130576/B-Infotainment Graphical Position Definition 3

Specific graphical display locations and content per program shall be provided by HMI and concurred upon by VE and E/ESE Parking Assistance Engineering.

Note:

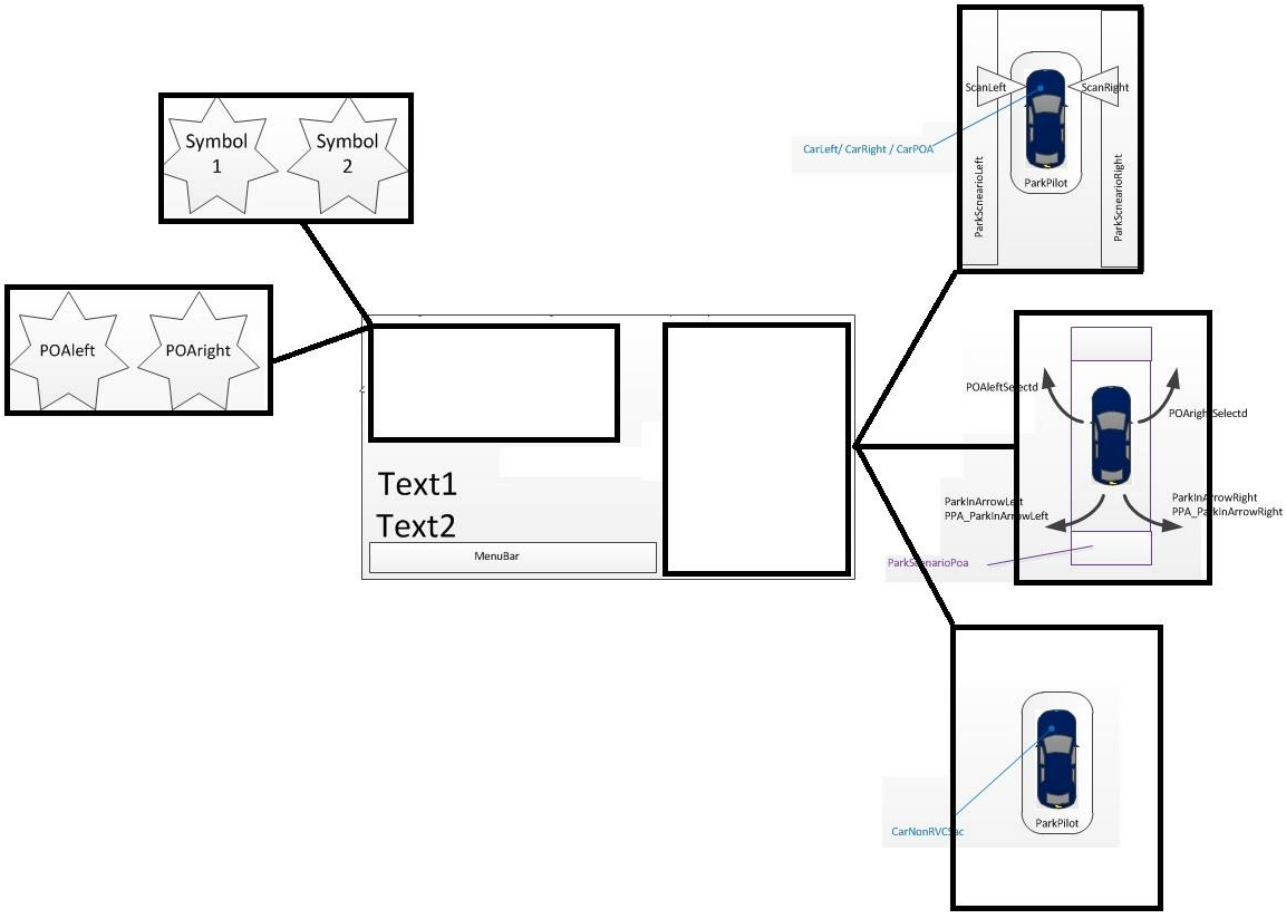
The above requirement means that the graphical examples provided in this specification are for functional direction only and are not to be implemented exactly as they have been drawn herein.

2.1.4 CAMERA-FUR-REQ-130577/B-Infotainment Graphical Position Definition 4

All defined graphics shall always be supported. Should HMI deem a particular graphic not applicable, it shall achieve this appearance by defining the various states of that graphic as identical to the background.

2.2 Active Park Assist Graphical Requirements

2.2.1 CAMERA-FUR-REQ-130444/C-Active Park Assist Graphical Layout



*Note that multiple layouts are shown because there are positionals which overlap within the area.
Actual HMI graphics will be application specific.

Description	Positional Name
Park Slot Scanning	ScanLeft
Parking Slot Scanning	ScanRight
Driver Instruction/Information	Symbol1
Driver Instruction/Information	Symbol2
Driver Instruction/Information	Text1
Driver Instruction/Information	Text2
Icon Representing Driven Vehicle	CarLeft
Icon Representing Driven Vehicle	CarRight
Icon Representing Driven Vehicle	CarPOA
Visual Park Aid Zone Graphic	ParkPilot
Parked Vehicle Representation	ParkScenarioLeft
Parked Vehicle Representation	ParkScenarioRight
Parked Vehicle Representation	ParkScenarioPOA
Icon Representing Driven Vehicle	CarNonRVCSac

Driver Instruction/Information	ParkInArrow
Driver Instruction/Information	POAleft
Driver Instruction/Information	POAright
Driver Instruction/Information	POArightSelectd
Driver Instruction/Information	POAleftSelectd
Driver Soft Button Selection	SAPFeatureMenuBarVisibility
Driver Soft Button Selection	SAPFeatureMenuBarHighlight
Driver Soft Button Selection	SAPFeatureMenuBarGreyout
Driver Soft Button Selection	SAPFeatureMenuContent

HMI Zone Assignment for APA during steering or scanning

2.2.2 CAMERA-FUR-REQ-131003/B-Active Park Assist Graphical Requirements - 1

The APA screen content shall be developed in close cooperation between the APA function owner, HMI and VE.

2.2.3 CAMERA-FUR-REQ-131004/B-Active Park Assist Graphical Requirements - 2

The HMI team shall design the APA screens such that they reflect the detailed instructions that the driver must follow.

2.2.4 CAMERA-FUR-REQ-131005/B-Active Park Assist Graphical Requirements - 3

The HMI system screen designer shall meet the functional direction of this interface specification (e.g. a graphic shall be provided for each functional block MDISP/CMDSTAT/DTLMOD/etc.) however the actual graphic and its position shall be placed per HMI direction.

2.2.5 CAMERA-FUR-REQ-131006/B-Active Park Assist Graphical Requirements - 4

It is acceptable for the HMI design to overlap positionals as deemed necessary per HMI direction. Should this be required, all overlaps shall be reviewed with parking assistance engineering to ensure proper foreground/background priority has been assigned to the overlapping positionals.

2.2.6 CAMERA-FUR-REQ-131007/B-Active Park Assist Graphical Requirements - 5

Each logical value of the simplified signals shall determine the display of each positional as defined in section Active Park Assist (APA) Signal Processing.

2.2.7 CAMERA-FUR-REQ-165413/B-Active Park Assist Graphical Requirements - 6

If Reverse Video Camera (RVC) and Active Park Assist (APA) are equipped and operational, (ApaSteScanMde_D_Stat == Scanning) and a transition from (Gear ~= Reverse) to (Gear == Reverse) takes place:

- The HMI system shall memorize the SAP system's current screen request "SapScrn@Rentry".
- The RVC base screen shall be built (including the VPA overlay) prior to populating any APA overlay.
- The HMI display shall (only) populate the SAP-BPA- RVC base screen with SAP text and symbols if it receives a SAP system screen request other than "SapScrn@Rentry".

Note: this is for flicker prevention. The HMI ECU memorizes the state of the APA signals at APA screen transition and does not overlay any APA positionals until there is a state change of the input signals.

2.3 Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC) Graphical Requirements

2.3.1 CAMERA-FUR-REQ-161276/B-Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC) Graphical Layout

Actual HMI graphics will be application specific.

Position	Abbreviation
Driver Instruction/Information	Symbol 3
Driver Instruction/Information	Symbol 4
Driver Instruction/Information	Text3
Driver Instruction/Information	Text4
Visual Park Aid Zone Graphic	ParkPilot

HMI Zone Assignment for APA and PDC during RVC

2.3.2 CAMERA-FUR-REQ-161271/B-Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC) Graphical Requirements 1

The APA and PDC during RVC screen content shall be developed in close cooperation between the APA function owner, HMI and VE.

2.3.3 CAMERA-FUR-REQ-161272/B-Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC) Graphical Requirements 2

The HMI team shall design the screens such that they reflect the detailed instructions that the driver must follow.

2.3.4 CAMERA-FUR-REQ-161273/B-Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC) Graphical Requirements 3

The HMI system screen designer shall meet the functional direction of this interface specification (e.g. a graphic shall be provided for each functional block) however the actual graphic and its position shall be placed per HMI team direction.

2.3.5 CAMERA-FUR-REQ-161274/B-Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC) Graphical Requirements 4

It is acceptable for the HMI design to overlap positionals as deemed necessary. Should this be required, all overlaps shall be reviewed with parking assistance engineering to ensure proper foreground/background priority has been assigned to the overlapping positionals.

2.3.6 CAMERA-FUR-REQ-161275/B-Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC) Graphical Requirements 5

Each logical value of the simplified signals shall determine the display of each positional as defined in section Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC) Signal Processing.

2.3.7 CAMERA-FUR-REQ-165415/A-Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC) Graphical Requirements 6

Upon transition into or out of "Active Park Assist (APA) and Park Distance Control (PDC) during Rear Video Camera (RVC)," active park positionals shall not be displayed until the state of the active park input signals has changed.
Note: this is for flicker prevention. The HMI ECU memorizes the state of the APA signals at RVC screen transition and does not overlay any APA positionals until there is a state change of the input sign

2.4 Display HMI Arbitration

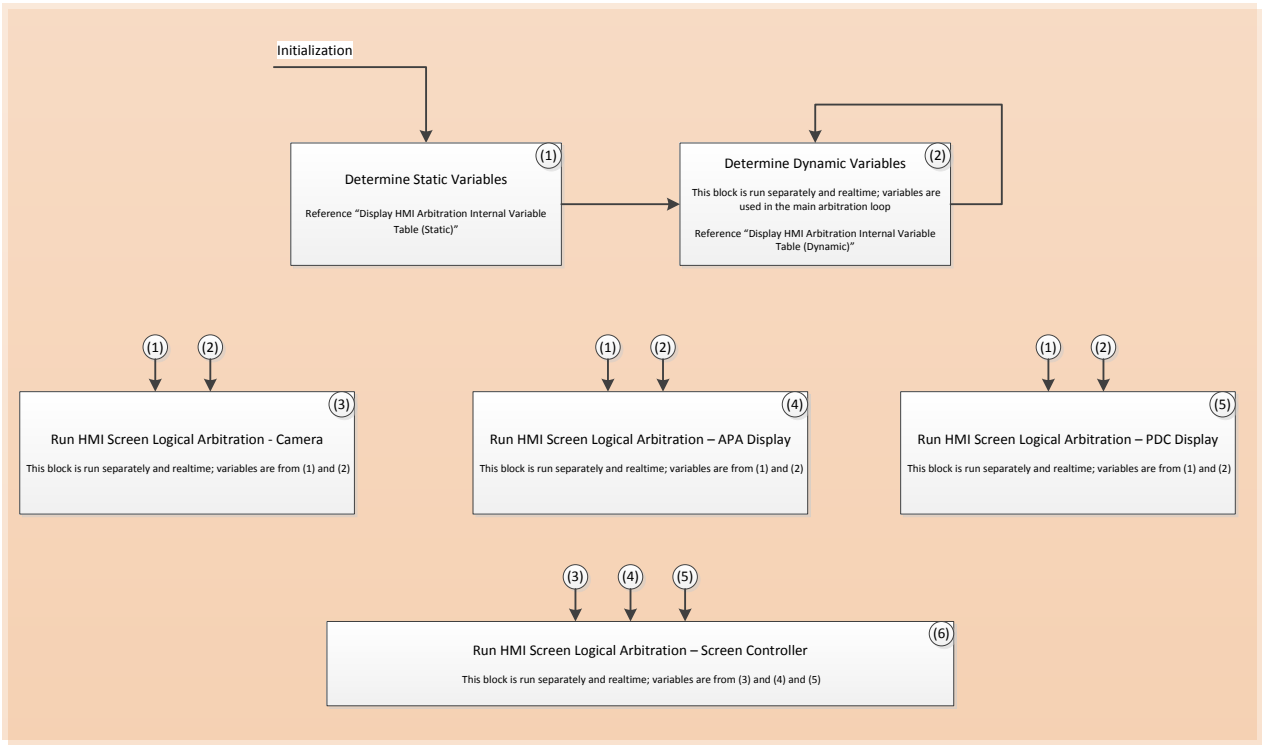
It is essential that the Infotainment ECU seamlessly integrates the Visual Park Aid and Active Park Assist screens into the overall display arbitration.

2.4.1 Display HMI Arbitration General Requirements

HMI Screen Logical Arbitration – Use Diagram
(Reference Only)

The operational steps through this section of the specification are:
1) Determine Static Variables at initialization
2) Determine Dynamic Variables (continuous)
3, 4, 5) Run Camera, APA and PDC engines (continuous)
6) Run screen controller (continuous)

Scheduler Layout



Display HMI Arbitration Use Diagram

2.4.1.1 CAMERA-FUR-REQ-131009/C-Display HMI Arbitration General Requirements 1

The HMI system shall arbitrate between screens with no discernable flicker as per HMI arbitration state machines.

2.4.1.2 CAMERA-FUR-REQ-131010/B-Display HMI Arbitration General Requirements 2

Within the Infotainment ECU overall display arbitration, the Camera, Active Park Assist and Visual Park Assist screens shall have the highest priority. No provision has been made in the screen arbitration to allow for higher priority displays, so any deviations require review and sign-off by Parking Assistance Core Engineering.

Note:

A legal requirement for APA exists. This states, the driver needs to be informed if the function is active and when it has been finished. In some legacy projects an indicator in the APA button has supported this requirement. However, the current design approach is to not use an indicator in the APA switch. The second part of the above requirement respects that (today) "Emergency Assist" has a higher priority than APA.

2.4.1.3 CAMERA-FUR-REQ-131011/C-Display HMI Arbitration General Requirements 3

Static Variables (e.g. configuration checks) shall be determined at transition to stable RUN operating mode, power-on initialization or ECU reset as per the arbitration tables.

2.4.1.4 CAMERA-FUR-REQ-131012/B-Display HMI Arbitration General Requirements 4

Static variables shall hold their state in KAM at key OFF. This is to provide a prior value during key RUN initialization.

2.4.1.5 CAMERA-FUR-REQ-131013/C-Display HMI Arbitration General Requirements 5

If a Park Aid fault screen is shown, the infotainment display system shall time out after a HMI-defined time. In addition to this time out, HMI may also allow a user input to acknowledge the fault and then close the screen.

2.4.1.6 CAMERA-FUR-REQ-131014/B-Display HMI Arbitration General Requirements 6

The HMI display client shall provide for internal timers. Operational value of the non-customer-selectable timers shall be programmable via direct memory write to EEPROM OR via a constant change in flash ROM (Individual vehicle applications may adjust the timers as program requirements dictate). At initialization (entry into stabilized RUN mode, power on reset, ECU reset), all timers shall initialize into state STOPPED AND RESET.

2.4.1.7 CAMERA-FUR-REQ-131015/C-Display HMI Arbitration General Requirements 7

Customer-selectable settings shall store the customer preference in KAM within a key cycle. At key OFF, if the customer-selected value is different than the stored value, the KAM location shall be committed to EEPROM or flash ROM appropriately.

2.4.1.8 CAMERA-FUR-REQ-211760/A-Display HMI Arbitration General Requirements 8

Fault screen appearance shall be approved by the camera, active park and park aid core teams respectively.

2.4.2 Display HMI Arbitration Internal Arbitration Variables

2.4.2.1 CAMERA-FUR-REQ-131016/D-Display HMI Arbitration Internal Variable Table (Static)

Variable Name	Value at initialization (battery connect)	Value at transition into RUN state	Notes
APA_Cfg	False	Use prior value	This looks at method II variables in the HMI ECU to determine whether or not to show the APA screens
Camra_Cfg	False	Use prior value	This looks at method II variables in the HMI ECU to determine whether or not to show the camera screens
FVC_Cfg	False	Use prior value	This looks at method II variables in the HMI ECU to determine maximum allowable speed limit for RVC exit
PDC_Cfg	False	Use prior value	This looks at method II variables in the HMI ECU to determine whether or not to show the PDC screens
OffRoadCamera_Cfg	False	Use prior value	This looks at method II variables in the HMI ECU to determine the speed thresholds for FVC screen deactivation
CamraDisable_Cfg	Use stored value	Use stored value	This is a internal parameter (not method 2 configurable) representing the vehicle speed at which the camera delay is overridden. **Typical setting is 10kph.**
CamraOffRoadDisable_Cfg	Use stored value	Use stored value	This is a internal parameter (not method 2 configurable) representing the vehicle speed at which the front camera delay is overridden when off-road capability has been enabled by the user. **Typical setting is 24kph.**

2.4.2.2 CAMERA-FUR-REQ-161326/C-Display HMI Arbitration Internal Variable Table (Dynamic)

Variable Name	Value at initialization (battery connect)	Value at transition into RUN state	Notes
APADisp	FALSE	FALSE	Internal parameter that represents the real-time state of the APA screen request. Used by the screen controller.
APA_Mode	NOT_APA	NOT_APA	Real-time (not debounced) variable used by the APA state machine. Debounce is handled on the PAM side.
APA_Sys_Stat	OFF	OFF	Real-time (not debounced) variable used by the APA state machine. Debounce is handled on the PAM side.
APA_Gear_Shif	NO_REQUEST	NO_REQUEST	Real-time (not debounced) variable used by the APA state machine. Debounce is handled on the PAM side.
FVCDisp	FALSE	FALSE	Internal parameter that represents the real-time state of the FVC screen request. Used by the screen controller.
FVC_OverSpd_Thres	CamraDisable_Cfg	CamraDisable_Cfg	Used as speed threshold for FVC screen deactivation
FVCScrRq	FALSE	FALSE	Internal parameter that is used to represent the real-time state of the Front Video Camera (FVC) user request status
GearPosHMI	PARK	PARK	Debounced internal parameter (see timer section for debounce characteristics) that is set and used within the arbitration state machines
Park_Brake_Merged	NOT_APPLIED	NOT_APPLIED	Real-time (not debounced) variable used in the gear input processing table – park brake status is required in order to determine PARK on manual transmission variants
PDC_Stat	INACTIVE	INACTIVE	
PDCDisp	FALSE	FALSE	Internal parameter that represents the real-time state of the PDC screen request. Used by the screen controller.
RVC_OverSpd_Thres	CamraDisable_Cfg	CamraDisable_Cfg	Used as speed threshold for RVC screen deactivation
RVCDisp	FALSE	FALSE	Internal parameter that represents the real-time state of the RVC screen request. Used by the screen controller.

2.4.2.3 CAMERA-FUR-REQ-161327/D-Display HMI Arbitration Internal Variable Table (Timers and Debounce)

Variable Name	Minimum Programmable Value	Maximum Programmable Value	Initial (default, not program specific) Value	Notes
APA_Actv_MM_Timr_Cfg	0	5000ms	250ms	Time to missing message fault while APA is actively displaying
APA_Mode_Timr_Cfg	0	2000ms	0ms	Timer for debouncing active park input data Note: should already be debounced by source.
Camra_Actv_MM_Timer_Cfg	0	5000ms	1000ms	Time to missing message fault while camera is actively displaying
Camra_Exit_Timr_Cfg	0	5000ms	2000	Minimum RVC camera screen display time when exiting using Camera Exit Delay.
GearPosHMI_Timr_Cfg	0	2000ms	250ms	Camera screen entry time Note: 2000ms is the FMVSS111 maximum time. Ford maximum per Rqt131305-007773 is 750ms for the entire system.
Camra_Fault_Timr_Cfg	0	5000ms	1000ms	Timer for debouncing data “faulty”
Park_Brake_Timr_Cfg	0	2000ms	0ms	Timer for debouncing park brake input data Note: should already be debounced by source.
PDC_Stat_Timr_Cfg	0	2000ms	0ms	Timer for debouncing park aid input data Note: should already be debounced by source.

Variable Name	Minimum Programmable Value	Maximum Programmable Value	Initial (default, not program specific) Value	Notes
PDC_Actv_MM_Timr_Cfg	0	5000ms	250ms	Time to missing message fault while PDC is actively displaying
PDC_Fault_Timr_Cfg	0	5000ms	250ms	Timer for debouncing data "faulty"

2.4.3 CAMERA-FUR-REQ-131018/D-HMI Screen Logical Arbitration - Determine Static Variables (Camra_Cfg)

The following decision table creates Camra_Cfg based on Method II camera configuration values.

Method 2 "Rear Camera"	Method 2 "RVC Split View"	Method 2 "DAFVC Split View"	Method 2 "360 Camera View"	"Camra_Cfg"
NOT_ AVAILABLE	NOT_ AVAILABLE	NOT_ AVAILABLE	NOT_ AVAILABLE	**FALSE**
All Other Cases				**TRUE**

Screen Arbitration Configuration Variables: Camera

2.4.4 CAMERA-FUR-REQ-131019/C-HMI Screen Logical Arbitration - Determine Static Variables (APA_Cfg, PDC_Cfg)

HMI Configuration for Parking Assistance	APA_Cfg	PDC_Cfg
NO_PDC_PSM_SAPP (or NOT_USED)	**FALSE**	**FALSE**
REAR_PDC | REARFRONT_PDC	**FALSE**	**TRUE**
REARFRONT_PDC_SAPP_NA | REAR_SAPP_NA | REARFRONT_PDC_EU | REAR_SAPP_EU | REARFRONT_PDC_APA | APALITE | APALITE_PLUS	**TRUE**	**TRUE**

Screen Arbitration Configuration Variables: Active Park Assist (APA) & Park Distance Control (PDC)

2.4.5 CAMERA-FUR-REQ-131020/E-HMI Screen Logical Arbitration - Determine Dynamic Variables (GearPosHMI)

The following decision table determines the parking brake status for use in the gear input processing table associated with manual transmissions. The parking brake may be mechanical or electronic-based, and there are separate CAN signals for each.
PrkBrkStatus is a CAN signal that contains numerous states such as REAR_CALIPER_CLOSED and REAR_CALIPER_TRANSITION. The table below assumes a simplified mapping of the signal into ACTIVE and INACTIVE.

PrkBrkActv_B_Actl	PrkBrkStatus	Park_Brake_Merged
DON'T CARE	ACTIVE consecutive samples for (T>= Park_Brake_Timr_Cfg)	**APPLIED**
DON'T CARE	INACTIVE consecutive samples for (T>= Park_Brake_Timr_Cfg)	**NOT_APPLIED**
ACTIVE consecutive samples for (T>= Park_Brake_Timr_Cfg)	DON'T CARE	**APPLIED**
INACTIVE consecutive samples for (T>= Park_Brake_Timr_Cfg)	DON'T CARE	**NOT_APPLIED**

The following two decision tables take the Gear Lever Position and Gear Reverse CAN input signals that are used for automatic and manual transmissions, respectively, and produce GearPosHMI.

TrnType	GearRvrse_ D_Actl_ ComStat	GearRvrse_D_Actl	Park_Brake_ Merged	ApaSteScanMde_D_Stat	GearPosHMI
MANUAL	MISSING for >=Camra_Actv_ MM_Timr_Cfg	DON'T CARE	DON'T CARE	DON'T CARE	MISSING
MANUAL	PRESENT	ACTIVE_CONFIRMED | ACTIVE_NOT_ CONFIRMED consecutive samples for (T>=GearPosHMI_Timr_Cfg)	DON'T CARE	DON'T CARE	REVERSE
MANUAL	PRESENT	INACTIVE_ NOT_CONFIRMED | INACTIVE_ CONFIRMED After consecutive samples for (T>=GearPosHMI_Timr_Cfg)	APPLIED	NULL | NOT_SCANNING | SCANNING (No debounce)	PARK
MANUAL	PRESENT	INACTIVE_ NOT_CONFIRMED | INACTIVE_ CONFIRMED | ACTIVE_ NOT_CONFIRMED After consecutive samples for (T>=GearPosHMI_Timr_Cfg)	NOT_ APPLIED	NULL | NOT_SCANNING | SCANNING (No debounce)	NOT_PARK_ REVERSE
MANUAL	PRESENT	FAULT for >= Camra_Fault_Timr_Cfg	DON'T CARE	DON'T CARE	GEAR_FAULT

TrnType	GearLvrPos_ D_Actl_ComStat	GearLvrPos_D_Actl	ApaSteScanMde_ D_Stat	GearPosHMI
AUTO	MISSING for >= Camra_Actv_ MM_Timr_Cfg	DON'T CARE	DON'T CARE	MISSING
AUTO	PRESENT	REVERSE After consecutive samples for (T>=GearPosHMI_Timr_Cfg)	DON'T CARE	REVERSE
AUTO	PRESENT	FAULT for >= Camra_Fault_Timr_Cfg	DON'T CARE	GEAR_FAULT
AUTO	PRESENT	PARK After consecutive samples for (T>=GearPosHMI_Timr_Cfg)	NULL | NOT_SCANNING | SCANNING (No debounce)	PARK
AUTO	PRESENT	NEUTRAL | DRIVE | SPORT_DRIVESPORT | LOW |	NULL | NOT_SCANNING | SCANNING (No debounce)	NOT_PARK_ REVERSE

		FIRST | SECOND | THIRD | FOURTH | FIFTH | SIXTH | UNKNOWN_POSITION After consecutive samples for (T>=GearPosHMI_Timr_Cfg)		

General Screen Arbitration: Gear Position Determination

2.4.6 CAMERA-FUR-REQ-161328/B-HMI Screen Logical Arbitration - Determine Dynamic Variables (FVCScrRq)

CtrStkFeatNoActl (FeatConfig for 0x081B)	FVCScrRq
OFF	OFF
FRONT360 | FRONTNORMAL | FRONTSPLIT (feature number coded; no debounce)	FRONT
REAR | REAR360 | REARNORMAL | REARSPLIT | REARZOOM | CHMSL | CHMSLZOOM | AUX | TRG | TRGREARNORMAL | STRAIGHTBACKUP MODE (feature number coded; no debounce)	REAR

General Screen Arbitration: Front Camera Status Determination

2.4.7 CAMERA-FUR-REQ-196894/A-HMI Screen Logical Arbitration - Determine Dynamic Variables (RVC_OverSpd_Thres)

The following decision table creates FVC_OverSpd_Thres based on the Off Road status and mode. RVC_OverSpd_Thres is set to CamraDisable_Cfg (only one speed threshold applies to rear camera).

OffRoad Camera_Cfg	AWDStat_D_RqDsply	FVC_OverSpd_Thres	RVC_OverSpd_Thres
TRUE	_4x4_Off_Road_Mode | _4x4_Exiting_Off_Road | _4x4_Extreme_Off_Road_Mode | _4x4_Off_Road_Speed (No debounce)	Value of CamraOffRoadDisable_Cfg (24 KPH)	Value of CamraDisable_Cfg (10 KPH)
TRUE	!=(_4x4_Off_Road_Mode | _4x4_Exiting_Off_Road | _4x4_Extreme_Off_Road_Mode | _4x4_Off_Road_Speed) (No debounce)	Value of CamraDisable_Cfg (10 KPH)	Value of CamraDisable_Cfg (10 KPH)
FALSE	DON'T CARE	Value of CamraDisable_Cfg (10 KPH)	Value of CamraDisable_Cfg (10 KPH)

FALSE	DON'T CARE	Value of CamraDisable_Cfg (10 KPH)	Value of CamraDisable_Cfg (10 KPH)

Front & Rear Camera Overspeed Threshold Input Processing Table

2.4.8 CAMERA-FUR-REQ-196895/A-HMI Screen Logical Arbitration - Determine Dynamic Variables (APA_Mode)

The following decision table creates APA_Mode from the ApaMde_D_Stat CAN signal.

ApaMde_D_Stat_ComStat	ApaMde_D_Stat	APA_Mode
MISSING for >= APA_Actv_MM_Timr_Cfg	DON'T CARE	MISSING
PRESENT	SAPP | PPA | POA After consecutive samples for (T>=APA_Mode_Timr_Cfg)	APA
PRESENT	NULL | OFF After consecutive samples for (T>=APA_Mode_Timr_Cfg)	NOT_APA

APA Mode Input Processing Table

2.4.9 CAMERA-FUR-REQ-196896/A-HMI Screen Logical Arbitration - Determine Dynamic Variables (APA_Sys_Stat)

ApaSys_D_Stat	APA_Sys_Stat
NULL (No Debounce)	NULL
OFF (No Debounce)	OFF
ON (No Debounce)	ON
OVERSPEED (No Debounce)	OVERSPEED
APA_CANCELLED (No Debounce)	APA_CANCELLED
NOT_ACCESSIBLE (No Debounce)	NOT_ACCESSIBLE
FINISHED (No Debounce)	FINISHED
FAULTY for >=APA_Fault_Timr_Cfg	APA_SYS_FAULT

APA System Status Input Processing Table

2.4.10 CAMERA-FUR-REQ-196897/A-HMI Screen Logical Arbitration - Determine Dynamic Variables (APA_Gear_Shif)

ApaGearShif_D_RqDrv	APA_Gear_Shif
NULL (No Debounce)	NULL
NO_REQUEST (No Debounce)	NO_REQUEST
SHIFT_TO_R (No Debounce)	SHIFT_TO_R
SHIFT_TO_D (No Debounce)	SHIFT_TO_D
SHIFT_TO_N (No Debounce)	SHIFT_TO_N
SHIFT_TO_P (No Debounce)	SHIFT_TO_P

APA Gear Shift Input Processing Table

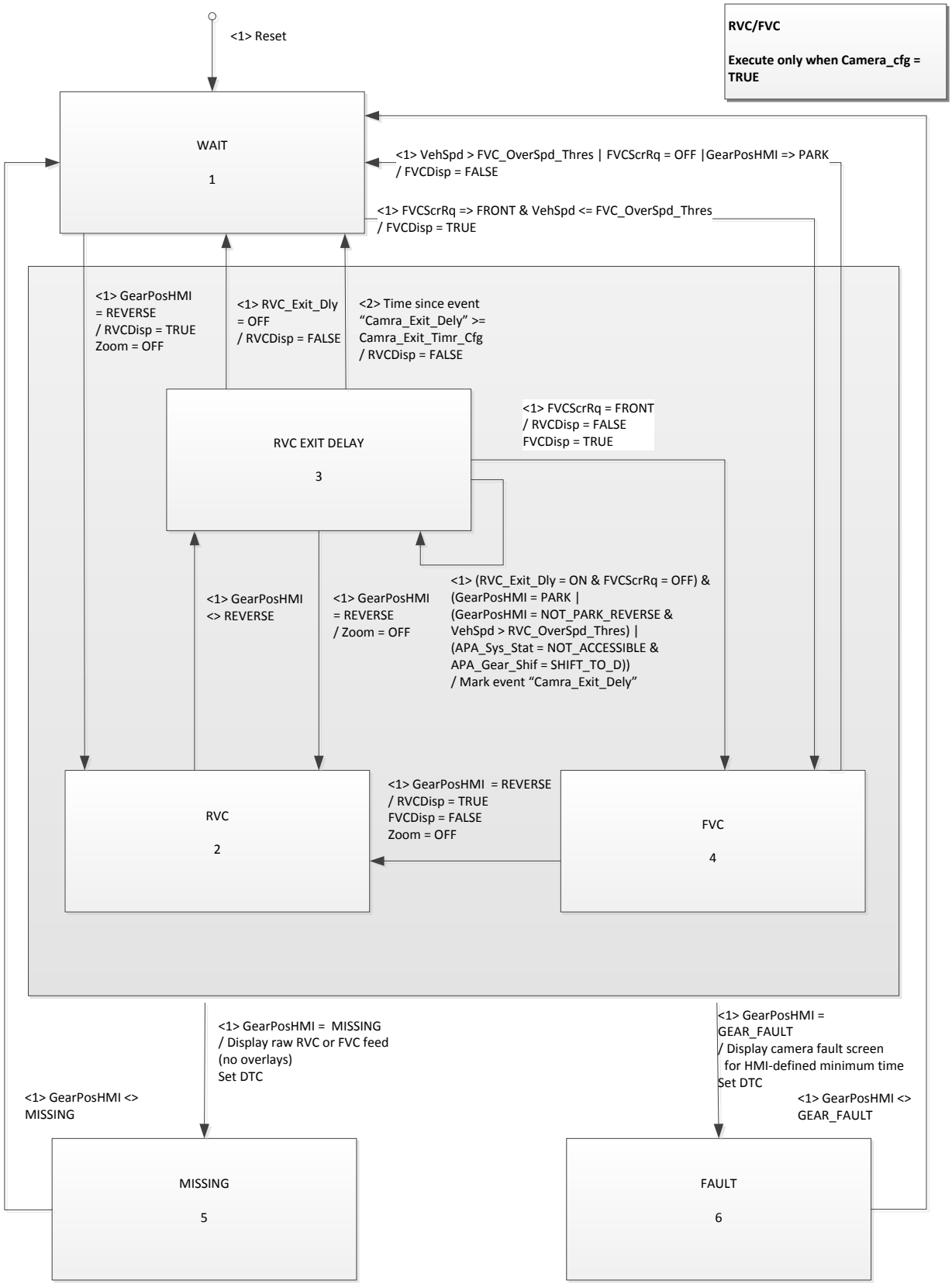
2.4.11 CAMERA-FUR-REQ-196898/C-HMI Screen Logical Arbitration - Determine Dynamic Variables (PDC_Stat)

PrkAidMsgTxt_D_Rq_ComStat	PrkAidMsgTxt_D_Rq	PDC_Stat
MISSING for >= PDC_ Actv_MM_Timr_Cfg	DON'T CARE	MISSING
PRESENT	R_SNSRS_ON_F_SNSRS_OFF | R_SNSRS_OFF_F_SNSRS_ON | R_SNSRS_ON_F_SNSRS_ON | | FAIL_MODE_NO_CHIME | FAIL_MODE_WITH_CHIME |R_SNS_INACTIVE_TRLR_ATCH | R_Sns_Trlr_F_Sns_Blk | R_Sns_Blk_F_Sns_On | R_Sns_On_F_Sns_Blk | All_Sns_Blk After consecutive samples for (T>=PDC_Stat_Timr_Cfg)	ACTIVE
PRESENT	ALL_PARK_SENSORS_OFF | PARK_SYS_ALTERNATE_MODE | NOT_USED | NOT_AVAIL_TRLR_ATTCHD After consecutive samples for (T>=PDC_Stat_Timr_Cfg)	INACTIVE
PRESENT	FAULT for >= PDC_Fault_Timr_Cfg	PDC_STAT_

		FAULT

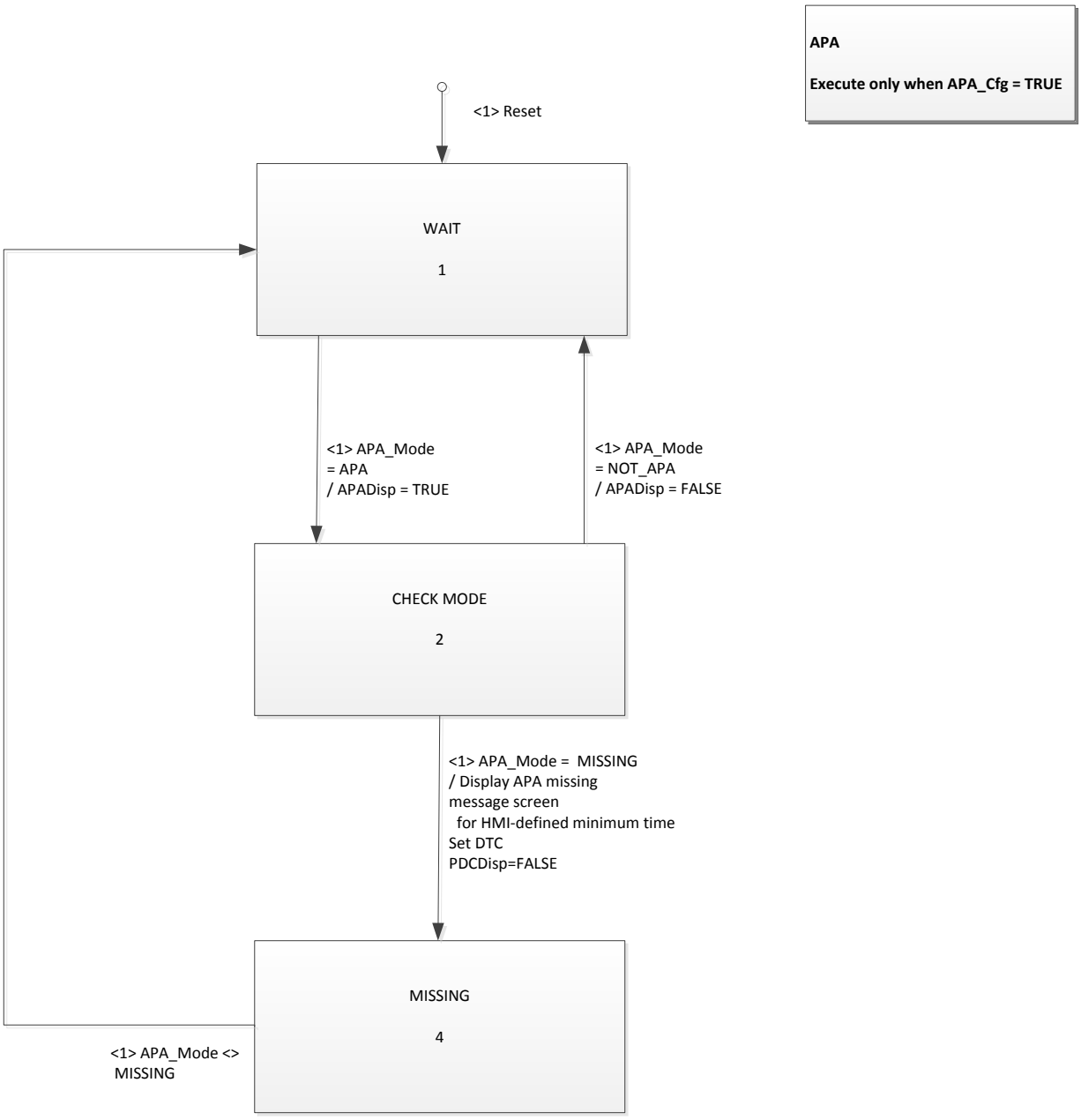
Park Aid Message Text Input Processing Table

2.4.12 CAMERA-FUR-REQ-166820/C-HMI Screen Logical Arbitration - Camera



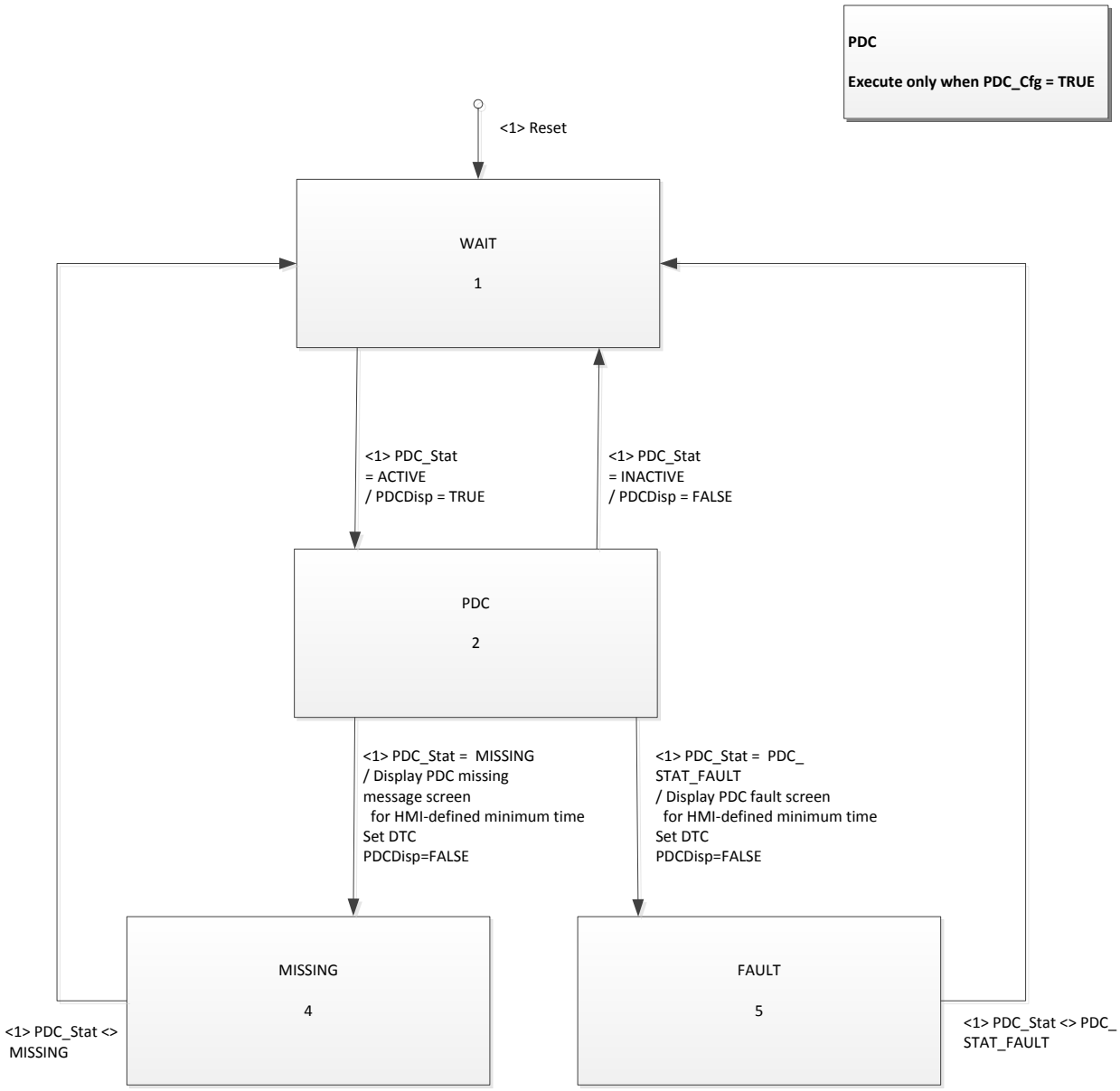
General Screen Arbitration: Step #1 Camera

2.4.13 CAMERA-FUR-REQ-166823/D-HMI Screen Logical Arbitration - APA Dedicated Display



General Screen Arbitration: Active Park Assist (APA)

2.4.14 CAMERA-FUR-REQ-131023/E-HMI Screen Logical Arbitration - PDC Dedicated Display

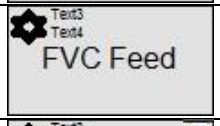
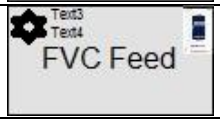


General Screen Arbitration: Park Distance Control (PDC)

2.4.15 CAMERA-FUR-REQ-196899/A-HMI Screen Logical Arbitration - Screen Controller

Screens shall be assigned real time as per the following state table

FVCDisp	RVCDisp	APADisp	PDCDisp	Screen displayed	Reference: Sample Screen
0	0	0	0	No display (release control to HMI ECU)	
0	0	0	1	Dedicated PDC	

0	0	1	0	APA (PDC will not be shown)	
0	0	1	1	APA (PDC will be shown)	
0	1	0	0	RVC (APA instructions not shown, PDC will not be shown)	
0	1	0	1	RVC (APA instructions not shown, PDC will be shown)	
0	1	1	0	RVC (APA instructions will be shown, PDC will not be shown)	
0	1	1	1	RVC (APA instructions will be shown, PDC will be shown)	
1	0	0	0	FVC (APA instructions not shown, PDC will not be shown)	
1	0	0	1	FVC (APA instructions not shown, PDC will be shown)	
1	0	1	0	FVC (APA instructions will be shown, PDC will not be shown)	
1	0	1	1	FVC (APA instructions will be shown, PDC will be shown)	
1	1	0	0	Combination prohibited by the RVC/FVC state machine (FVC & RVC images not displayed simultaneously)	N/A
1	1	0	1		
1	1	1	0		
1	1	1	1		

Screen Arbitration Controller

2.5 Active Park Assist (APA) Signal Interface

This section lists all the signals that shall be used by the infotainment display to show the Active Park Assist (APA) graphic.

2.5.1 Active Park Assist (APA) Signal list – Received by Infotainment ECU (from PAM)

2.5.1.1 CAMERA-FUR-REQ-130490/C-Active Park Assist (APA) Signal - [ApaSys_D_Stat]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaSys_D_Stat]	State Encoded: $0: Null $1: Off $2: On $3: Overspeed $4: ApaCancelled $5: NotAccessible $6: Finished $7: Faulty	ScanLeft ScanRight Symbol1 Symbol2 Text1 Text2 CarLeft CarRight CarPOA ParkPilot ParkScenarioLeft ParkScenarioRight ParkScenarioPOA CarNonRVCSac ParkInArrow POAleft POAright POArightSelectd POAleftSelectd SAPFeatureMenuBarVisibility Symbol3 Symbol4 Text3 Text4

2.5.1.2 CAMERA-FUR-REQ-131149/C-Active Park Assist (APA) Signal - [ApaSteScanMde_D_Stat]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaSteScanMde_D_Stat]	State Encoded: $0: Null $1: NotScanning $2: Scanning $3: Steering	ScanLeft ScanRight Symbol1 Symbol2 Text1 Text2 CarLeft CarRight CarPOA ParkPilot ParkScenarioLeft ParkScenarioRight ParkScenarioPOA CarNonRVCSac ParkInArrow POAleft POAright POArightSelectd POAleftSelectd SAPFeatureMenuBarVisibility Symbol3 Text3 Text4

2.5.1.3 CAMERA-FUR-REQ-131150/C-Active Park Assist (APA) Signal - [ApaActvSide2_D_Stat]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaActvSide2_D_Stat]	State Encoded: $0: Null $1: Left $2: Right $3: No_Side	ScanLeft ScanRight Text1 Text2 CarLeft CarRight ParkScenarioLeft ParkScenarioRight ParkInArrow POAleft POAright POArightSelectd POAleftSelectd

2.5.1.4 CAMERA-FUR-REQ-131151/C-Active Park Assist (APA) Signal - [ApaMde_D_Stat]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaMde_D_Stat]	State Encoded: $0: Null $1: Off $2: SAPP $3: PPA $4: POA $5: NotUsed1 $6: NotUsed2 $7: NotUsed3	ScanLeft ScanRight Symbol1 Symbol2 Text1 Text2 CarLeft CarRight CarPOA ParkScenarioLeft ParkScenarioRight ParkScenarioPOA ParkInArrow POAleft POAright POArightSelectd POAleftSelectd SAPFeatureMenuBarHighlight Symbol3 Text3 Text4

2.5.1.5 CAMERA-FUR-REQ-131152/C-Active Park Assist (APA) Signal - [ApaSelSapp_D_Stat]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaSelSapp_D_Stat]	State Encoded: $0: Null $1: Selectable $2: NotSelectable $3: NotConfigured	N/A*

*Signal is defined here to protect-for future use.

2.5.1.6 CAMERA-FUR-REQ-131153/C-Active Park Assist (APA) Signal - [ApaSelPpa_D_Stat]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaSelPpa_D_Stat]	State Encoded: $0: Null $1: Selectable $2: NotSelectable $3: NotConfigured	SAPFeatureMenuBarGreyout SAPFeatureMenuBarContent

2.5.1.7 CAMERA-FUR-REQ-131154/C-Active Park Assist (APA) Signal - [ApaSelPoa_D_Stat]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaSelPoa_D_Stat]	State Encoded: $0: Null $1: Selectable $2: NotSelectable $3: NotConfigured	SAPFeatureMenuBarGreyout

2.5.1.8 CAMERA-FUR-REQ-131155/C-Active Park Assist (APA) Signal - [ApaScan_D_Stat]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaScan_D_Stat]	State Encoded: $0: Null $1: NoParkSlot $2: ParkSlotFound $3: ParkSlotReady	Symbol1 Symbol2 Text1 Text2 ParkScenarioLeft ParkScenarioRight ParkInArrow POArightSelectd POAleftSelectd

2.5.1.9 CAMERA-FUR-REQ-131156/D-Active Park Assist (APA) Signal - [ApaLongCtl_D_RqDrv]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaLongCtl_D_RqDrv]	State Encoded: $0: Null $1: NoRequest $2: Stop $3: DriveForward $4: DriveBackward $5: ReleaseBrake $6: NotUsed1 $7: NotUsed2	Symbol1 Symbol2 Text1 Text2 ParkInArrow Symbol3 Text3 Text4

2.5.1.10 CAMERA-FUR-REQ-131157/C-Active Park Assist (APA) Signal - [ApaGearShif_D_RqDrv]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaGearShif_D_RqDrv]	State Encoded: $0: Null $1: NoRequest $2: ShiftToR $3: ShiftToD $4: ShiftToN $5: ShiftToP $6: NotUsed1 $7: NotUsed2	Symbol1 Symbol2 Text1 Text2 ParkInArrow Symbol3 Text3 Text4

2.5.1.11 CAMERA-FUR-REQ-131158/C-Active Park Assist (APA) Signal - [ApaSteWhl_D_RqDrv]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaSteWhl_D_RqDrv]	State Encoded: $0: Null $1: NoRequest $2: RemoveHands $3: TakeControl	Symbol1 Symbol2 Text1 Text2 ParkInArrow Symbol3 Text3 Text4

2.5.1.12 CAMERA-FUR-REQ-131159/D-Active Park Assist (APA) Signal - [ApaAcsy_D_RqDrv]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaAcsy_D_RqDrv]	State Encoded: $0: Null $1: NoRequest $2: SelectSide $3: PressApaButton $4: CheckForObject $5: CloseDoor $6: SelectSideLeft $7: SelectSideRight	Symbol1 Symbol2 Text1 Text2 POAleft POAright POArightSelectd POAleftSelectd Symbol3 Text3 Text4

2.5.1.13 CAMERA-FUR-REQ-197168/B-Active Park Assist (APA) Signal - [ApaMsgTxt_D_Rq]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaMsgTxt_D_Rq]	State Encoded: $0: Null $1: None $2: WheelSlip $3: TcsDisabled $4: SpeedLimitExceeded $5: HighInclination $6: BrakingActive $7: SteeringInteraction $8: WrongDirection $9: AccelPedalInactive $A: NotUsed1 $B: NotUsed2 $C: NotUsed3 $D: NotUsed4 $E: NotUsed5 $F: NotUsed6	Text1 Text2

2.5.1.14 CAMERA-FUR-REQ-203878/A-Active Park Assist (APA) Signal - [ApaTrgtDist_D_Stat]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaTrgtDist_D_Stat]	State Encoded: $0: Off $1: Step1 $2: Step2 $3: Step3 $4: Step4 $5: Step5 $6: Step6 $7: Step7 $8: Step8 $9: Step9 $A: Step10 $B: Step11 $C: Step12 $D: Step13 $E: Step14 $F: Step15	Symbol1

2.5.1.15 CAMERA-FUR-REQ-131160/F-Active Park Assist (APA) Signal - [PrkAidMsgTxt_D_Rq]

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[PrkAidMsgTxt_D_Rq]	State Encoded: $0: All_Park_Sensors_Off $1: R_Snsrs_On_F_Snsrs_Off $2: R_Snsrs_Off_F_Snsrs_On $3: NotUsed $4: NotUsed $5: R_Snsrs_On_F_Snsrs_On $6: Park_Sys_Alternate_Mode $7: NotUsed $8: R_Sns_Trlr_F_Sns_Blk $9: Fail_Mode_with_Chime $A: Fail_Mode_no_Chime $B: Not_Avail_Trlr_attchd $C: R_Sns_Inactive_Trlr_atch $D: R_Sns_Blk_F_Sns_On $E: R_Sns_On_F_Sns_Blk $F: All_Sns_Blk	ScanLeft ScanRight Text2 ParkPilot

2.5.2 Active Park Assist (APA) Signal Processing

2.5.2.1 CAMERA-FUR-REQ-130494/E-Active Park Assist (APA) Signal Processing - Positional ScanLeft

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	0x1	0x2	X	X	X	X	X	X	X	X	X	X	0x0	Active 
	0x2	0x2	0x1	0x3	X	X	X	X	X	X	X	X	X	X	0x0	Active 
	0x2	0x2	0x2	0x2	X	X	X	X	X	X	X	X	X	X	0x0	Passive 
	0x2	0x2	0x2	0x3	X	X	X	X	X	X	X	X	X	X	0x0	Passive 
	All Other Cases															Blank (Do not show ScanLeft)

Active Park Assist (APA) Positional ScanLeft

2.5.2.2 CAMERA-FUR-REQ-130495/E-Active Park Assist (APA) Signal Processing - Positional ScanRight

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Operational Modes and Voltage	0x2	0x2	0x2	0x2	X	X	X	X	X	X	X	X	X	X	0x0	Active 

	0x2	0x2	0x2	0x3	X	X	X	X	X	X	X	X	X	X	0x0	Active 
	0x2	0x2	0x1	0x2	X	X	X	X	X	X	X	X	X	X	0x0	Passive 
	0x2	0x2	0x1	0x3	X	X	X	X	X	X	X	X	X	X	0x0	Passive 
	All Other Cases															Blank (Do not show ScanRight)

Active Park Assist (APA) Positional ScanRight

2.5.2.3 CAMERA-FUR-REQ-130496/G-Active Park Assist (APA) Signal Processing - Positional Symbol1

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	X	X	X	X	X	X	0x2	0x2	X	X	X	X	X	
	0x2	0x2	X	X	X	X	X	0x3	X	0x4	0x2	X	X	X	X	
	0x2	0x2	X	0x4	X	X	X	0x3	X	0x3	X	X	X	X	X	
	0x2	0x2	X	0x4	X	X	X	0x3	X	0x2	X	X	X	X	X	
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x2	0x1	X	0x7	X	
	0x2	0x2	X	X	X	X	X	X	0x2	0x1	X	X	X	X	X	
	0x2	0x3	X	X	X	X	X	X	0x2	X	X	X	X	X	X	
	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	0x0	0x1	X	
	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	0x1-0xE	0x1	X	With fill %*
	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	0xF	0x1	X	
	0x2	0x3	X	0x4	X	X	X	X	0x1	X	0x3	X	X	X	X	
	0x2	X	X	X	X	X	X	X	0x3	X	X	X	0x0	0x1	X	
	0x2	X	X	X	X	X	X	X	0x3	X	X	X	0x1-0xE	0x1	X	With fill %*
	0x2	X	X	X	X	X	X	X	0x3	X	X	X	0xF	0x1	X	

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
	0x2	X	X	X	X	X	X	X	0x4	0x1	0x1	0x1	X	0x9	X	Accel (TBD)
	0x2	X	X	X	X	X	X	X	0x3	0x1	0x1	0x1	X	0x9	X	Accel (TBD)
	0x4	X	X	X	X	X	X	X	X	X	X	0x3	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	0x4	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	0x5	X	X	X	
	0x3	0x1	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x3	0x3	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x5	X	X	X	X	X	X	X	X	0x1	X	X	X	X	X	
	0x2	X	X	X	X	X	X	X	0x1	0x1	0x1	0x4	X	X	X	
	0x5	X	X	X	X	X	X	X	X	0x3	X	X	X	X	X	1 (Manual) or D (Auto)
	0x6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x5	X	0x1	X	
	0x2	0x2	X	X	X	X	X	X	X	0x1	X	0x3	X	X	X	
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x3	X	0x1	X	
	0x2	X	X	X	X	X	X	X	X	0x1	0x1	0x5	X	0x9	X	
	0x2	X	X	X	X	X	X	X	X	0x1	0x2	0x1	X	0x9	X	
	0x2	X	X	X	X	X	X	X	X	0x1	0x1	0x3	X	0x9	X	
	All Other Cases															Blank (Do not show Symbol1)

Active Park Assist (APA) Positional Symbol1

*Fill % represents arrow with empty/full ratio of ApaTrgtDist_D_Stat/15. Fill starts at tail and fills toward direction of arrow.

2.5.2.4 CAMERA-FUR-REQ-130497/F-Active Park Assist (APA) Signal Processing - Positional Symbol2

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	X	X	X	X	X	X	0x2	0x2	0x2	X	X	X	X	
	0x2	0x2	X	0x4	X	X	X	X	X	0x5	X	X	X	X	X	
	0x2	0x2	X	0x4	X	X	X	0x3	X	0x2	X	X	X	X	X	
	0x2	0x2	X	X	X	X	X	X	0x2	0x2	X	X	X	X	X	
	0x2	0x2	X	X	X	X	X	0x3	X	0x4	X	X	X	X	X	
	0x2	0x2	X	0x4	X	X	X	0x3	X	0x3	X	X	X	X	X	
	0x2	0x3	X	X	X	X	X	X	0x2	0x2	X	X	X	X	X	 (Manual) or  (Auto)
	0x2	0x3	X	X	X	X	X	X	0x2	0x3	X	X	X	X	X	 (Manual) or  (Auto)
	0x2	0x3	X	X	X	X	X	X	0x2	0x1	0x2	X	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	0x3	X	X	X	
	All Other Cases															Blank (Do not show Symbol2)

Active Park Assist (APA) Positional Symbol2

2.5.2.5 CAMERA-FUR-REQ-130498/G-Active Park Assist (APA) Signal Processing - Positional Text1

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI

Run (as per Operational Modes and Voltage Range Definition)																
	0x2	0x2	X	0x2	X	X	X	0x1	0x3	X	X	X	X	X	X	Scanning
	0x2	0x2	X	0x3	X	X	X	0x1	0x3	X	X	X	X	X	X	Scanning
	0x2	0x2	0x3	0x4	X	X	X	X	X	X	X	0x2	X	X	X	Select Side
	0x2	0x2	0x2	0x4	X	X	X	0x1	X	0x1	X	0x1	X	X	X	Right Side Selected
	0x2	0x2	0x1	0x4	X	X	X	0x1	X	0x1	X	0x1	X	X	X	Left Side Selected
	0x2	0x2	X	0x4	X	X	X	X	0x1	X	X	0x6	X	X	X	Select Left Side
	0x2	0x2	X	0x4	X	X	X	X	0x1	X	X	0x7	X	X	X	Select Right Side
	0x2	0x2	X	X	X	X	X	0x3	X	X	0x2	X	X	X	X	Release Steering Wheel
	0x2	0x2	X	0x2	X	X	X	0x2	X	X	X	X	X	X	X	Space Found
	0x2	0x2	X	0x3	X	X	X	0x2	X	X	X	X	X	X	X	Space Found
	0x2	0x2	X	0x2	X	X	X	0x3	X	X	0x1	X	X	X	X	Space Found
	0x2	0x2	X	0x3	X	X	X	0x3	X	X	0x1	X	X	X	X	Space Found
	0x2	0x3	X	X	X	X	X	X	0x2	0x3	X	0x1	X	X	X	Stop (red text)
	0x2	0x3	X	X	X	X	X	X	0x2	0x2	X	0x1	X	X	X	Stop (red text)
	0x2	0x3	X	X	X	X	X	X	0x2	X	X	0x4	X	X	X	Stop (red text)
	0x2	0x3	X	X	X	X	X	X	0x2	0x1	0x2	X	X	X	X	Stop (red text)
	0x2	0x3	X	X	X	X	X	X	0x3	X	X	X	X	X	X	Drive Forward Slowly (green text)
	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	X	X	X	Drive Backward Slowly (green text)
	0x2	0x3	X	0x4	X	X	X	X	0x1	X	0x3	X	X	X	X	Finished – Take Control
	0x3	0x3	X	X	X	X	X	X	X	X	X	X	X	X	X	Slow Down
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x1	X	Cancelled
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x2	X	Cancelled-Wheel slip
	0x4	X	X	X	X	X	X	X	X	X	X	0x5	X	0x1	X	Cancelled-Door open
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x5	X	Cancelled-High inclination
	0x4	X	X	X	X	X	X	X	X	X	X	0x4	X	0x1	X	Cancelled-Obstacle in path
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x3	X	Cancelled
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x7	X	Cancelled-Steering intervention
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x8	X	Cancelled
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x4	X	Cancelled
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x6	X	Cancelled: Autobrake
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0x8	Cancelled: Sensors blocked
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0xC	Cancelled: Trailer attached
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0xD	Cancelled: Sensors blocked
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0xE	Cancelled: Sensors blocked
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0xF	Cancelled: Sensors blocked
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x5	X	0x1	X	Paused
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x2	0x1	X	0x1	X	Paused
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x3	X	0x1	X	Paused

0x4	X	X	X	X	X	X	X	X	X	X	X	0x3	X	0x7	X	Release Steering Wheel
0x7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Active Park Assist
0x5	X	X	X	X	X	X	X	X	0x3	X	X	X	X	X	X	Shift to 1 (Manual) Shift to D (Auto)
0x2	0x2	X	0x4	X	X	X	0x1	X	0x5	X	X	X	X	X	X	Shift to P
0x5	X	X	X	X	X	X	X	X	0x1	X	X	X	X	X	X	Active Park Not Available
0x3	0x1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Slow Down
0x6	X	X	0x2	X	X	X	X	X	X	X	X	X	X	X	X	Finished
0x6	X	X	0x3	X	X	X	X	X	X	X	X	X	X	X	X	Finished
0x2	0x2	X	X	X	X	X	X	X	X	X	X	0x3	X	X	X	Hold park button
0x2	0x3	X	X	X	X	X	X	0x4	0x1	X	0x4	X	X	X	X	Attention!
0x2	0x3	X	X	X	X	X	X	0x3	0x1	X	0x4	X	X	X	X	Attention!
0x2	X	X	X	X	X	X	X	0x1	X	X	0x4	X	X	X	X	Obstacle in path
0x2	X	X	X	X	X	X	X	X	0x1	X	X	X	X	0x9	X	Accel pedal inactive
All Other Cases																Blank (Do not show Text1)

Active Park Assist (APA) Positional Text1

2.5.2.6 *CAMERA-FUR-REQ-130500/G-Active Park Assist (APA) Signal Processing - Positional Text2*

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	X	X	X	X	X	X	0x2	0x1	X	0x1	X	X	X	Stop
	0x2	0x2	X	0x2	X	X	X	0x1	0x3	X	X	X	X	X	X	Drive Forward
	0x2	0x2	X	0x3	X	X	X	0x1	0x3	X	X	X	X	X	X	Drive Forward
	0x2	0x2	X	0x2	X	X	X	0x2	0x3	X	X	X	X	X	X	Drive Forward (green Text)
	0x2	0x2	X	0x3	X	X	X	0x2	0x3	X	X	X	X	X	X	Drive Forward (green Text)
	0x2	0x2	X	0x4	X	X	X	0x3	X	0x3	0x2	X	X	X	X	Shift to Drive
	0x2	0x2	X	0x2	X	X	X	X	0x2	0x2	X	X	X	X	X	Shift to Reverse
	0x2	0x2	X	0x3	X	X	X	X	0x2	0x2	X	X	X	X	X	Shift to Reverse
	0x2	0x2	X	0x4	X	X	X	0x3	X	0x2	0x2	X	X	X	X	Shift to Reverse
	0x2	0x3	X	X	X	X	X	X	0x2	0x3	X	0x1	X	X	X	Shift to Forward
	0x2	0x2	X	X	X	X	X	X	X	0x4	X	X	X	X	X	Shift to N
	0x2	0x2	X	X	X	X	X	0x3	X	0x4	X	X	X	X	X	Shift to N
	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	X	X	X	Prepare to Stop
	0x2	0x3	X	X	X	X	X	X	0x3	X	X	X	X	X	X	Prepare to Stop
	0x2	0x3	X	X	X	X	X	X	0x2	0x2	X	0x1	X	X	X	Shift to Reverse
	0x6	X	X	X	X	X	X	X	X	X	0x3	X	X	X	X	Take Control
	0x4	X	X	X	X	X	X	X	X	X	0x3	X	X	X	X	Take Control
	0x2	0x3	X	0x4	X	X	X	X	0x1	X	0x3	X	X	X	X	Take Control
	0x2	X	X	X	X	X	X	X	0x2	X	X	0x4	X	X	X	Object in Path
	0x3	0x3	X	X	X	X	X	X	X	X	X	X	X	0x6	X	Autobrake Activated
	0x4	X	X	X	X	X	X	X	X	X	X	0x3	X	0x1	X	Press Button to Resume
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x2	X	Wheel Slip
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x3	X	T/C OFF
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x4	X	High Speed

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x6	X	Driver: Use Brakes!
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0xD	Sensors Blocked
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0xC	Trailer Attached
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0x8	Sensors Blocked
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0xE	Sensors Blocked
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0xF	Sensors Blocked
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x7	X	Remove Hands
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x8	X	Wrong Direction
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x1	0xC	Trailer Attached
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x3	X	T/C OFF
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x1	0xD	Sensors Blocked
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x1	0xE	Sensors Blocked
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x1	0xF	Sensors Blocked
	0x7	X	X	X	X	X	X	X	X	X	0x1	X	X	X	X	System Fault
	0x2	0x2	X	X	X	X	X	0x3	0x5	0x1	X	0x3	X	X	X	Release brake to start
	0x2	0x3	X	X	X	X	X	X	0x1	X	X	0x4	X	X	X	Check surroundings
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x5	X	X	X	Close door
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x2	0x1	X	0x7	X	Release steering wheel
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x3	X	X	X	Hold button to resume
	0x2	0x3	X	X	X	X	X	X	0x2	0x1	0x2	X	X	X	X	Wait for Steering
	0x7	X	X	X	X	X	X	X	X	X	0x3	X	X	X	X	Take control
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x5	X	High inclination
			All Other Cases													Blank (Do not show Text2)

Active Park Assist (APA) Positional Text2

2.5.2.7 *CAMERA-FUR-REQ-130502/E-Active Park Assist (APA) Signal Processing - Positional CarLeft*

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
(as per Operational Modes and Voltage Range	0x2	0x2	0x1	0x2	X	X	X	X	X	X	X	X	X	X	X	

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
	0x2	0x2	0x1	0x3	X	X	X	X	X	X	X	X	X	X	X	
	0x3	0x1	0x1	X	X	X	X	X	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not show CarLeft)

Active Park Assist (APA) Positional CarLeft

2.5.2.8 CAMERA-FUR-REQ-165423/C-Active Park Assist (APA) Signal Processing - Positional CarRight

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	0x2	0x2	X	X	X	X	X	X	X	X	X	X	X	
	0x2	0x2	0x2	0x3	X	X	X	X	X	X	X	X	X	X	X	

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
	0x3	0x1	0x2	X	X	X	X	X	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not show CarRight)

Active Park Assist (APA) Positional CarRight

2.5.2.9 CAMERA-FUR-REQ-165424/C-Active Park Assist (APA) Signal Processing - Positional CarPOA

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	X	0x4	X	X	X	X	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not show CarPOA)

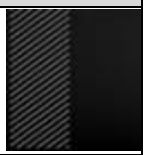
Active Park Assist (APA) Positional CarPOA

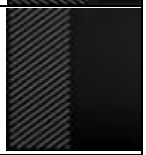
2.5.2.10 CAMERA-FUR-REQ-130503/G-Active Park Assist (APA) Signal Processing - Positional ParkPilot

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0x1	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0x2	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0x5	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0x8	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0x9	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0xA	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0xC	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0xD	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0xE	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	0xF	Follow Base Park Aid Signal Interface
	All Other Cases															Blank (Do not show ParkPilot)

Active Park Assist (APA) Positional ParkPilot

2.5.2.11 CAMERA-FUR-REQ-130504/F-Active Park Assist (APA) Signal Processing - Positional ParkScenarioLeft

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	0x1	0x2	X	X	X	0x1	X	X	X	X	X	X	X	no slot found graphic SAPP L 
	0x2	0x2	0x1	0x3	X	X	X	0x1	X	X	X	X	X	X	X	no slot found graphic PPA L 

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
	0x2	0x2	0x1	0x2	X	X	X	0x2	X	X	X	X	X	X	X	slot found graphic SAPP L 
	0x2	0x2	0x1	0x3	X	X	X	0x2	X	X	X	X	X	X	X	slot found graphic PPA L 
	0x2	0x2	0x1	0x2	X	X	X	0x3	X	≠ 0x1	X	X	X	X	X	slot found graphic SAPP L 
	0x2	0x2	0x1	0x2	X	X	X	0x3	X	0x1	X	X	X	X	X	slot ready graphic SAPP L 
	0x2	0x2	0x1	0x3	X	X	X	0x3	X	≠ 0x1	X	X	X	X	X	slot found graphic PPA L 
	0x2	0x2	0x1	0x3	X	X	X	0x3	X	0x1	X	X	X	X	X	slot ready graphic PPA L 
	0x3	0x1	0x1	0x2	X	X	X	X	X	X	X	X	X	X	X	no slot found graphic SAPP L 
	0x3	0x1	0x1	0x3	X	X	X	X	X	X	X	X	X	X	X	no slot found graphic PPA L 
	All Other Cases															Blank (Do not show ParkScenarioLeft)

Active Park Assist (APA) Positional ParkScenarioLeft

2.5.2.12 CAMERA-FUR-REQ-130505/F-Active Park Assist (APA) Signal Processing - Positional ParkScenarioRight

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	0x2	0x2	X	X	X	0x1	X	X	X	X	X	X	X	no slot found graphic SAPP R 
	0x2	0x2	0x2	0x3	X	X	X	0x1	X	X	X	X	X	X	X	no slot found graphic PPA R 
	0x2	0x2	0x2	0x2	X	X	X	0x2	X	X	X	X	X	X	X	slot found graphic SAPP R 
	0x2	0x2	0x2	0x3	X	X	X	0x2	X	X	X	X	X	X	X	slot found graphic PPA R 
	0x2	0x2	0x2	0x2	X	X	X	0x3	X	≠ 0x1	X	X	X	X	X	slot found graphic SAPP R 
	0x2	0x2	0x2	0x2	X	X	X	0x3	X	0x1	X	X	X	X	X	slot ready graphic SAPP R 
	0x2	0x2	0x2	0x3	X	X	X	0x3	X	≠ 0x1	X	X	X	X	X	slot found graphic PPA R 
	0x2	0x2	0x2	0x3	X	X	X	0x3	X	0x1	X	X	X	X	X	slot ready graphic PPA R 
	0x3	0x1	0x2	0x2	X	X	X	X	X	X	X	X	X	X	X	no slot found graphic SAPP R 
	0x3	0x1	0x2	0x3	X	X	X	X	X	X	X	X	X	X	X	no slot found graphic PPA R 

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
	All Other Cases															Blank (Do not show ParkScenarioRight)

Active Park Assist (APA) Positional ParkScenarioRight

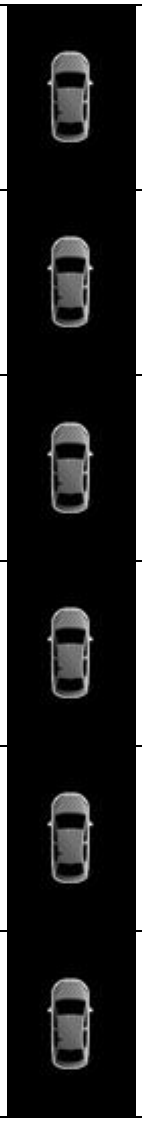
2.5.2.13 CAMERA-FUR-REQ-161347/D-Active Park Assist (APA) Signal Processing - Positional ParkScenarioPOA

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	X	0x4	X	X	X	X	X	X	X	X	X	X	X	Park Scenario POA graphic 
	All Other Cases															Blank (Do not show ParkScenarioPOA)

Active Park Assist (APA) Positional ParkScenarioPOA

2.5.2.14 CAMERA-FUR-REQ-165427/D-Active Park Assist (APA) Signal Processing - Positional CarNonRVCSac

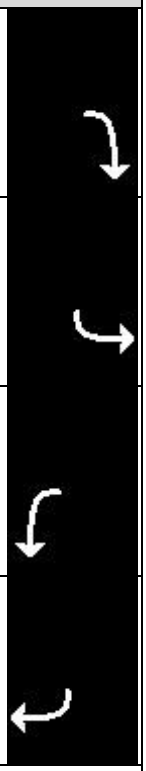
Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI

Run (as per Operational Modes and Voltage Range Definition)																
	0x2	0x3	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x3	0x3	X	X	X	X	X	X	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not show CarNonRVCSac)

Active Park Assist (APA) Positional CarNonRVCSac

2.5.2.15 CAMERA-FUR-REQ-165428/C-Active Park Assist (APA) Signal Processing - Positional ParkInArrow

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	0x1	0x2	X	X	X	0x3	0x2	0x2	0x2	X	X	X	X	
	0x2	0x2	0x1	0x3	X	X	X	0x3	0x2	0x2	0x2	X	X	X	X	
	0x2	0x2	0x2	0x2	X	X	X	0x3	0x2	0x2	0x2	X	X	X	X	
	0x2	0x2	0x2	0x3	X	X	X	0x3	0x2	0x2	0x2	X	X	X	X	
All Other Cases																Blank (Do not show ParkInArrow)

Active Park Assist (APA) Positional ParkInArrow

2.5.2.16 CAMERA-FUR-REQ-161348/D-Active Park Assist (APA) Signal Processing - Positional POAleft

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
al Modes and Voltage	0x2	0x2	0x1	0x4	X	X	X	X	X	X	X	0x1	X	X	X	

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
	0x2	0x2	0x3	0x4	X	X	X	X	X	X	X	0x2	X	X	X	
	0x2	0x2	X	0x4	X	X	X	X	0x1	X	X	0x7	X	X	X	
	0x4	0x2	X	0x4	X	X	X	X	X	X	X	0x4	X	X	X	
	All Other Cases															Blank (Do not show POAleft)

Active Park Assist (APA) Positional POAleft

2.5.2.17 CAMERA-FUR-REQ-161349/D-Active Park Assist (APA) Signal Processing - Positional POAright

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	0x2	0x4	X	X	X	X	X	X	X	0x1	X	X	X	
	0x2	0x2	0x3	0x4	X	X	X	X	X	X	X	0x2	X	X	X	
	0x2	0x2	X	0x4	X	X	X	X	0x1	X	X	0x6	X	X	X	
	0x4	0x2	X	0x4	X	X	X	X	X	X	X	0x4	X	X	X	
	All Other Cases															Blank (Do not show POAleft)

Active Park Assist (APA) Positional POAright

2.5.2.18 CAMERA-FUR-REQ-165437/C-Active Park Assist (APA) Signal Processing - Positional POArightSelectd

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	0x2	0x4	X	X	X	0x3	X	X	X	X	X	X	X	
	0x2	0x2	0x2	0x4	X	X	X	0x1	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not show POArightSelectd)

Active Park Assist (APA) Positional POArightSelectd

2.5.2.19 CAMERA-FUR-REQ-165441/C-Active Park Assist (APA) Signal Processing - Positional POAleftSelectd

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	0x1	0x4	X	X	X	0x3	X	X	X	X	X	X	X	
	0x2	0x2	0x1	0x4	X	X	X	0x1	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not show POAleftSelectd)

Active Park Assist (APA) Positional POAleftSelectd

2.5.2.20 CAMERA-FUR-REQ-165442/E-Active Park Assist (APA) Signal Processing - Positional SAPFeatureMenuBarVisibility

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not show SAPFeatureMenuBarVisibility)

Active Park Assist (APA) Positional SAPFeatureMenuBarVisibility for larger screens without display size limitations

*Note: this is the bottom layer of the menu bar. Modifiers such as selection highlights and nonavailability gray-outs will be overlayed as per the other menu bar positionals.

*Note: this is intended to depict only the graphical portion of the soft menu interface. The functional characteristics of button press CAN commands are defined in the Soft Menu Interface section.

*Note: the above table is for larger screens. For smaller screens (e.g. CHR) which can only show during the scanning phase due to limitations in screen size, use the following table:

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x3	0x1	X	X	X	X	X	X	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not show SAPFeatureMenuBarVisibility)

Active Park Assist (APA) Positional SAPFeatureMenuBarVisibility for small screens with display size limitations

2.5.2.21 CAMERA-FUR-REQ-165445/C-Active Park Assist (APA) Signal Processing - Positional SAPFeatureMenuBarHighlight

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage	X	X	X	0x2	X	X	X	X	X	X	X	X	X	X	X	
	X	X	X	0x3	X	X	X	X	X	X	X	X	X	X	X	
	X	X	X	0x4	X	X	X	X	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not overlay SAPFeatureMenuBarHighlight)

Active Park Assist (APA) Positional SAPFeatureMenuBarHighlight

*Note: this is an overlay on the menu bar. It is implied that SAPFeatureMenuBarVisibility is active in order to show these overlay modifiers.

*Note: this is intended to depict only the graphical portion of the soft menu interface. The functional characteristics of button press CAN commands are defined in the Soft Menu Interface section.

2.5.2.22 CAMERA-FUR-REQ-165446/D-Active Park Assist (APA) Signal Processing - Positional SAPFeatureMenuBarGreyout

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	X	X	X	X	0x2	X	X	X	X	X	X	X	X	X	X	
	X	X	X	X	X	0x2	X	X	X	X	X	X	X	X	X	
	X	X	X	X	X	X	0x2	X	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not overlay SAPFeatureMenuBarGreyout)

Active Park Assist (APA) Positional SAPFeatureMenuBarGreyout

*Note: this is an overlay on the menu bar. It is implied that SAPFeatureMenuBarVisibility is active in order to show these overlay modifiers.
*Note: this is intended to depict only the graphical portion of the soft menu interface. The functional characteristics of button press CAN commands are defined in the Soft Menu Interface section.

2.5.2.23 CAMERA-FUR-REQ-165449/C-Active Park Assist (APA) Signal Processing - Positional SAPFeatureMenuContent

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	X	X	X	X	X	0x3	X	X	X	X	X	X	X	X	X	
	All Other Cases															Blank (Do not overlay SAPFeatureMenuContent)

Active Park Assist (APA) Positional SAPFeatureMenuContent

*Note: this is an overlay on the menu bar. It is implied that SAPFeatureMenuBarVisibility is active in order to show these overlay modifiers.
*Note: this is intended to depict only the graphical portion of the soft menu interface. The functional characteristics of button press CAN commands are defined in the Soft Menu Interface section.

2.5.3 Active Park Assist (APA) Soft Menu Interface

2.5.3.1 CAMERA-FUR-REQ-130508/C-Active Park Assist (APA) Soft Menu Interface General Requirements 1

The infotainment display system shall provide a suitable means to allow mode selection of the APA functions SAPP, PPA and POA.
Note: This would consist of either touch screen keys or soft buttons, depending on HMI ECU hardware.

2.5.3.2 Active Park Assist (APA) Soft Menu Interface General Requirements 2

2.5.3.2.1 CAMERA-FUR-REQ-166829/A-Active Park Assist (APA) Soft Menu Interface General Requirements 2

[APA_SMenu] is an internal HMI parameter containing the current state of the soft menu display. It is derived from CAN signals [ApaMde_D_Stat], [ApaSelSapp_D_Stat], [ApaSelPpa_D_Stat] and [ApaSelPoa_D_Stat].
"Allowed Soft Buttons" refers to the soft button keys that may be selected by the customer. If a soft button is not allowed, it may still be displayed but must be shown as "grayed out" or otherwise denoted as not-selectable per HMI team direction.
Reference positional "MenuBar" in the active park assist signal processing section for a graphical example.

2.5.3.2.2 CAMERA-FUR-REQ-161350/B-Active Park Assist (APA) Soft Menu Interface General Requirements 2a

Operational Mode	**[ApaMde_D_Stat]**	**[ApaSelSapp_D_Stat]**	**[ApaSelPpa_D_Stat]**	**[ApaSelPoa_D_Stat]**	**APA_SB1 (SAPP) selection allowed?**	**APA_SB2 (PPA) selection allowed?**	**APA_SB3 (POA) selection allowed?**	**APA_SB4 (OFF) selection allowed?**	**APA_SB5 (INFO) selection allowed?**	**[APA_SMenu]**
Run (as per Operational Modes and Voltage Range Definition)	0x2-SAPP 0x3 PPA 0x4 POA	X	X	X	Yes	No Change	No Change	Yes	No Change	Set equal to [ApaMde_D_Stat]
All other cases					None					Inactive

Active Park Assist (APA) Internal Variable [APA_SMenu]
[APA_SMenu] shall initialize to state 'inactive' at battery connect and transition to key RUN.
SAPP selection is never "greyed out."

2.5.3.2.3 CAMERA-FUR-REQ-165450/A-Active Park Assist (APA) Soft Menu Interface General Requirements 2b

Operational Mode	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	APA_SB1 (SAPP) selection allowed?	APA_SB2 (PPA) selection allowed?	APA_SB3 (POA) selection allowed?	APA_SB4 (OFF) selection allowed?	APA_SB5 (INFO) selection allowed?	[APA_SMenu]
Run (as per Operational Modes and Voltage Range Definition)	0x2-SAPP 0x3 PPA 0x4 POA	X	≠0x2	X	No Change	Yes	No Change	No Change	No Change	Set equal to [ApaMde_D_Stat]
		X	0x2	X	No Change	No	No Change	No Change	No Change	
All other cases					None					Inactive

Active Park Assist (APA) Internal Variable [APA_SMenu]

[APA_SMenu] shall initialize to state 'inactive' at battery connect and transition to key RUN.
PPA selection is "greyed out" if PPA signal indicates "Not Selectable."

2.5.3.2.4 CAMERA-FUR-REQ-165451/A-Active Park Assist (APA) Soft Menu Interface General Requriements 2c

Operational Mode	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	APA_SB1 (SAPP) selection allowed?	APA_SB2 (PPA) selection allowed?	APA_SB3 (POA) selection allowed?	APA_SB4 (OFF) selection allowed?	APA_SB5 (INFO) selection allowed?	[APA_SMenu]
Run (as per Operational Modes and Voltage Range Definition)	0x2-SAPP 0x3 PPA 0x4 POA	X	X	≠0x2	No Change	No Change	Yes	No Change	Yes	Set equal to [ApaMde_D_Stat]

		X	X	0x2	No Change	No Change	No	No Change	No	
All other cases					None					Inactive

Active Park Assist (APA) Internal Variable [APA_SMenu]

[APA_SMenu] shall initialize to state 'inactive' at battery connect and transition to key RUN.
POA and INFO selections are "greyed out" if POA signal indicates "Not Selectable."

2.5.3.3 Active Park Assist (APA) Soft Menu Interface General Requirements 3

2.5.3.3.1 CAMERA-FUR-REQ-166831/A-Active Park Assist (APA) Soft Menu Interface General Requirements 3

[APA_SBtn] is an internal HMI parameter that tracks button press status. Debounce and arbitration of this variable (e.g. how to handle multiple presses, simultaneous presses and other error cases) shall be defined and contained within the HMI ECU and shall follow all applicable Ford design standards.

[APA_SBtn] may only have one active state at any given time no matter how many buttons the vehicle user is simultaneously pressing.

2.5.3.3.2 FUR-REQ-161351/A-Active Park Assist (APA) Soft Menu Interface General Requirements 3a

HMI debounced button press status	[APA_SBtn] State
No soft button is pressed	APA_SB0
Soft button 1 (SAPP) is pressed	APA_SB1
Soft button 2 (PPA) is pressed	APA_SB2
Soft button 3 (POA) is pressed	APA_SB3
Soft button 4 (OFF) is pressed	APA_SB4
Soft button 5 (INFO) is pressed	APA_SB5

Active Park Assist (APA) Internal Variable [APA_SBtn]

2.5.3.4 Active Park Assist (APA) Soft Menu Interface General Requirements 4

2.5.3.4.1 CAMERA-FUR-REQ-166832/A-Active Park Assist (APA) Soft Menu Interface General Requirements 4

The infotainment display system shall set the APA command request based on the current status of the internal variable [APA_SMenu] and [APA_SBtn].

2.5.3.4.2 FUR-REQ-161352/A-Active Park Assist (APA) Soft Menu Interface General Requirements 4a

[APA_SMenu]	[APA_SBtn]	[ApaMdeStat_D_RqDrv]
➔ Transition into Inactive (OFF)	X	0x0-Inactive*
Inactive	APA_SB0	0x0-Inactive
	APA_SB1	0x1-SAPP

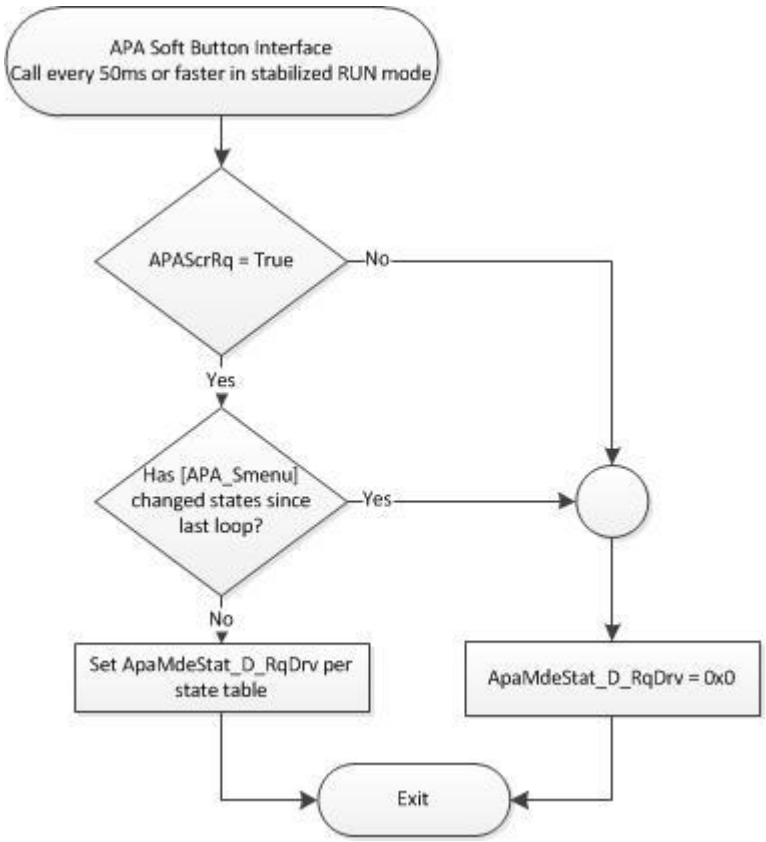
	APA_SB2	0x2-PPA
	APA_SB3	0x3-POA
	APA_SB4	0x0-Inactive
➔ Transition into SAPP	X	0x0-Inactive*
SAPP	APA_SB0	No State Change*
	APA_SB1	0x0-Inactive
	APA_SB2	0x2-PPA
	APA_SB3	0x3-POA
	APA_SB4	0x6-Off
➔ Transition into PPA	X	0x0-Inactive*
PPA	APA_SB0	No State Change*
	APA_SB1	0x1-SAPP
	APA_SB2	0x0-Inactive
	APA_SB3	0x3-POA
	APA_SB4	0x6-Off
➔ Transition into POA	X	0x0-Inactive*
POA	APA_SB0	No State Change*
	APA_SB1	0x1-SAPP
	APA_SB2	0x2-PPA
	APA_SB3	0x0-Inactive
	APA_SB4	0x6-Off
X	APA_SB5	No State Change*

Active Park Assist (APA) CAN Command [ApaMdeStat_D_RqDrv]

*[ApaMdeStat_D_RqDrv] latches until either [APA_SMenu] changes to the desired state (a successful user selection) or the user presses a different button. If the button is pressed and the request goes out on the bus as [ApaMdeStat_D_RqDrv], the intention is to leave the request out there and published until PAM reacts to it. At that point it changes back to 0x0-Inactive.

Note: The information button (info screen to be displayed) is handled within the HMI ECU and is transparent to operation of the system; this is why it has no impact on [ApaMdeStat_D_RqDrv].

2.5.3.5 CAMERA-FUR-REQ-131103/B-Active Park Assist (APA) Soft Menu Interface - Soft Button Interface Logic



Active Park Assist (APA) Soft Button Interface Logic

2.6 Reverse Video Camera (RVC) with Active Park Assist (APA) and Park Distance Control (PDC) Signal Interface

When the camera channel is open to RVC with a PDC/APA overlay that is generated by the HMI ECU, the screen shall be generated as depicted in this section. This defines the “HMI Screen Logical Subroutine-Camera” block titled “RVC – Port Camera Feed to Display Screen with a PDC overlay.”

2.6.1 CAMERA-FUR-REQ-161353/A-Reverse Video Camera (RVC) with Active Park Assist (APA) and Park Distance Control (PDC) Signal List

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaSys_D_Stat]	As per Active Park Assist (APA) Signal Interface	Symbol3, Symbol4, Text3, Text4
[ApaSteScanMde_D_Stat]		Symbol3, Text3, Text4
[ApaActvSide2_D_Stat]		Not used
[ApaMde_D_Stat]		Symbol3, Text3, Text4
[ApaSelSapp_D_Stat]		Not used
[ApaSelPpa_D_Stat]		Not used

Signal Received By Infotainment	Signal Parameters	Affected Display Position
[ApaSelPoa_D_Stat]		Not used
[ApaScan_D_Stat]		Not used
[ApaLongCtl_D_RqDrv]		Symbol3, Text3, Text4
[ApaGearShif_D_RqDrv]		Symbol3, Text3, Text4
[ApaSteWhl_D_RqDrv]		Symbol3, Text3, Text4
[ApaAcsy_D_RqDrv]		Symbol3, Text3, Text4
[PrkAidMsgTxt_D_Rq]		Not used

2.6.2 Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) Signal Processing

2.6.2.1 CAMERA-FUR-REQ-161354/A-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional ParkPilot

As per Active Park Assist (APA) Signal Interface

2.6.2.2 CAMERA-FUR-REQ-161355/F-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional Symbol3

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	X	X	X	X	X	X	0x2	X	X	X	X	X	X	
	0x2	0x3	X	X	X	X	X	X	0x2	0x3	X	0x1	X	X	X	
	0x2	0x3	X	X	X	X	X	X	0x2	0x2	X	0x1	X	X	X	
	0x2	0x3	X	X	X	X	X	X	0x2	0x1	0x2	X	X	X	X	
	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	0x0	X	X	
	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	0x1-0xE	X	X	With fill %*
	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	0xF	X	X	
	0x2	X	X	X	X	X	X	X	0x4	0x1	0x1	0x1	X	0x9	X	Accel  (TBD)
	0x2	X	X	X	X	X	X	X	0x3	0x1	0x1	0x1	X	0x9	X	Accel  (TBD)
	0x2	X	X	X	X	X	X	X	X	0x1	0x1	0x5	X	0x9	X	
	0x2	X	X	X	X	X	X	X	X	0x1	0x2	0x1	X	0x9	X	

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
	0x2	X	X	X	X	X	X	X	X	0x1	0x1	0x3	X	0x9	X	
	0x2	0x3	X	0x4	X	X	X	X	0x1	X	0x3	X	X	X	X	
	0x2	X	X	X	X	X	X	X	0x2	X	X	0x4	X	X	X	
	0x2	X	X	X	X	X	X	X	0x3	X	X	X	0x0	X	X	
	0x2	X	X	X	X	X	X	X	0x3	X	X	X	0x1-0xE	X	X	With fill %*
	0x2	X	X	X	X	X	X	X	0x3	X	X	X	0xF	X	X	
	0x3	0x3	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0x5	X	X	X	X	X	X	X	X	0x3	X	X	X	X	X	SHIFT 1 (Manual) or D (Auto)
	0x5	X	X	X	X	X	X	X	X	0x1	X	X	X	X	X	
	0x2	X	X	X	X	X	X	X	0x1	X	X	0x4	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	0x4	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	0x5	X	X	X	
	0x2	0x2	X	0x4	X	X	X	0x3	0x1	0x4	0x2	X	X	X	X	
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x2	0x1	X	0x1	X	
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x5	X	0x1	X	
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x3	X	0x1	X	
	0x4	X	X	X	X	X	X	X	X	X	X	0x3	X	X	X	
	All Other Cases															Blank (Do not show Symbol3)

Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) Positional Symbol3
*Fill % represents arrow with empty/full ratio of ApaTrgtDist_D_Stat/15. Fill starts at tail and fills toward direction of arrow.

2.6.2.3 CAMERA-FUR-REQ-161356/F-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional Symbol4

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	X	X	X	X	X	X	0x2	X	X	X	X	X	1|2|5|8|9|A|C|D|E|F	
	0x2	0x3	X	X	X	X	X	X	0x2	0x2	X	X	X	X	1|2|5|8|9|A|C|D|E|F	 (Manual) or  (Auto)
	0x2	0x3	X	X	X	X	X	X	0x2	0x3	X	X	X	X	1|2|5|8|9|A|C|D|E|F	 (Manual) or  (Auto)
	0x2	0x3	X	X	X	X	X	X	0x2	0x1	0x2	X	X	X	X	
	0x4	X	X	X	X	X	X	X	X	X	X	0x3	X	X	1|2|5|8|9|A|C|D|E|F	
	0x2	0x2	X	X	X	X	X	0x3	0x1	0x4	X	X	X	X	X	
	0x2	X	X	X	X	X	X	X	X	X	X	X	X	0x9	X	
	All Other Cases															Blank (Do not show Symbol4)

Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) Positional Symbol4

2.6.2.4 CAMERA-FUR-REQ-161357/F-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional Text3

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
(as per Operational Modes and Voltage Range	0x2	0x2	X	X	X	X	X	X	0x2	X	X	X	X	X	X	Stop
	0x2	0x3	X	0x4	X	X	X	X	0x1	X	0x3	X	X	X	X	Finished
	0x2	0x3	X	X	X	X	X	X	0x2	X	X	X	X	X	X	Stop
	0x2	0x3	X	X	X	X	X	X	0x2	X	X	0x4	X	X	X	Stop
	0x2	0x3	X	X	X	X	X	X	0x2	0x1	0x2	X	X	X	X	Stop
	0x2	0x3	X	X	X	X	X	X	0x3	X	X	X	X	X	X	Drive Forward Slowly

	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	X	X	X	Drive Backward Slowly
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x2	X	Cancelled-Wheel slip
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x3	X	Cancelled
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x1	X	Cancelled
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x8	X	Cancelled518
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x4	X	Cancelled519
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x7	X	Cancelled-Steering intervention
	0x4	X	X	X	X	X	X	X	X	X	X	0x5	X	0x1	X	Cancelled-Door open
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x5	X	Cancelled-High inclination
	0x4	X	X	X	X	X	X	X	X	X	X	0x4	X	0x1	X	Cancelled-Obstacle in path
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0x8	Cancelled, Sensors Blocked520
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0xD	Cancelled, Sensors Blocked520
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0xE	Cancelled, Sensors Blocked520
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0xF	Cancelled, Sensors Blocked520
	0x4	X	X	X	X	X	X	X	X	X	0x3	0x1	X	0x1	0xC	Cancelled, Trailer Attached521
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x6	X	Cancelled: Autobrake
	0x2	0x2	X	0x4	X	X	X	0x3	X	X	0x2	X	X	X	X	Release Steering Wheel
	0x4	X	X	X	X	X	X	X	X	X	X	0x3	X	0x7	X	Release Steering Wheel
	0x7	X	X	X	X	X	X	X	X	X	X	X	X	X	X	System Fault
	0x6	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Finished
	0x5	X	X	X	X	X	X	X	X	0x3	X	X	X	X	X	Shift to 1 (Manual) Shift to D (Auto)
	0x5	X	X	X	X	X	X	X	X	0x1	X	X	X	X	X	Not Available
	0x3	0x3	X	X	X	X	X	X	X	X	X	X	X	X	X	Slow Down
	0x2	0x3	X	X	X	X	X	X	X	0x1	X	X	X	X	X	Attention
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x5	X	0x1	X	Paused
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x2	0x1	X	0x1	X	Paused
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x3	X	0x1	X	Paused
	0x2	X	X	X	X	X	X	X	0x1	X	X	0x4	X	X	X	Obstacle in path
	0x2	X	X	X	X	X	X	X	X	0x1	X	X	X	0x9	X	Accel pedal inactive
	All Other Cases															Blank (Do not show Text3)

Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) Positional Text3

2.6.2.5 *CAMERA-FUR-REQ-161358/F-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional Text4*

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x2	X	X	X	X	X	X	0x2	X	X	X	X	X	X	Release Steering
	0x2	0x3	X	0x4	X	X	X	X	0x1	X	0x3	X	X	X	X	Take Control
	0x4	X	X	X	X	X	X	X	X	X	0x3	X	X	X	X	Take Control
	0x6	X	X	X	X	X	X	X	X	X	0x3	X	X	X	X	Take Control
	0x2	0x3	X	X	X	X	X	X	0x2	0x2	X	0x1	X	X	X	Shift to Reverse
	0x2	0x2	X	0x4	X	X	X	0x3	X	0x4	X	X	X	X	X	Shift to Neutral
	0x2	0x3	X	X	X	X	X	X	0x2	X	X	0x4	X	X	X	Object in Path
	0x2	0x3	X	X	X	X	X	X	0x3	X	X	X	X	X	X	Prepare to Stop
	0x2	0x3	X	X	X	X	X	X	0x4	X	X	X	X	X	X	Prepare to Stop
	0x2	0x3	X	X	X	X	X	X	X	X	X	0x4	X	X	X	Check Surroundings
	0x4	X	X	X	X	X	X	X	X	X	X	0x3	X	0x1	X	Press Button To Resume
	0x2	0x3	X	X	X	X	X	X	0x2	0x1	0x2	X	X	X	X	Wait for Steering
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x2	X	Wheel Slip
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x3	X	T/C OFF
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x4	X	High Speed
	0x4	X	X	X	X	X	X	X	X	X	X	0x1	X	0x6	X	Driver: Use Brakes!
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0x8	Sensors Blocked
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0xC	Trailer Attached
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0xD	Sensors Blocked

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0xE	Sensors Blocked
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x1	0xF	Sensors Blocked
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x7	X	Remove Hands
	0x4	X	X	X	X	X	X	X	X	X	0x1	0x1	X	0x8	X	Wrong Direction
	0x3	0x3	X	X	X	X	X	X	X	X	X	X	X	0x6	X	Autobrake Activated
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x1	0xC	Trailer Attached
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x3	X	T/C OFF
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x1	0x8	Sensors Blocked
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x1	0xD	Sensors Blocked
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x1	0xE	Sensors Blocked
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x1	0xF	Sensors Blocked
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x5	X	X	X	Close door
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x2	0x1	X	X	X	Release steering wheel
	0x2	0x3	X	X	X	X	X	X	X	0x1	0x1	0x3	X	X	X	Hold button to resume
	0x7	X	X	X	X	X	X	X	X	X	0x3	X	X	X	X	Take control
	0x5	X	X	X	X	X	X	X	X	X	X	X	X	0x5	X	High inclination
	All Other Cases															Blank (Do not show Text4)

Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) Positional Text4

2.6.2.6 *CAMERA-FUR-REQ-204405/A-Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) - Positional Text5*

Operational Mode	[ApaSys_D_Stat]	[ApaSteScanMde_D_Stat]	[ApaActvSide2_D_Stat]	[ApaMde_D_Stat]	[ApaSelSapp_D_Stat]	[ApaSelPpa_D_Stat]	[ApaSelPoa_D_Stat]	[ApaScan_D_Stat]	[ApaLongCtl_D_RqDrv]	[ApaGearShif_D_RqDrv]	[ApaSteWhl_D_RqDrv]	[ApaAcsy_D_RqDrv]	[ApaTrgtDist_D_Stat]	[ApaMsgTxt_D_Rq]	[PrkAidMsgTxt_D_Rq]	Display HMI
Run (as per Operational Modes and Voltage Range Definition)	0x2	0x3	X	X	X	X	X	X	X	0x1	X	X	X	X	X	Shift to cancel
	All Other Cases															Blank (Do not show Text5)

Reverse Video Camera with Active Park Assist (APA) and Park Distance Control (PDC) Positional Text5

3 Functional Definition

3.1 Active Park Assist Manager

3.1.1 APAMv2-FUN-REQ-131088/A-Select Active Park Assist Mode

3.1.1.1 Use Cases

3.1.1.1.1 APAM-UC-REQ-013892/A-HMI Offers Active Park Assist Mode Selection (TcSE ROIN-290408)

Linked Elements
APAM-UC-REQ-013897/A-Display Active Park Assist Mode Selected (TcSE ROIN-290413)
APA-UC-REQ-013931/A-Display Active Park Assist Instructions with Rear Camera Active (TcSE ROIN-290414)
APA-UC-REQ-013932/A-Display Active Park Assist Instructions with Rear Camera Inactive (TcSE ROIN-290415)
APA-UC-REQ-131659/B-Display Active Park Assist Instructions with Rear Camera Active
APA-UC-REQ-131660/B-Display Active Park Assist Instructions with Rear Camera Inactive

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. At least one Active Park Assist (APA) mode is available for selection as indicated by the vehicle system.
Scenario Description	The user activates the APA system via hard button interface. The vehicle system interface triggers the HMI to offer the user the option to select a particular APA mode.
Post-conditions	The user selects a particular APA mode or accepts the default mode selection.
List of Exception Use Cases	NA
Interfaces	G-HMI Dedicated Hard Button Vehicle System Interface

3.1.1.1.2 APAM-UC-REQ-013893/A-Semi-Automatic Parallel Parking Selected (TcSE ROIN-290409)

Linked Elements
APAM-UC-REQ-013892/A-HMI Offers Active Park Assist Mode Selection (TcSE ROIN-290408)
APAM-UC-REQ-013897/A-Display Active Park Assist Mode Selected (TcSE ROIN-290413)
APA-UC-REQ-013931/A-Display Active Park Assist Instructions with Rear Camera Active (TcSE ROIN-290414)
APA-UC-REQ-013932/A-Display Active Park Assist Instructions with Rear Camera Inactive (TcSE ROIN-290415)
APA-UC-REQ-131659/B-Display Active Park Assist Instructions with Rear Camera Active
APA-UC-REQ-131660/B-Display Active Park Assist Instructions with Rear Camera Inactive

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The Active Park Assist (APA) system is activated. The HMI has offered the APA mode selection. Semi-Automatic Parallel Parking (SAPP) mode is available for selection as indicated by the vehicle system.
Scenario Description	The user selects SAPP mode.
Post-conditions	SAPP mode is selected and active.
List of Exception Use Cases	NA
Interfaces	G-HMI Dedicated Hard Button Vehicle System Interface

3.1.1.1.3 APAM-UC-REQ-013894/A-Perpendicular Park Assist Selected (TcSE ROIN-290410)

Linked Elements
APAM-UC-REQ-013892/A-HMI Offers Active Park Assist Mode Selection (TcSE ROIN-290408)
APAM-UC-REQ-013897/A-Display Active Park Assist Mode Selected (TcSE ROIN-290413)
APA-UC-REQ-013931/A-Display Active Park Assist Instructions with Rear Camera Active (TcSE ROIN-290414)
APA-UC-REQ-013932/A-Display Active Park Assist Instructions with Rear Camera Inactive (TcSE ROIN-290415)
APA-UC-REQ-131659/B-Display Active Park Assist Instructions with Rear Camera Active
APA-UC-REQ-131660/B-Display Active Park Assist Instructions with Rear Camera Inactive

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The Active Park Assist (APA) system is activated. The HMI has offered the APA mode selection. Perpendicular Park Assist (PPA) mode is available for selection as indicated by the vehicle system.
Scenario Description	The user selects PPA mode.
Post-conditions	PPA mode is selected and active.
List of Exception Use Cases	NA
Interfaces	G-HMI Dedicated Hard Button Vehicle System Interface

3.1.1.1.4 APAM-UC-REQ-013895/A-Park Out Assist Selected (TcSE ROIN-290411)

Linked Elements
APAM-UC-REQ-013892/A-HMI Offers Active Park Assist Mode Selection (TcSE ROIN-290408)
APAM-UC-REQ-013897/A-Display Active Park Assist Mode Selected (TcSE ROIN-290413)
APA-UC-REQ-013931/A-Display Active Park Assist Instructions with Rear Camera Active (TcSE ROIN-290414)
APA-UC-REQ-013932/A-Display Active Park Assist Instructions with Rear Camera Inactive (TcSE ROIN-290415)
APA-UC-REQ-131659/B-Display Active Park Assist Instructions with Rear Camera Active
APA-UC-REQ-131660/B-Display Active Park Assist Instructions with Rear Camera Inactive

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The Active Park Assist (APA) system is activated. The HMI has offered the APA mode selection. Park Out Assist (POA) mode is available for selection as indicated by the vehicle system.
Scenario Description	The user selects POA mode.
Post-conditions	POA mode is selected and active.
List of Exception Use Cases	NA
Interfaces	G-HMI Dedicated Hard Button Vehicle System Interface

3.1.1.1.5 APAM-UC-REQ-013896/A-Off Selected (TcSE ROIN-290412)

Linked Elements
APAM-UC-REQ-013892/A-HMI Offers Active Park Assist Mode Selection (TcSE ROIN-290408)

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The Active Park Assist (APA) system is activated. The HMI has offered the APA mode selection.

Scenario Description	The user selects APA Off.
Post-conditions	The Active Park Assist session is cancelled via vehicle system interface.
List of Exception Use Cases	NA
Interfaces	G-HMI Dedicated Hard Button Vehicle System Interface

3.1.1.1.6 APAM-UC-REQ-013897/A-Display Active Park Assist Mode Selected (TcSE ROIN-290413)

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The Active Park Assist (APA) system has been activated. An APA mode has been selected.
Scenario Description	The HMI displays which APA mode is selected and active as indicated by the vehicle system.
Post-conditions	The HMI indicates the active APA mode.
List of Exception Use Cases	NA
Interfaces	G-HMI Dedicated Hard Button Vehicle System Interface

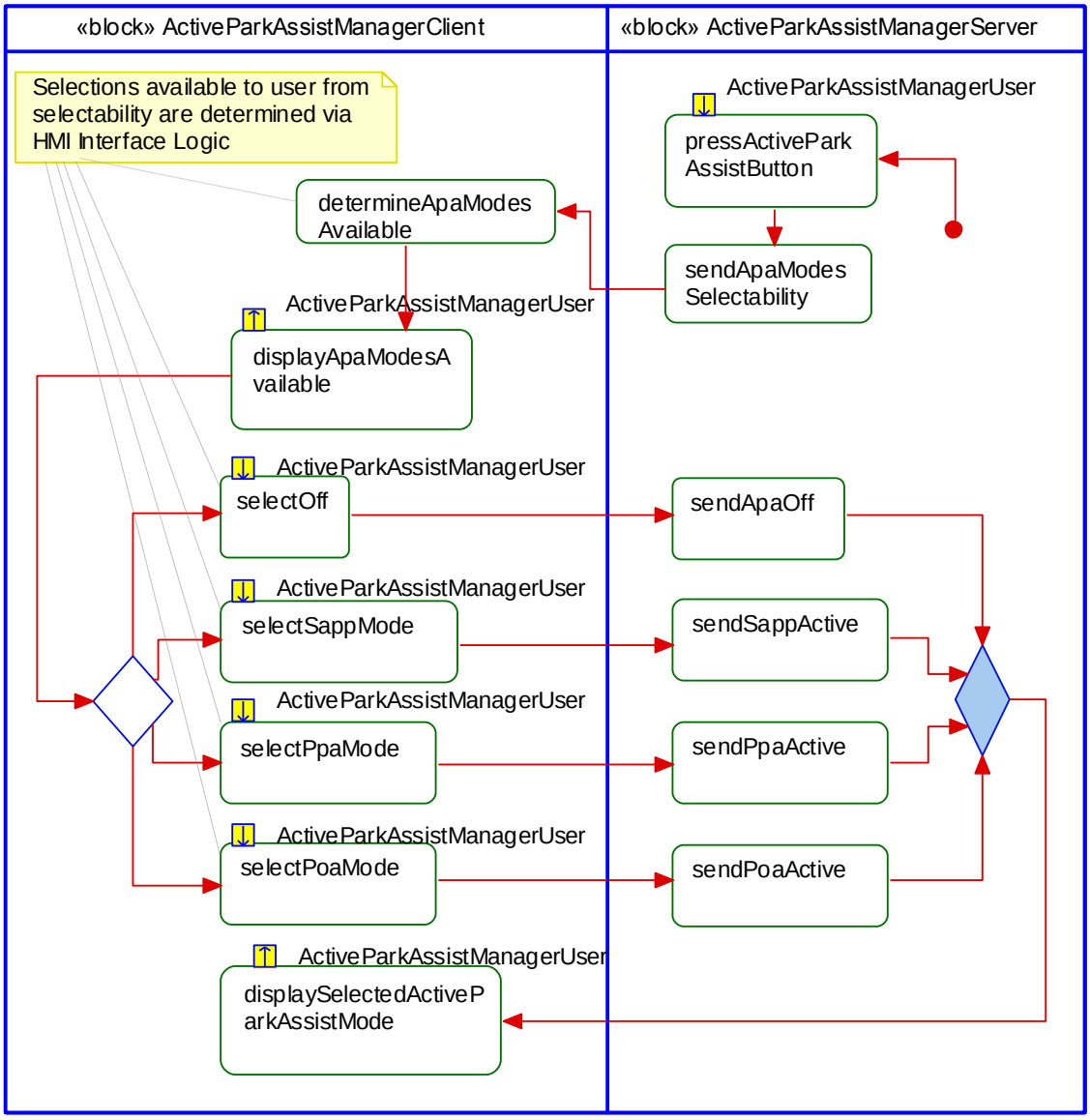
3.1.1.2 White Box View

3.1.1.2.1 Activity Diagrams

3.1.1.2.1.1 APAMv2-ACT-REQ-162488/A-Select Active Park Assist Mode

Linked Elements
APA-SD-REQ-013898/A-Select Active Park Assist Mode (TcSE ROIN-292955)

Activity Diagram



3.1.1.2.2 Sequence Diagrams

3.1.1.2.2.1 APAv2-SD-REQ-162489/A-Select Active Park Assist Mode

Scenarios

Normal Usage

The user selects an Active Park Assist mode.

Constraints

Pre-condition

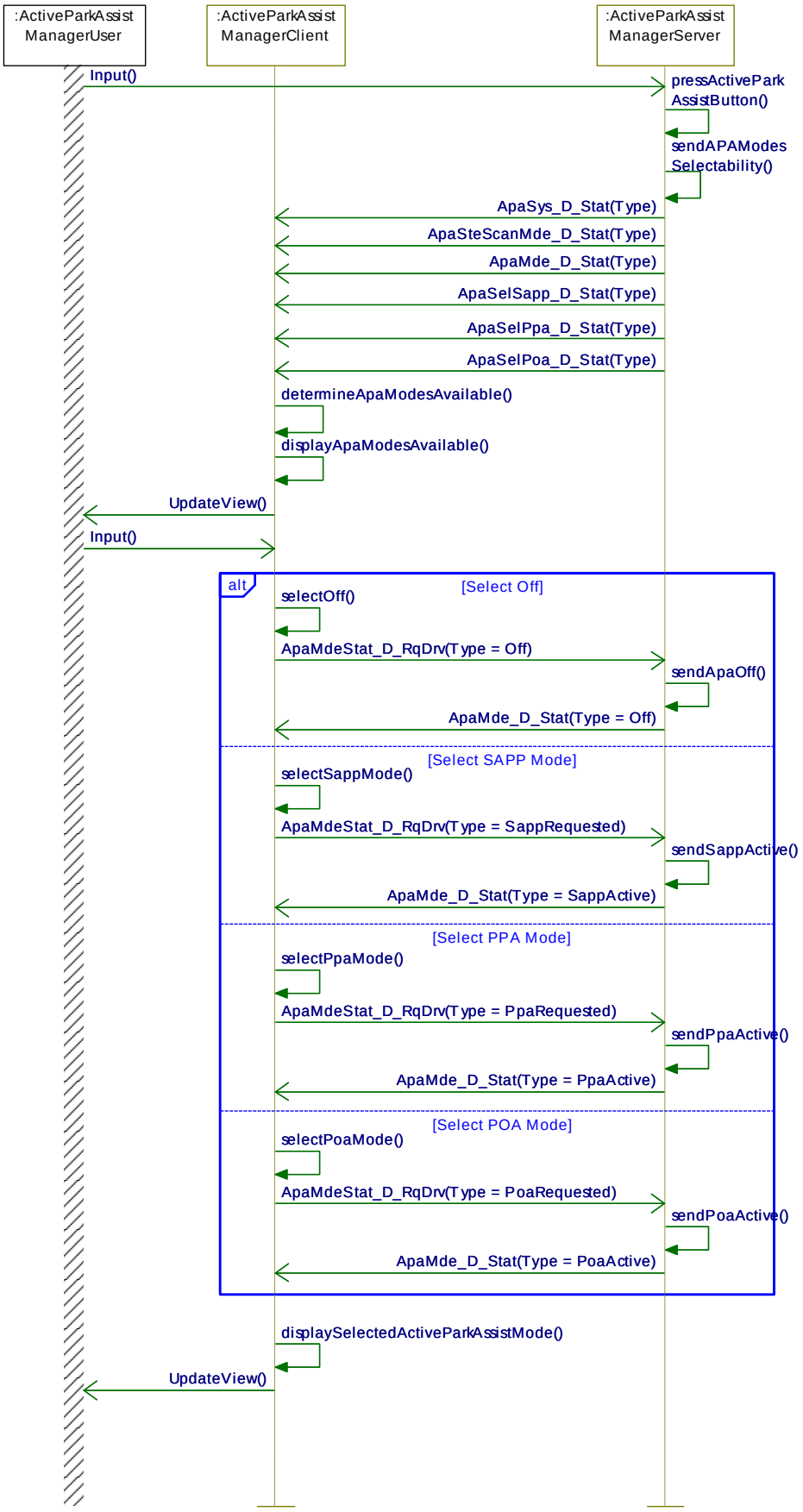
The infotainment system is powered on.

At least one Active Park Assist (APA) mode is available for selection as indicated by the vehicle system.

Post-condition

The infotainment system indicates the user's Active Park Assist mode selection.

Sequence Diagram



3.2 Active Park Assist

3.2.1 APAv2-FUN-REQ-131658/A-Activate Active Park Assist

3.2.1.1 Use Cases

3.2.1.1.1 APA-UC-REQ-131659/B-Display Active Park Assist Instructions with Rear Camera Active

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The Active Park Assist (APA) system has been activated. An APA mode has been selected.
Scenario Description	The HMI displays maneuvering instructions and status on the rear camera image as indicated by the vehicle system. The messages and display states are defined ~~in the latest version of the "APA_HmiStatus_Coding"~~per this specification document.
Post-conditions	The HMI displays APA instructions and graphics as defined ~~by the latest version of the "APA_HmiStatus_Coding" document.~~elsewhere in this specification and applicable HMI specifications.
List of Exception Use Cases	NA
Interfaces	G-HMI Dedicated Hard Button Vehicle System Interface

3.2.1.1.2 APA-UC-REQ-131660/B-Display Active Park Assist Instructions with Rear Camera Inactive

Actors	Vehicle Occupant
Pre-conditions	The infotainment system is powered on. The Active Park Assist (APA) system has been activated. An APA mode has been selected.
Scenario Description	The HMI displays maneuvering instructions and status without the rear camera image as indicated by the vehicle system. The messages and display states are defined per this specification~~in the latest version of the "APA_HmiStatus_Coding"~~ document.
Post-conditions	The HMI displays APA instructions and graphics as defined elswhere in this specification and applicable HMI specifications~~by the latest version of the "APA_HmiStatus_Coding" document~~.
List of Exception Use Cases	NA
Interfaces	G-HMI Dedicated Hard Button Vehicle System Interface

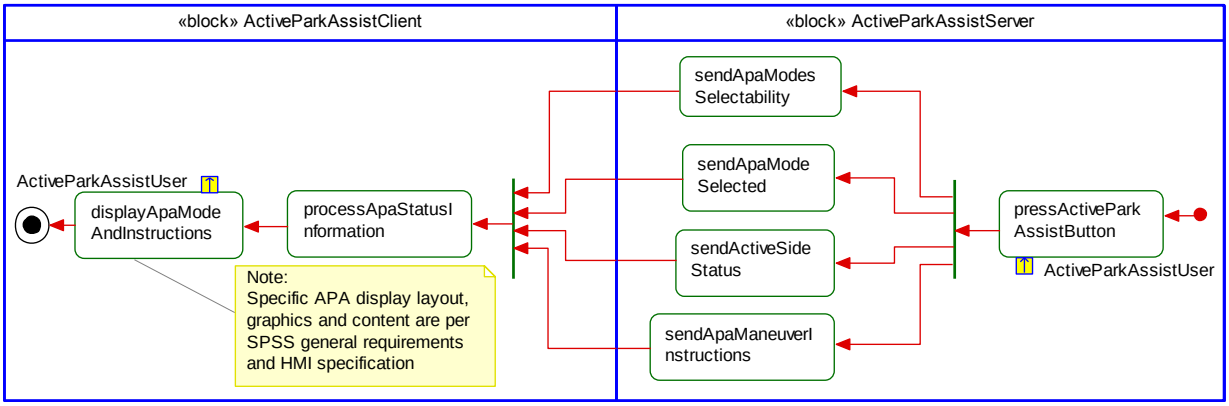
3.2.1.2 White Box View

3.2.1.2.1 Activity Diagrams

3.2.1.2.1.1 APAv2-ACT-REQ-131661/A-Display Active Park Assist Instructions

Linked Elements
APAv2-SD-REQ-131662/A-Display Active Park Assist Instructions

Activity Diagram



3.2.1.2.2 Sequence Diagrams

3.2.1.2.2.1 APAv2-SD-REQ-131662/A-Display Active Park Assist Instructions

Scenarios

Normal Usage

The driver activates the Active Park Assist system and performs a park maneuver by following the instructions given via the HMI display.

Constraints

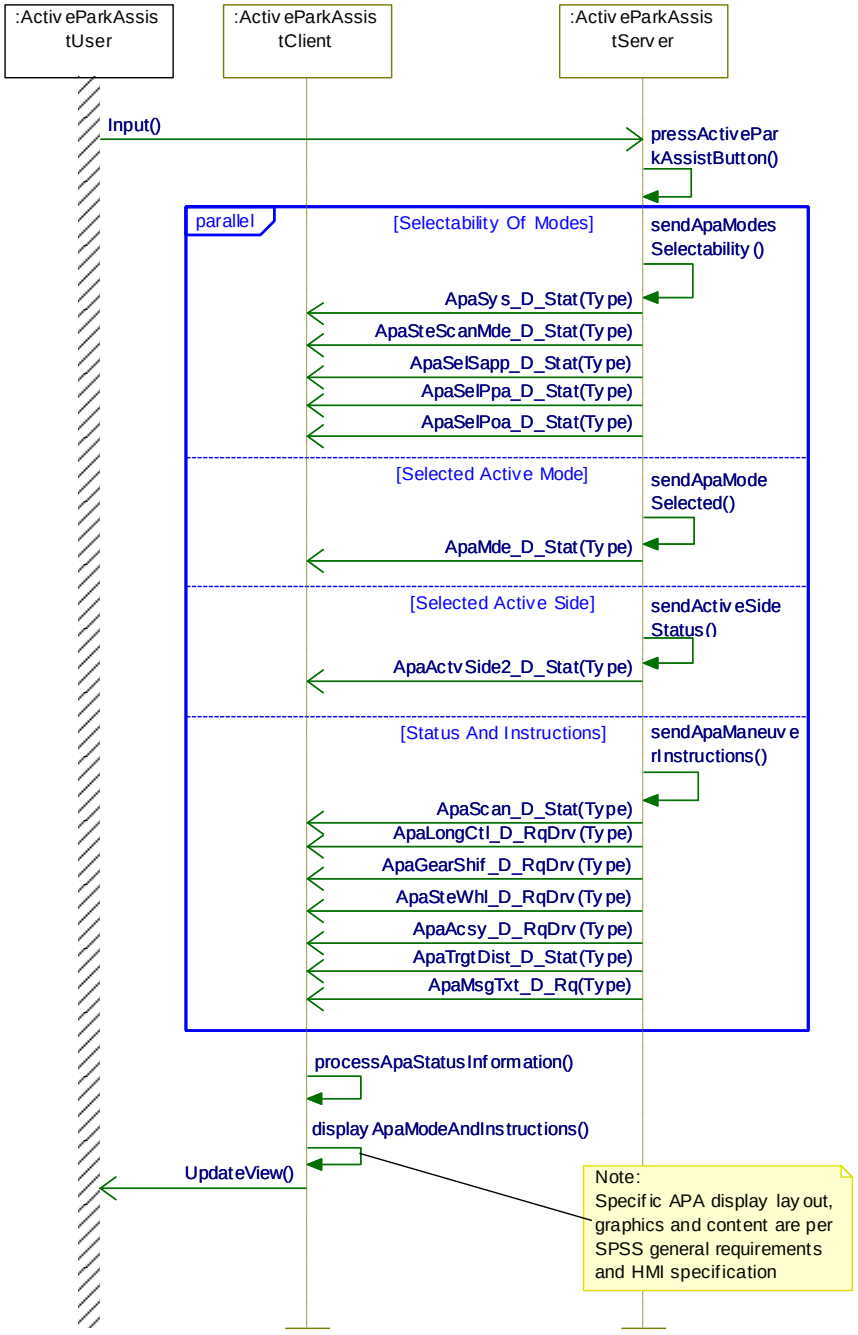
Pre-condition

The infotainment system is powered on.
The Active Park Assist (APA) system has been activated.
An APA mode has been selected.

Post-condition

The HMI displays APA instructions and graphics as defined elsewhere in this specification and applicable HMI specifications~~by the latest version of the "APA_HmiStatus_Coding" document~~.

Sequence Diagram



4 Appendix: Reference Documents

Reference #	Document Title
1	APA_HmiStatus_Coding
2	
3	
4	
5	